CONTENTS

Application Fee for All India SLIET Entrance Test

This year process of registration shall be ONLINE as well as OFFLINE :

DIRECT ENTRY

Direct Entry (Online Submission)

- General & Other Categories : ₹ 1000/-
- SC / ST : ₹ 500/-

Direct Entry (Offline Application)

- General & Other Categories : ₹ 1100/-
- SC / ST : ₹ 600/-

VERTICAL ENTRY (Only for SLIET Students of 2010 Batch)

Vertical Entry only (Online submission only) : ₹ 1000/- (₹ 500/- for SC/ST)

Vertical & Direct Entry Combined (Online submission only) : ₹ 1500/- (₹ 750/- for SC/ST)

For any Information Contact: Dr. Ajat Shatru Arora, Chairman, SET-2012
Dr. Vikas Rastogi, Vice-Chairman, SET-2012
Tel. No. 01672-280072, 253136
Fax No. 01672-280072, 280057
Email: chairmanset@sliet.ac.in, chairmanset2012@gmail.com

Help Desk Numbers (for ONLINE Submission) : **01672-253178, 253179, 8968473523-24**
Institute Website : **www.sliet.ac.in**
Website for ONLINE Application : **www.sliet.net.in**

IMPORTANT DATES & CHECK LIST FOR SET-2012

Last date for receipt of complete Application Form (Both Online & Offline) **Monday April 30, 2012**

Date of Examination

• Certificate Programme (SET-I)	**June 02, 2012**	**Saturday**	**10.00 – 12.30 Hours**
• Diploma Programme (SET-II / SET-IV)	**June 03, 2012**	**Sunday**	**10.00 – 12.30 Hours**
• Degree Programme (SET-III / SET-V)	**June 02, 2012**	**Saturday**	**14.30 – 17.00 Hours**
• M.Tech. Programme (SET-VI)	**June 03, 2012**	**Sunday**	**10.00 – 12.30 Hours**
• M.Sc. / M.B.A. Programme (SET-VII)	**June 02, 2012**	**Saturday**	**10.00 – 12.30 Hours**
• Ph.D. Programme (SET-VIII)	**June 02, 2012**	**Saturday**	**14.30 – 17.00 Hours**

Declaration of Result : June 18, 2012 (Monday)

• Group Discussion & Interview for MBA	**July 11-12, 2012**	**Wednesday-Thursday**
• Interview for Ph.D.	**July 13, 2012**	**Friday**
• Declaration of Result for MBA	**July 13, 2012**	**Friday**
• Declaration of Result for Ph.D.	**July 16, 2012**	**Monday**

Online Counselling*

Vertical Entry

- Online Choice Filling	June 19-21, 2012
- Display of Provisional Seat Allotment	June 22, 2012
- Seat Holding (After payment of Counselling Fee)	June 22-23, 2012
- 2nd Round	June 30, 2012 onwards

Direct Entry

- Online Choice Filling (Certificate, Diploma, Degree, M.Tech., M.Sc.)	June 19-25, 2012
- Display of Provisional Seat Allotment	June 26, 2012
- Seat Holding (After payment of Counselling Fee)	June 26-28, 2012
- 2nd Phase Allotment	June 29, 2012
- Seat Holding (After payment of Counselling Fee)	June 29 to July 01, 2012

Documents Verification and Payment of Admission Fee* (at SLIET Campus, Longowal)

Vertical Entry June 25-26, 2012

Direct Entry

-	Certificate (SET-I)	Punjab (Reserve categories) Morning	July 05, 2012
-	Certificate (SET-I)	Other States (All categories) Afternoon	July 05, 2012
-	Certificate (SET-I)	Punjab (General category)	July 06, 2012
-	Diploma (SET-II)	All	July 07, 2012
-	Degree (SET-III)	All	July 09, 2012
-	M.Tech. / M.Sc.	All	July 10, 2012
-	MBA/PWD Scheme	All	July 13, 2012

Dates for Counselling / Documents Verification are tentative/provisional

Commencement of Classes **Tuesday July 17, 2012**

CHECK LIST

Following must be checked while sending the Application Form (Both Online & Offline):

1. OMR Application Form (only for Offline Applications) Yes/No
2. Thumb Impression and Signature Yes/No
3. Photograph pasted at proper place Yes/No
4. Declaration signed Yes/No
5. **Candidate must provide correct information to avoid disqualification for admission. The Correspondence address, Landline / Mobile Phone Numbers and Email ID should be checked thoroughly as any of these mode(s) will be used for contacting the candidate and in case of wrong information in this regard, the responsibility lies with the candidate ONLY.**

Note: No Certificates / mark sheets etc. be attached with the OMR Application Form.
The Certificates / mark sheets will be verified at the time of Documents Verification for Admission.

CHAPTER - I

THE INSTITUTE

1.1 INTRODUCTION

Sant Longowal Institute of Engineering & Technology (SLIET) has been established by the Government of India to provide technical education in emerging areas of Engineering & Technology. It caters to the technical manpower requirements at various levels by adopting a concept of modular system in imparting technical education with emphasis on practical training in industry. This institute was set up in 1991 under Rajiv Gandhi-Longowal accord with an aim to fulfill the cherished dreams of late Sant Harchand Singh Longowal. The Institute is fully funded by Ministry of Human Resources & Development, Government of India. The educational programmes of this institute are non-conventional, innovative, practical oriented and contain all aspects of new education policy (1986) of Govt. of India. The Institute offers programmes at Certificate, Diploma, Degree, Post-graduate (M.Tech., MBA and M.Sc.) levels in various branches of Engineering, Technology & Sciences and Ph.D. programmes in Science, Management, Technology and Engineering. The programmes in the Institute provide direct entry at Certificate, Diploma, Degree, M.Tech., MBA, M.Sc. and Ph.D. levels and vertical mobility at Diploma and Degree levels of education, besides non-formal education programmes. The Institute has acquired the status of a Deemed University in the year 2007 (Notification No.F.9-42/2001-U.3).

1.2 OBJECTIVES

The objectives of the Institute are:

(a) Education and Training:

(i) To offer flexible, modular, layered, multipoint entry/exit programmes in Engineering & Technology,
(ii) To promote ñSelf-employmentòin all programmes by introducing a component of entrepreneurship & providing guidance and counselling services to help students to take-up self employment ventures,
(iii) To offer non-formal programmes in different areas of technology to strengthen the scope of Institutional programmes,
(iv) To provide Technical Education facilities for women, through specially designed courses,
(v) To offer continuing education programmes for working personnel from industries at different levels,
(vi) To offer bridge courses for lateral entry in all programmes and for moving from one level of course to another level,
(vii) To meet the requirements of small, medium and large scale industries,
(viii) To offer higher level programmes in the Institute after acquiring necessary competence at lower level programmes of the Institute,
(ix) To provide non-formal education and training to persons from unorganized sectors and school drops-out through its extension services, to enable them to acquire basic technical skills, so that they are successfully employed.

(b) Extension Services :

To offer services to:

(i) Industries in the neighborhood and in the region
(ii) Working personnel
(iii) Passed out students
(iv) I.T.I.ôs and Polytechnics
(v) Research and other institutes of higher learning

(c) Research & Development :

(i) To conduct exploratory research to assess manpower requirement leading to integrated educational planning, curriculum development & instructional material development in the identified areas of Science & Technology.
(ii) To conduct research in the inter-disciplinary areas aimed at solving the problems of industry and community. The concept of practice school introduced in the Institute, will enable the students to attain the knowledge of modern technology practices in the Industries within reasonable time frame.

(d) Collaborations :

Number of M.O.U.ôs with reputed industries and institutes of higher learning have been signed and some more are in pipe-line, for the purpose of drawing the expertise available with them, for the overall development of the Institute.

1.3 STATUS

The Institute is an autonomous body having the status of a Deemed University and fully funded by the Government of India. It is controlled by SLIET Society, registered under Societies Registration Act, 1860. The Institute awards its own Certificates, Diplomas and Degrees including M.Tech., MBA, M.Sc. and Ph.D. Further, it is clarified that:

(a) Certificates, Diplomas and Degrees awarded by SLIET were recognized by All India Council for Technical Education (A.I.C.T.E.), New Delhi (Letter No.F,765-65-031(E)/ET/97 dated July 4, 1997 and Letter No.F-765-65/ ET/97 dated April 15, 1997). Certificate courses of SLIET are equivalent to 10+2 qualification and Diploma Courses of SLIET are equivalent to the Diplomas awarded by the various State Boards of Technical Education in the appropriate fields for the purpose of recruitment to the posts and services under Central Government (Notification 42 No.F 18-8/93 T.D.V./T.S. IV dated March 8, 1995).

(b) Diplomas awarded by SLIET (except Diploma in Computer Science & Engineering) are exempted from Section-A of AMIE by The Institution of Engineers (India) vide letters No.EEA/AKG/R-22A dated Feb 20, 1995; EEA/AD/R-22A dated July 23, 1996 and EEA/AKG/R-22A dated November 1, 1999.

(c) Panjab University, Chandigarh vide its letter No.ST/8374 dated 21.9.1999 has recognized the Certificate courses of SLIET for the purpose of admission to B.A./B.Sc./B.C.A. courses (1st year).

(d) Department of Technical Education & Industrial Training, Govt. of Punjab, Chandigarh vide its Memo No.13/23/05-1 T.S.2/32 dated 4.1.2006 has recognized Certificate Course of SLIET equivalent to 10+2. According to the notification, SLIET students are eligible for the admission to B.E./B.Tech. Programmes of Punjab Technical University, Jalandhar (state-wise).

(e) M.Sc. (Physics, Chemistry & Mathematics) is approved by the UGC, New Delhi vide letter no. F 6.66/2004 (CPP-I) dated 04 March, 2011.

1.4 LOCATION

The Institute is situated at Longowal (about 8 km from Badbar on Chandigarh-Bathinda Highway) in the District of Sangrur, Punjab. It is well connected by road with Sangrur (18 km), Ludhiana (100 km), Chandigarh (150 km) and Delhi (360 km). The nearest railway stations are Sangrur (18 km), Dhuri (30 km) & Sunam (16 km) on the Northern Railway. The nearest airports are at Chandigarh and Ludhiana.

1.5 FACILITIES

Spread in sprawling more than four hundred acres, the Institute is wonderfully blessed with natural beauty and greenery. It expresses through refreshing shades revealing the environment and conditions truly designed to give the human spirit true satiety and comfort. Large plantations carried out at the Institute make the Institute a living beauty, a sign of endless and in exhaustible plenty. Live atmosphere enhances working environment bringing a softening, humanizing touch to the surroundings. Institute plays host to a number of migratory birds giving the glimps of some of the rarest species of birds in the world. Splendour of the natural environment and beauty of the birds are the perfect setting for a spiritual and academic aesthete. Institute provides an atmosphere which means oneself away from the worries, converging desires promoting the values of thinking and analysis. While a cool shade never fails oneself, a nice and comfortable well-equipped guest house adds to the charm of staying at the Institute. Dotted with green parks, strolling areas, gymnasium, swimming pool, herbal nursery, a lake with a created home for doves, the Institute is a mini-paradise extending a warm welcome and symbolizes the 'Modern Gurukul' of 21st Century.

All modern facilities to the residents in the campus are available such as :

(a) Hostels :

SLIET is a residential campus with ten hostels for boys and three for girls accommodating about 3200 students which includes about 750 girl students. The hostels have been provided with modern kitchens, comfortable dining halls and indoor games facilities. Internet connectivity, Newspapers / Magazines and Cable T.V. facilities are also available in all the hostels. **Hostel facility shall be provided to the students subject to availability. Limited number of seats are available in Hostel for PG students to be admitted during the Academic Session 2012-13.**

(b) Teaching Departments & Workshop :

The Institute has well-established departments of :

(i) Computer Science & Engineering
(ii) Electronics & Communication Engineering
(iii) Electrical & Instrumentation Engineering
(iv) Mechanical Engineering
(v) Chemical Technology
(vi) Food Engineering &Technology
(vii) Physics
(viii) Chemistry
(ix) Mathematics
(x) Management and Humanities
(xi) Disabilities Studies

All the departments have well qualified faculty and supporting staff with laboratories equipped with the modern equipments. A modern workshop has been set up. An exhaustive practical training is imparted to the students to develop their working skills in well equipped workshops.

(c) Central Library :

The Library is housed in a modern building having all kinds of facilities for its best utilization by the faculty, staff and students. It has large number of volumes of technical books along with a good collection of books on literature, general awareness, management, social sciences and humanities. The central library is subscribing numerous National/International periodicals and magazines for the benefit of its users. Besides the print journals, the central library is a member of INDEST Consortium. Through INDEST, the faculty, staff and students of the institute have online access to the full text of journals from IEEE, Springer, Science Direct, ASME, ASCE, ACM, NATURE etc. The library users also have access to DELNET database and JCCC.

(d) Computing Facilities :

The Institute is equipped with latest and powerful hardware & software. The computer laboratories provide computing environment (Linux and Windows Platforms) to the students and faculty for the pursuit of academic excellence. The various softwares are catering to the need of students such as Oracle 10g, Sybase, DB2, Power Builder, Developer 2000, Visual Basic, .Net, Rational Rose, Qualnet etc. and hardware such as IBM Blade Server, IMB xSeries Servers, IBM AS/400, RS6000, Acer G510 series Servers, workstations and PCs are available. The computer laboratories are also equipped with high end printers, plotters and scanners. All servers, PCs and peripherals are connected to the campus-networking to share the resources. Academic Blocks, Administrative Block, other Institute Buildings and all hostels are connected through optical fibre to share the resources and exchange the data.

(e) Health Centre :

The Institute has its own Health Centre to provide necessary medical aid to the students and staff in the campus. Apart from the Medical Officers, specialists are also approved as AMAs for providing consultation to the residents. Ambulance facility is also available round the clock to shift the serious patients to the nearby hospitals.

(f) Bank, Post Office, Telephone Exchange and Shopping Centre :

A branch of Central Bank of India with ATM facility and a post office are functioning in the campus to cater the needs of the faculty, staff and the students. STD payphone and cyber café facilities are available in the campus. A 800 line EPABX internal telephone facility is available in the institute. Each hostel has been provided with a telephone facility. A moderate shopping centre has been set-up to cater to the needs of the residents. All major players of mobile companies have established their network around the campus.

(g) Sports :

Adequate provisions for extra-curricular activities are made in the institute. At present, facilities are available for Table Tennis, Badminton, Swimming, Volley-Ball, Football, Hockey, Cricket, Basketball, Lawn Tennis and other indoor games. 400 meters Athletic Track is also available.

(h) Students Activity Centre:

A modern Students Activity Centre (SAC) which has 02 Squash courts, well equipped Gymnasium, other indoor games (Table Tennis, Chess & Carrom) facilities, etc. is fully functional.

(i) Extra Curricular Activities :

Students are encouraged to participate in extra curricular activities. Music and Hobbies clubs are functioning very effectively. Literary society is organizing various literary activities from time to time. Almost all the departments have their own technical societies which organize technical seminars, quizzes and other competitions in the departments to give a thrust to the development of academic potential of the students. NSS & NCC units have also been rendering valuable service by inculcating the habits of social & national responsibilities amongst the students. The NSS unit also organizes the Blood Donation camps at SLIET Health Centre. ISTE-SLIET Students Chapter organizes a number of events on various aspects of personality and skill development and other areas of studentõs interest.

(j) Curriculum Development Cell :

The Institute has its own Curriculum Development Cell and Resource Centre for production of teaching aids and systemic development of curriculum to suit the requirements of industry.

(k) Equal Opportunities Cell :

The equal opportunities cell has been established in the institute to oversee the effective implementation of policies and programmes for deprived group [SCõs, STõs, OBCõs (non-creamy layer, minorities)] as per Government of India guidelines, in order to enhance their employability and to provide the guidance.

(l) Internet :

At present the Institute has dedicated 01 Gbps internet connectivity for the benefit of the students and faculty. Internet facility has been extended to various Academic Blocks, Administrative Block, hostels and other Institute Buildings through campus wide networking.

(m) Training and Placement Cell :

A centralized department of Training & Placement is established in SLIET, Longowal to meet its students placement and industrial training requirements. The department is keeping strong liaison with reputed industries to provide placement opportunities and impart industrial training to the students of Institute. The department also provides the inputs on soft skills, personality development and communication skills etc. to the students in order to meet the expectations of the industry. A good number of industries conduct campus placements at SLIET, Longowal and about 80-85% of the eligible students get placed every year. The department is having state-of-the-art infrastructure viz. a group discussion room, interview rooms and a seminar hall. The department is associated with dynamic team of HOD, Departmental Placement Co-ordinators and Student Representatives which leave no stone unturned for providing the best placement opportunities to SLIET graduating engineers. TCS, iGate-Patni, M&M, L&T Infotech, Birlasoft, Infosys, Abhishek Industries Barnala, ISGEC Yammunanagar, Punj Lloyd, Honda Siel Cars India Ltd., ESSAR, CIMCOO, J.P. Group of Industries, Nestle, Hindustan Unilever, SANMAR Group of Industries, L&T, Godrej and Boycee Mfg. Co. etc. are some of the recruiting industries of SLIET students through Campus Placement.

1.6 THE FACULTY AND ADMINISTRATION

The Faculty of the institute is the core of the academic programme and guardian angle of maintaining the highest academic standards. Several academic distinction ï honours and awards, fellowships of professional societies, books and monographs, patents have been bestowed on our faculty in recognition of their academic achievements. The institute is administrated by dynamic team of Director, Deans and Head of the Departments and Section Incharges.

DIRECTOR

Sunil Pandey, Ph.D.

DEANS

Amar Partap Singh Pharwaha, Ph.D., Dean (SFW)
D.C. Saxena, Ph.D., Dean (P&D)
H.K. Sharma, Ph.D., Dean (R&C)
J.S.Dhillon, Ph.D., Dean (Academics)

DEPARTMENT OF CHEMICAL TECHNOLOGY

Associate Professors:

Avinash Thakur, M.E.
H. R. Ghatak, Ph.D.
Kamlesh Kumari, Ph.D.
Pushpa Jha, Ph.D. (H.O.D.)
Sandeep Mohan Ahuja, Ph.D.

Assistant Professors:

A.S.K. Sinha, M.Tech.
Gulshan Kumar Jawa, M.E.
Naveen Kumar Kaushley, M.Tech.
Subita Bhagat, M.Tech.
Vinay Kumar, M.Tech.
Vinod Kumar Meena, B.E.

DEPARTMENT OF CHEMISTRY

Professor:

B.K. Kanungo, Ph.D. (On Sabbatical Leave)
Dhiraj Sud, Ph.D. (H.O.D.)
Harish Kumar Chopra, Ph.D.

Associate Professors:

Damanjeet Singh Cannoo, Ph.D.
Ram Pal Chaudhary, Ph.D.

Assistant Professor:

Hemant Kumar, Ph.D.

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Associate Professors:

Birmohan Singh, M.E.
Damanpreet Singh, M.S. (H.O.D.)
Gurjinder Kaur Cheema, M.S.
Major Singh Goraya, M.Tech.
Manoj Kumar Sachan, M.E.
Pardeep Singh Cheema, M.S.
Sukhwinder Singh, Ph.D.(On Deputation)

Assistant Professors:

Jaspal Singh, M.Tech.
Manminder Singh, M.Tech.
Vinod Kumar Verma, M.S.

DEPARTMENT OF ELECTRICAL & INSTRUMENTATION ENGINEERING

Professors :

Ajat Shatru Arora, Ph.D.
Jaspreet Singh Dhillon, Ph.D.
Sanjay Marwaha, Ph.D.
Vijender Kumar Jain, Ph.D. (H.O.D.)

Associate Professors:

Anshuka Bansal, M.Tech.
Asim Ali Khan, M.Tech.
Charanjiv Gupta, M.E.
Diljinder Singh, M.E.
Gurmeet Singh, M.E.
Manpreet Kaur, M.Tech.
Manpreet Singh Manna, M.E.
Pratibha Tyagi, M.Tech.
Rajinder Kaur, M.Tech. (On Study Leave)
Surita Maini, M.E.

Assistant Professors:

Ashwani Kumar Aggarwal, M.Tech. (EOL)
Jaspal Singh Aujla, M.Tech.
Manmohan Singh, M.E.
Raj Kumar Garg, M. Tech.
Sanjeev Singh, Ph.D.

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Professor:

Amar Partap Singh Pharwaha, Ph.D.

Associate Professors:

Ajay Pal Singh Chauhan, M.E.
Anupma Marwaha, Ph.D.
Jagpal Singh Ubhi, Ph.D.
Lakhvinder Singh Solanki, M.E. (H.O.D.)
P.C. Upadhyay, Ph.D.
Surinder Singh, Ph.D.

Assistant Professors:

Jatinder Singh, M.Tech.
Pankaj Kumar Das, B.E. (On Study Leave)

DEPARTMENT OF DISABILITIES STUDIES

Harish Kumar Chopra, Ph.D. (H.O.D.)

DEPARTMENT OF MANAGEMENT & HUMANITIES

Associate Professors:

Jap Preet Kaur Bhangu, Ph.D.
Mahesh Kumar Arora, Ph.D.
Pardeep Kumar Jain, Ph.D.
Parveen Kaur Khanna, Ph.D.
Pawan Kumar Dhiman, Ph.D. (H.O.D.)
Sanjeev Bansal, Ph.D.
Sanjeev Kumar Garg, M.B.A.

Assistant Professors:

Mandeep Ghai, M.B.A.

DEPARTMENT OF FOOD ENGINEERING & TECHNOLOGY

Professors:

D.C. Saxena, Ph.D.
H.K. Sharma, Ph.D. (H.O.D.)
M.B. Bera, Ph.D.

Associate Professors:

Bahadur Singh Hathan, Ph.D.
C.S. Riar, Ph.D.
Charanjeev Singh, M.Sc.
Kamlesh Prasad, Ph.D.
P.S. Panesar, Ph.D.
Pradyuman Kumar, Ph.D.
Sukhcharn Singh, Ph.D.
Vikas Nanda, Ph.D.

Assistant Professors:

Navdeep Jindal, M.Tech.

DEPARTMENT OF MATHEMATICS

Professor:

Mandeep Singh, Ph.D. (H.O.D.)
S.S. Dhaliwal, Ph.D.

Associate Professors:

Janak Raj Sharma, Ph.D.
R.K. Guha, Ph.D.
Raj Kumar Goyal, M.Phil.
Ravi Kant Mishra, Ph.D.
Sushma Gupta, Ph.D.
V.K. Kukreja, Ph.D.
Vinod Mishra, Ph.D.

DEPARTMENT OF MECHANICAL ENGINEERING

Professors:

Pardeep Gupta, Ph.D.
P.K. Singh, Ph.D. (H.O.D.)
V. Sahni, Ph.D.

Associate Professors:

Amandeep Singh Shahi, Ph.D.
Amrik Singh, M.E.
Anil Kumar, M.E.
Arvind Jayant, M.Tech.
Harminder Singh Bains, Ph.D. (On Deputation)
Indraj Singh, M.Tech.
Jagtar Singh, Ph.D.
Jaspal Singh Gill, M.Tech.
Jatinder Madan, Ph.D. (On EOL)
Kanwalpreet Singh, M.E.
Kulwant Singh, Ph.D.
M.A. Akhtar, M.Tech.
Manoj Kumar, M.E.
Rajesh Kumar, Ph.D.
Raj Kumar Yadav, M.Tech.
Rakesh Kumar, M.Tech.
Ravindra Kumar Saxena, Ph.D.
Shankar Singh, Ph.D.
Suresh Chandra Verma, M.E.
Vikas Rastogi, Ph.D.

Assistant Professors:

Harish Kumar Arya, M.Tech.
Manpreet Singh, M.Tech.
Mohd. Majid, M.Tech.
Surinder Kumar, B.Tech. (On Study Leave)
Sunil Kumar, M.Tech.
Sumit Kumar, B.Tech.
Vivek Kumar, M.Tech.

DEPARTMENT OF PHYSICS

Professors:

A.S. Dhaliwal, Ph.D.(H.O.D.)
Kiranjit Singh Kahlon, Ph.D.

Associate Professors :

K.S. Mann, Ph.D.
M.M. Sinha, Ph.D.
S.S.Ghumman, Ph.D.
S.S. Verma, Ph.D.

TRAINING & PLACEMENT CELL

Pardeep Gupta, Ph.D. (Head)

WORKSHOP

Kulwant Singh, Ph.D. (Head)

Asstt. Workshop Superintendent

Harbhajan Singh, Diploma

CENTRAL LIBRARY

Librarians :

Prithvi Singh, M.Phil.
Sanjay Gupta, M.Lib.Inf. Sci. (Admn. Incharge)

SPORTS DEPARTMENT

S.S.Punia, S.P.I., M.P.Ed., N.I.S.
Sukhwinder Kaur, P.I., B.A., B.P.Ed.

ADMINISTRATIVE & ACCOUNTS SECTION

Registrar

S.S. Dhaliwal, Ph.D.

Deputy Registrar (Administration):

Rajesh Kumar, Ph.D.

Deputy Registrar (Accounts):

Rakesh Mishra, M.Com,LLB, DCA,PGDBA

ACADEMIC SECTION

Deputy Registrar (Academics)

Sanjeev Singh, Ph.D.

CONTROLLER OF EXAMINATION

Pradyuman Kumar, Ph.D.

STORE PURCHASE SECTION

Store Purchase Officer:

C.S. Matharoo, D.M.E.

HEALTH CENTRE

Medical Officer:

Attar Singh Hooda, M.B.B.S.

ESTATE OFFICE

Incharge Estate:

Amandeep Singh Shahi, Ph.D.

A.E. (Electrical)

Jaspal Singh Aujla, M.Tech.

Estate Officer:

Sudeep Singh, M.E.

CHAPTER - II

IMPORTANT INFORMATION

The Institute offers modular pattern of education in emerging areas of Engineering, Technology, Sciences and Management. Following seven types of Programmes are offered by the institute:

(a) Certificate (b) Diploma (c) Degree (d) M.Tech. (e) M.B.A. (f) M.Sc. (g) Ph.D.

2.1 SLIET ENTRANCE TEST-2012 and Schedule

Entrance Test conducted for admission to Certificate, Diploma, Degree, M.Tech, M.Sc., M.B.A. and Ph.D. programmes is termed as SLIET Entrance Test (SET) and are given in **Table 2.1**.

Table 2.1

Entrance Test		Date	Time
For Certificate Programme	SET-I	2nd June, 2012	10.00 ï 12.30 Hours
For Diploma Programme	SET-II / SET-IV*	3rd June, 2012	10.00 ï 12.30 Hours
For Degree Programme	SET-III / SET-V*	2nd June, 2012	14.30 ï 17.00 Hours
For M.Tech. Programme	SET-VI	3rd June, 2012	10.00 ï 12.30 Hours
For M.B.A and M.Sc. Programmes	SET-VII	2nd June, 2012	10.00 ï 12.30 Hours
For Ph.D. Programme	SET-VIII	2nd June, 2012	14.30 ï 17.00 Hours

*The entrance test for admission to vertical entry seats of Diploma and Degree programme for SLIET students of Certificate and Diploma Programes of 2010 BATCH shall be termed as SLIET Entrance Test-IV (SET-IV) and SLIET Entrance Test-V (SET-V), respectively.

2.2 Pattern of Examination

There will be only one paper of two & half hours duration of 150 marks for all the SETs separately.

Note: There shall be a common test for SET-II & SET-IV. Similarly, there shall be common Test for SET-III and SET-V.

The syllabi and distribution of marks for SET-I, SET-II / SET-IV, SET-III / SET-V, SET-VI, SET-VII and SET-VIII are given in the Chapter-III, IV, V, VI, VII and VIII respectively. All the syllabus can also be downloaded from the institute website **www.sliet.ac.in / www.sliet.net.in**

Note : There will be objective type questions with four options having single correct answer. For each incorrect response, one fourth (1/4) of the total marks allotted to the question would be deducted. No deduction from the total score will, however, be made if no response is indicated for an item in the OMR Answer Sheet. The candidate appearing for Examination are advised not to attempt such item in the answer sheet if they are not sure of the correct response. **More than one answer indicated against a question will be deemed as incorrect response and will be negatively marked.** All objective type questions are required to be answered on OMR Answer Sheet to be provided at the time of Examination. Answers are to be marked using ball point pen (balck / blue) only.

2.3 Centres of SET-2012 :

(Numbers before the name of the city in following table indicate centre code)

01 Agra	02 Agartala	03 Amritsar	04 Bangalore	05 Barnala
06 Bathinda	07 Bhagalpur	08 Bhopal	09 Bhubaneswar	10 Chandigarh
11 Chennai	12 Darbanga	13 Dehradun	14 Delhi	15 Faridabad
16 Ferozepur	17 Gandhinagar	18 Gangtok	19 Gorakhpur	20 Gurdaspur
21 Guwahati	22 Hamirpur	23 Haridwar	24 Hyderabad	25 Imphal
26 Itanagar	27 Jaipur	28 Jalandhar	29 Jammu	30 Kolkata
31 Kurukshetra	32 Longowal	33 Lucknow	34 Ludhiana	35 Mansa
36 Meerut	37 Mumbai	38 Nagpur	39 Patiala	40 Patna
41 Panaji	42 Ranchi	43 Ropar	44 Sangrur	45 Shillong
46 Shimla	47 Trivandrum	48 Varanasi	49 Sunam	50 Moradabad
51 Delhi	52 Mandi	53 Hissar	54 Gaya	55 Raipur

Note : Director, SLIET / Chairman, SET reserves the right to scrap any centre and allot any other centre to the candidate without assigning any reason.

2.4. Application Fee

This year process of registration shall be ONLINE as well as OFFLINE.

DIRECT ENTRY

Direct Entry (Online Submission)

-	General & Other Categories	:	₹ 1000/-
-	SC / ST	:	₹ 500/-

Direct Entry (Offline Application)

-	General & Other Categories	:	₹ 1100/-
-	SC / ST	:	₹ 600/-

VERTICAL ENTRY (Only for SLIET Students of 2010 Batch)

-	Vertical Entry only (Online submission only)	:	₹ 1000/- (₹ 500 for SC/ST)
-	Vertical & Direct Entry Combined (Online submission only)	:	₹ 1500/- (₹ 750 for SC/ST)

2.5. Admit Cards

Admit Card will be provided in Duplicate. One Admit Card has to be deposited at examination centre at the time of examination and other copy shall be retained by the candidate for future use.

For Offline Applications : Admit Cards will be made available only to those eligible candidates who have submitted the application form offline and complete in all respects and with requisite fee before the closing date. The admit card shall be dispatched through post and the Institute shall not be held responsible for any postal delay or irregularity leading to not receiving the admit card by the applicant in time. The admit card will bear the name of the candidate, fatherôs name, roll number, application number, address of the examination centre allotted, name of the SET Examination and the examination schedule. The candidate should carefully examine the admit card received by him/her for all the entries made therein. If the admit card is not received/ found incomplete in any way, the candidate should contact/inform the issuing authority immediately but not later than 27.05.2012.

For Online Submission: The online applicants shall print their Admit Cards from the respective login after **20.05.2012**. The form number / roll number is the prime mean of locating the application and it should always be quoted in all correspondence & enquiry.

No applicant will be permitted to enter the examination hall without a valid admit card. The admit card meant for candidate should be preserved carefully.

2.6. Merit List for Direct Entry Seats

- All admissions will be made on merit determined for admission. In case of tie among two or more candidates, candidate elder in age as per the relevant entry in the matriculation certificate shall be placed higher in merit. Again, if there is tie in age (date of birth), candidate having higher marks in qualifying examination shall be placed higher in merit. Wrong filling of Date of Birth in Application Form will lead to disqualification of candidature.
- A candidate has to obtain a minimum marks in Entrance Test as well as in aggregate for inclusion in the merit list. Candidate who fails to appear in paper will not be included in the merit list.
- **For admission in Certificate / Diploma programme**, a common merit list for each programme shall be prepared and the candidates will be allotted trade/branch/specialization as per his/her merit and choice and the availability of seats in the said trade/branch/specialization of the programme.
- **For admission to Degree programme**, merit list will be prepared in three broad categories separately i.e. **Group A –** Electrical / Electronics / Computer, **Group B –** Mechanical, **Group C** ï Chemical & Food as mentioned in **Table 5.1**. Candidate who qualifies in Entrance Test (SET-III) will be admitted in the same Group in which he / she has applied / appeared.

- **For admission to M.Tech. courses**
  - There will be a separate merit list (of all disciplines) i.e. for (i) Food Engineering & Technology, (ii) Instrumentation & Control Engineering, (iii) Polymer (iv) Electronics and Communications Engineering, (v) (Manufacturing Systems Engineering and Welding & Fabrication) (Mechanical Engineering). Candidate who qualifies in the Entrance Test (SET-VI) will be admitted in the same Programme in which he/she has appeared. For example, a candidate who qualifies the test by appearing in Food Engineering & Technology will be eligible for admission to M.Tech. in Food Engineering & Technology only as per his/her merit and not in any other programme.
  - First preference will be given to the candidates having GATE qualifying marks and relevant engineering degree. Their admission shall be made on the basis of merit of GATE marks. Their merit lists will be displayed separately.
- **For admission to MBA programmes**
  - Merit list will be prepared on the basis of marks obtained in all the three components i.e. written test (SET-VII for MBA), group discussion and interview.
  - First preference will be given to the candidates having valid CAT score / percentile (However, these candidates have to appear in Group Discussion and Interview.
- **For admission to M.Sc. programmes**, there will be separate merit lists for all disciplines i.e. Physics, Chemistry & Mathematics. Candidate who qualifies in the Entrance Test (SET-VII for M.Sc.) will be admitted in the same discipline in which he/she has appeared and not in any other discipline.
- **For admission to Ph.D. programmes**
  - **MERIT List (in case of candidates appearing for the SLIET Entrance Test [SET-VIII])**
    (a) Total percentage of marks secured in the Post Graduate Degree Examination will be converted out of 50.
    (b) Total marks secured in the SLIET Entrance test (SET-VIII) will be converted out of 50.
    (c) The marks secured in the interview out of 50.
    (d) Total of (i), (ii) & (iii) (Total will be out of 150).

  - **MERIT List (in case of candidates exempted from appearing the Entrance Test)**
    (a) The merit list will be prepared on the basis of
    (i) Total percentage of marks* secured in National Level Test and converted out of 50
    (ii) Post Graduate examination marks (converted out of 50)
    (iii) The marks secured in the interview (converted out of 50).
    (iv) Total marks will be out of 150.

    *In case no marks / grade is mentioned on the Certificate of National Level Test and only qualifying criterion is there, then such candidate will be awarded 50 marks against this component to calculate the overall merit.

If the Post Graduate Degree is awarded without percentage, class / grade point, then his / her merit will be decided on the basis of total percentage of marks secured in National Level Test / SET-VIII converted out of 50 and the marks secured in the interview out of 100 marks.

The list of qualified candidates as per their information in admit card number and rank/merit will be displayed on the notice board of the Institute on June 18, 2012 (except for MBA and Ph.D. Programmes). **Result will also be available on Institute Website : www.sliet.ac.in / www.sliet.net.in**

Request for marks and re-evaluation of the answer sheets will not be entertained.

2.7. Counselling and Document Verification

This year, there will be ONLINE COUNSELLING for all the programmes (except for MBA and Ph.D.). The exact schedule of ONLINE COUNSELLING, document verification and submission of admission fee will be displayed on the Institute website **www.sliet.ac.in / www.sliet.net.in** After provisional allotment of seat, Document Verification and Submission of Admission Fee will be held at SLIET Campus, Longowal. The seat

allotted provisionally will be cancelled if the candidate fails to get the documents verified and fee deposited during the prescribed period. **No separate Call Letters will be sent to the candidates for Counselling / Document Verification / Submission of Admission Fee.** However, if a candidate fails to participate in counselling in time due to any reason, he may appear in the next available counselling. Such candidate will have to keep track of the next available counselling schedule which will be available on Institute website and participate therein without waiting for any intimation in this behalf. His/her claim in such subsequent counselling in which he/she may participate may be considered in accordance with his/her merit/choice and availability of seats in a particular trade/ branch/specialization during the said subsequent counselling. Candidate will be required to obtain a Final Seat Allotment Card after documentation verification and fee deposit to complete the admission process.

The steps to be followed for ONLINE COUNSELLING and eligibility conditions for participating in each round of Counselling will be made available before the start of ONLINE COUNSELLING at www.sliet.ac.in and www.sliet.net.in

2.8. Medium of Examination:

The medium of entrance examination for SET-II / SET-IV, SET-III / SET-V, SET-VI, SET-VII & SET-VIII, will be English. However, for candidates appearing in the entrance test for Certificate Programme (SET-I), question paper for Physics, Chemistry & Mathematics will be provided in English, Hindi & Punjabi language.

2.9 PRINCIPLES OF RESERVATION APPLICABLE TO ALL ADMISSIONS

2.9.1 Reservation of Seats*:

i) **There are two categories of seats in Diploma and Degree Programmes :**
(a) Direct Entry seats (b) Vertical Entry seats

The distribution of seats and admission procedure of Direct Entry seats and Vertical Entry seats is given in Chapter IV & V for Diploma & Degree Programmes respectively.

Note: The procedure for vertical promotion shall be as per policy framed by Institute from time to time.

ii) **Seats to which reservation apply:** There shall be no reservation in case of admission by vertical promotion from certificate course to diploma course (SET-IV) and diploma course to degree course (SET-V). The reservation of seats shall be available only in the direct entry seats meant for admission to certificate/diploma/degree/post-graduate/Ph.D. programmes.

iii) **Extent of reservation:** The extent of reservation will be as under:-

a) For Scheduled Caste (SC) 15%
b) For Scheduled Tribes (ST) 7.5%
c) For Physically Handicapped (PH) 3%
d) For Other Backward Classes (OBC) 27%
(OBC reservation will be available to non-creamy layer only. The details of non-creamy layer will be as per the stipulations set out hereunder at 2.9.3 (iv)).
e) 5% seats of sanctioned strength in Diploma, Degree, PG Programmes are reserved for NRI Category (for sons & daughters of NRIs) subject to approval of the AICTE, New Delhi. No vertical promotion system is available to the students admitted under NRI Category. In the event of non-availability of candidates in NRI category, the seats will be given to candidates belonging to general category.

***Reservation will be as per latest guidelines issued by the Government of India from time to time.**

2.9.2. Territorial Quota

Seats meant for certificate and diploma courses are bifurcated for the candidates of the State of Punjab and for the candidates belonging to other States, respectively in the following proportion:

I) Certificate Programme

Quota for Punjab State (excluding Chandigarh)	75%
Quota for Other States and U.T. (including Chandigarh)	25%

II) Diploma Programme

Quota for Punjab State (excluding Chandigarh)	50%
Quota for Other States and U.T. (including Chandigarh)	50%

NOTE: THERE SHALL BE NO TERRITORIAL RESERVATION FOR ADMISSION TO DEGREE, POST-GRADUATION (M.Tech, MBA, M.Sc.) AND Ph.D. PROGRAMMES. ALSO, THERE SHALL BE NO TERRITORIAL RESERVATION FOR VERTICAL ENTRY SEATS.

2.9.3. Rules for operating reservation

(i) For operating reservation of seats, seats of specialization in Mechanical Engineering Degree programmes will be treated as falling in one degree programme. The same rule will be applicable for Chemical Engineering Degree programmes.

(ii) Candidate passing qualifying examination from the Schools / Institutes falling in Punjab State (excluding Chandigarh) will be eligible for reservation marked for Punjab State and all others will be eligible to claim reservation for Other States & U.T. (including Chandigarh), for admission to Certificate / Diploma Programmes. Candidates passing qualifying examination from National Open School or as a private candidate will be entitled to claim territorial quota on the basis of their domicile.

(iii) Seats remaining unfilled in OBC category will be offered to general category, as per instructions of Govt. of India as may be applicable from time to time.

(iv) Eligibility for OBC Reservation : For applying to avail reservation under OBC category, the candidates will be required to submit adequate proof / certificate, issued by the competent authority as may be prescribed from time to time in evidence of his/her not belonging to creamy layer. The criteria of creamy layer will be applied as may be prescribed by the Govt. of India from time to time. At present, Notification dated 13.10.2008 issued by the Ministry of Human Resource Development, New Delhi, prescribes that the candidates whose family income does not exceed Rs. 4.5 lacs per annum do not fall within the category of creamy layer. **The above proof / certificate should pertain to the financial year 2011-12 and certificate for the same issued after 31.03.2012 only in the given format (Appendix-V) will be considered.**

(vi) For claiming seats reserved for Physically Handicapped candidates, the minimum degree of disability should be 40%. Seats falling to the share of Physically Handicapped candidates in various branches are inter changeable depending upon the availability/suitability of candidates. However, in any branch (as well as in the total seats meant for direct entry) number of seats will not exceed the prescribed quota of 3%. To claim reservation under Physically Handicapped candidates category, the candidate is required to submit a certificate from the Chief Medical Officer of the district concerned clearly mentioning about the extent/degree of disability. The admission to this category will be governed by the rules of Govt. of India/ State of Punjab as may be applicable from time to time. The decision of admission committee, regarding the suitability of a candidate for a particular branch for claiming reservation under this category, shall be final and binding on the candidates.

(vii) The seats remaining vacant in any branch due to non availability/suitability of eligible candidates belonging to physically handicapped category will be shifted to general category in that branch.

(viii) A candidate seeking admission against any reserved seat/ territorial quota if fails to get admission against the said reserved seat/quota for any reason, may immediately apply to the Chairman SET for consideration of his claim for admission in non-reserved category/quota. For considering the said claim, however, no separate call letter shall be issued to such candidates and he/she will have to appear in the counselling for filling up the seats other than reserved seats/quota at his/her own responsibility. The claim of such candidate shall be considered in order of his/her merit and his/her choice of trade/branch/specialization as well as availability of seats in the said trade/branch/specialization in the unreserved category/quota aforesaid.

2.10 FEE STRUCTURE FOR ACADEMIC YEAR 2012-2013

FEE PARTICULARS **A. REFUNDABLE FEE: (without any interest)** Caution Money Institute/Hostel/Mess	**Certificate** **₹ 5000**	**Diploma** **₹ 5000**	**Degree** **₹ 5000**	**PG (M.Tech., M.B.A, M.Sc.)** **₹ 5000**	**Ph.D.**
B. NON-REFUNDABLE FEE:					Fee Structure of Ph.D Programmes is available in Chapter-VIII at **Page No. 49**
Admission Fee	250	250	500	500	
Registration Fee	200	200	725	725	
Identity Card	50	50	50	50	
Convocation Fee	100	100	100	100	
Swimming Pool Fee	70	70	160	160	
Transport Fees	50	100	300	300	
Student Welfare Fund	600	1000	1200	1200	
Medical Fee	60	60	300	300	
Training & Placement Activity Fund	250	300	400	400	
Magazine Charges & Library Activities	60	60	600	600	
Book Bank	100	150	200	200	
Cable T.V. Charges	150	150	150	150	
Syllabus Charges	60	60	120	120	
Library Fee	-	100	300	300	
Students Activity Related Fund	-	925	2030	2030	
Alumni Association Fee	-	-	150	150	
Total	**2000**	**3575**	**7285**	**7285**	
C. OTHER FEE: (PER SEMESTER (Non-refundable))					
Institute Development Fund	500	500	1500	1500	
Computer Development Fund	450	450	500	500	
Tuition Fee*	1500	3000	15000	8000*	
Sports Fee & Extra Curricular Activities Fee	90	90	300	300	
Grade Card	15	15	15	15	
Examination Fee (Periodical Test Fee)	300	300	500	500	
Hostel Seat Rent & Common Room Charges	300	300	600	600	
Electricity & Water Charges	475	475	560	560	
Hostel Establishment Charges	-	-	350	350	
Internet Charges	600	600	600	600	
Contingency Charges (only for Non-GATE students)	-	-	-	2500	
Total	**4230**	**5730**	**19925**	**15425**	
GRAND TOTAL (A+B+C)	**11230**	**14305**	**32210**	**27710##**	
				25210#	
	# For GATE Candidates		**## For Non-GATE Candidates**		

The following fee shall be charged as applicable:

*For Industry-institute sponsored candidates in M.Tech, the tuition fee shall be ₹ 20,000/- per semester.

*For NRI/NRI sponsored candidates the tuition fee and Institute Development Charges shall be as follows:

	Tuition Fee	Institute Development Charges
Diploma	US $ 800 per annum	US $ 500 per annum
Degree/M.Tech.	US $ 5000 per annum	US $ 1000 per annum

Note: The fee structure may be revised from time to time with the approval of competent authority.

2.11 IMPORTANT NOTES FOR ADMISSION TO ALL PROGRAMMES

Following points are highlighted and shall also be applicable to the admission to the concerned programme:-

(a) Only those candidates, who possess the result of qualifying examination at the time of their turn (in order of merit in SET) during document verification and payment of admission fee at SLIET Campus, will be considered for admission as per allotted seat. However, a candidate who is not in possession of result of the qualifying examination at the time of his/her turn and gets the result subsequently, may appear in the next available counsellings alongwith his/her result. His/her claim for admission will be considered in order of his/her merit in the SET examination, his/her choice and as per the availability of seats at the time of his/her turn in the said subsequent counsellings.

(b) Candidate appearing in the Entrance Test for admission is allowed provisionally, subject to production of his/her Certificate having passed the qualifying examination on or before the day of Document Verification / Fee Payment of the concerned programme, failing which his/her candidature shall be deemed to have been cancelled.

(c) Semester system will be followed for Certificate, Diploma, Degree, Post-Graduate & Ph.D. Programmes.

(d) Academic calendar and study scheme alongwith syllabi shall be given to all the admitted students after start of the classes.

(e) The medium of instructions is English for all the Programmes.

(f) It is expected that the applicants will have good general physique with normal vision and hearing. In case of defective vision, it must be corrected to 6/9 in both eyes or 6/6 in the better eye. Defective hearing should also be corrected. There should not be any abnormality in heart and lungs and history of mental disease /chronic disease and epileptic fits. The candidate must attach a medical certificate of fitness from a Govt. Doctor not below the rank of A.M.O.

(g) Scholarships are provided to the meritorious candidates as per norms of Government of India notified from time to time.

(h) Tuition Fee Waiver (TFW) Scheme of AICTE, New Delhi shall be applicable in all Degree Courses only to the meritorious candidates as per norms of the scheme notified from time to time.

(i) Post-matric Scholarships for Punjab Domicile Scheduled Caste (SC) candidates admitted in the Institute will be offered as per terms & conditions of the scholarship scheme.

2.12 WITHDRAWAL FROM ADMISSION and REFUND OF FEE

A candidate after taking admission in the Institute may withdraw his/her admission and request for refund of fee as per following procedure :

Withdrawal : The candidate has to make a written request to the Chairman, SET-2012 in the prescribed proforma available in SET office for withdrawal of his / her admission and get the same approved.

Refund of Fee : After approval of withdrawal of admission from Chairman, SET-2012, the candidate is required to obtain blank proforma of ñNo Dues Certificateò from the Accounts Section of the Institute at a payment of Rs.10/-. After getting ñNo Due Certificateò completed from all the concerned Departments / Sections of the Institute, this is to be submitted in **Original** in Accounts Section. **The case of refund of fee will be processed only after submission of complete "No Dues Certificate".**

Note: If the admission is withdrawn before the start of academic session / classes **(i.e. before 17th July, 2012),** then there is no need to submit ñNo Dues Certificateòfor refund of fee.

2.13 LEGAL JURISDICTION

All disputes pertaining to the counselling and admission for all Certificate / Diploma / Degree / Post-Graduate (M.Tech. / MBA & M.sc.) and Ph.D Programmes of SLIET, Longowal shall fall within the jurisdiction of Sangrur (Punjab) only.

2.14 DISCLAIMER

The statement made in the information brochure and all other information contained herein is believed to be correct at the time of publication. However, the Institute reserves the right to make changes at any time without notice, in and additions to the regulations, conditions governing the admission, requirements, seats, fees and any other information, or statements contained in this information brochure. No responsibility will be accepted by the Institute for hardship or expenses encountered by candidates / any other person for such changes, additions, omissions or errors, no matter how those are caused.

CHAPTER - III

CERTIFICATE PROGRAMME (SET-I)

3. Certificate Programme

The objective of the Certificate Programme is to produce technically skilled manpower in appropriate areas. The meritorious students who wish to study further may join the higher programmes of SLIET.

(a) Entry Qualification: The minimum qualification for admission to the Certificate Programme is Matric pass (Pass in English, Mathematics and Science is compulsory) from a State Education Board / CBSE / ICSE / National Open School or an equivalent examination recognized / approved by MHRD, Government of India.

(b) Duration: The duration of the Certificate programme is 2 years.

(c) Disciplines & Seats: Admission is available in the following Certificate disciplines. **General principles relating to reservations are given in Section 2.9.**

INTAKE AND DISTRIBUTION OF SEATS FOR THE ACADEMIC SESSION 2012-2013

Disciplines	No. of seats
Air Conditioning and Refrigeration **(CAC)**	46
Auto and Farm Machinery **(CAF)**	46
Computer Applications **(CCA)**	46
Foundry & Forging **(CFF)**	46
Food Technology **(CFT)**	46
Maintenance of Television **(CTV)**	47
Maintenance of Electrical Equipments**(CMEE)**	46
Paper and Printing Technology **(CPPT)**	46
Servicing and Maintenance of Electronics Instruments **(CSME)**	46
Servicing and Maintenance of Medical Instruments **(CSMM)**	46
Tool and Die Technology **(CTD)**	47
Welding Technology **(CWG)**	46
Total	**554**

(d) Territorial Quota:

Seats meant for certificate courses are bifurcated for the candidates of the State of Punjab and for the candidates belonging to other States, respectively in the following proportion:

Certificate Programme	
Quota for Punjab State (excluding Chandigarh)	75%
Quota for Other States and U.T. (including Chandigarh)	25%

(e) Admission Procedure: Admission to all Certificate courses shall be made on the basis of All India SLIET Entrance Test (SET-I).

(f) Entrance Test Schedule :

Test	Date	Time
SET-I (Certificate)	2nd June, 2012	10.00-12.30 Hours

(g) Fee Structure for Certificate Programme (Itemized fee structure is in Section 2.10 at Page No.14) :

FEE PARTICULARS		AMOUNT (In Rupees)
A.	REFUNDABLE FEE (Without any interest)	5000
B.	NON-REFUNDABLE FEE	2000
C.	OTHER FEE: (PER SEMESTER) (Non-Refundable)	4230
GRAND TOAL (A + B + C)		**11230**

Note : The fee structure may be revised from time to time with the approval of competent authority.

SYLLABUS OF SLIET ENTRANCE TEST (SET-I) FOR ADMISSION TO CERTIFICATE PROGRAMME, 2012

PATTERN OF SET- I

SLIET Entrance Test (SET-I) for admission to Certificate Programme will consist of one paper of two & half hours duration. This paper will have 150 objective type questions of 150 marks from English, General Knowledge, Mental Aptitude, Mathematics, Physics & Chemistry.

Note: Answers of all the objective type questions are to be filled in the OMR answer sheet given separately during the Examination. <u>There will be 25% negative marking for wrong answers</u>.

SYLLABUS AND MODEL QUESTIONS

Marks : 150 **Time : 2½ Hours**

ENGLISH, GENERAL KNOWLEDGE, MENTAL APTITUDE

Marks: 20 (20 Questions)

Syllabus :

1. Usage of Tenses
2. Fill in the Blanks with Prepositions
3. Active Passive Voice
4. General Knowledge/Awareness
5. Aptitude Test

MATHEMATICS

Marks: 50 (50 Questions)

Syllabus :

ALGEBRA : Integers, rational and irrational numbers, ratio and proportions. Polynomials, GCD and LCM of Polynomials by factorization method. Linear equations in one variable; solution of simultaneous equations. Quadratic equations and their solutions. Law of indices.

TRIGONOMETRY: Trigonometric ratios-sin x, cos x, tan x, cot x, cosec x and sec x for 0^o, 30^o, 45^o, 60^o and 90^o. Trigonometric Identities. Use of Trigonometric tables. Simple problems on heights and distances.

MENSURATION : Perimeter and area of a triangle, square, rectangle, rhombus, trapezium, quadrilateral and circle. Volume and surface area of cube, right prism, cylinder, cone and sphere.

GEOMETRY : Point, line, collinear points, intersecting and non-intersecting lines in a plane. Family of lines, concurrent lines, distance between two parallel lines. Angle-acute, obtuse and right angles. Triangle, its sides and angles. Similarity of triangles. Congurence of triangles. Pythagoras theorem and its converse. Circle. Diameter and circumference of a circle. Arc and sector of a circle. Chord and segment of a circle. Tangent to a circle. Family of concentric circles. Direct and transverse common tangents. Centroid, and orthocentre.

STATISTICS : Collection and tabulation of statistical data. Graphical representation of statistical data, bar diagram, histograms, pie-charts. Measures of central tendency (mean, median, mode).

PHYSICS

Marks : 40 (40 Questions)
Syllabus :

Motion : Uniform and non-uniform motion (qualitative idea only), displacement, speed and velocity, acceleration, equations of motion.
Force : Definition, Inertia of a body, balanced and unbalanced forces, acceleration, relationship between force, acceleration and mass of an object, action and reaction of forces.
Gravitation : Laws of gravitation, acceleration due to gravity.
Work : Work done by a force, relation between work and energy, kinetic energy and potential energy.
Wave Motion : Nature of wave, propagation of a wave through a medium, type of waves; longitudinal, transverse, simple harmonic motion (graphical representation), amplitude of wave, relationship between wave length, frequency and velocity of wave.
Light : Perception of energy carried by light waves, human eye structure and function of human eye, focal length of eye-lens, image formation on the retina, perception of color-composition of white light.
Heat : Mechanical work and heat, heat and temperature, measurement of temperature, specific heat, thermal expansion, change of state, idea of latent heat, idea about relative humidity.
Electricity : Conductors and resistors, measurement of current, potential difference and resistance. Heating effect of electric current, quantitative relationship between heat, current, resistance and time of flow of current, electric appliances based on heating effect of current, measurement of electric energy, units of electric power and energy.
Magnetic effects of Electric Current : Magnetic field of a current carrying conductor, coil and solenoid, electric motor & its applications, Electromagnetic induction.

Reference Book : Science: for Class-IX and X, Published by NCERT.

CHEMISTRY

Marks: 40 (40 Questions)
Syllabus :

Matter-Nature and Behaviour : Nature and behaviour of different types of substances, elements, compounds and their mixtures, structure of matter, atomic theory, molecules and atom; Structure of atom-electrons, protons and neutrons; composition of nucleus-atomic number and mass number, distribution of electrons in different energy levels in an atom, valence electrons and valency.
Atomic Mass and Molecular Mass: Mole concept; percentage composition of compounds.
Physical and Chemical Changes: Combination, displacement, decomposition, slow, fast, exothermic and endothermic reactions, catalyst; chemical equations.
Electrochemical Cell: Construction and working of a simple voltaic cell; lead storage battery and dry cell; electrolysis-movement of ions during electrolysis; Faradayôs Laws; electroplating.
Classification of Elements: Periodic Law, periods & groups; General trend in properties of elements in periodic table.
Fuel : Type of fuels, coal; natural fuels, conditions for combustion, heat produced during combustion, combustion of food in living organisms.
Mineral Cycles : Carbon cycle, role of carbon and its compounds, nitrogen cycle, nitrogen fixation, oxygen cycle, oxidation process, water cycle, role of energy in different cycles.
Water : Water a natural resource, origin of life in it, a medium for the activity of the living, a solvent, uses, saturated and unsaturated solution, sea water as habitat of organism, salts from sea.

Air : Composition, Atmosphere & its role in radiation, Carbon dioxide and its diverse effects on living organism, role of trees, release of carbon dioxide from fossils, fuels and automobiles, corrosion of metals, damage of historical monuments from acidic gases, effect of metallic particles, asbestos, etc., on living organisms. Carbon monoxide and its ill effects, air pollution and its effects on human beings.

Dependence of Man on Natural Resources : Minerals from earth, metals and non-metals, uses of non-metals.

Carbon and its Compounds : Introduction, allotropes of carbon and their occurrence, structure, related properties and uses; hydrocarbons - their elementary structure, properties and uses; isomerism (elementary idea); simple compounds of carbon, hydrogen and oxygen and their uses; petroleum products; introductory account of synthetic fibres, plastics, rubber, soaps and detergents.

Extraction of Metals : Metals and non-metals (Si, P,S) occurrence, properties and uses; general metallurgical operations for extraction of pure metal (extraction of copper, iron and aluminum). Properties of metals, uses of metals and non-metals; properties of some alloys (brass, gunmetal, German silver, Solder, bronze), uses at home and in industry.

Reference Book : Science-A Text Book for Class IX & X, Published by NCERT.

Sample Objective Type Questions :

Fill the choice of the alternative you think to be correct answer in the OMR answer sheet.

Q.1 The name of the city which is known as a pink city.
(a) Chandigarh (b) Mumbai (c) Jaipur (d) Delhi

Q.2 In a right angled triangle the sides perpendicular to each other are 15 cm and 8 cm. Its perimeter is :
(a) 46 cm (b) 60 cm (c) 120 cm (d) 40 cm

Q.3 The least distance of distinct vision of normal eye is
(a) 30 cm (b) 25 cm (c) 15 cm (d) 20 cm

Q.4 To remove hypermetropia, lens used is
(a) concave (b) convex (c) cylindrical (d) plano-concave

Q.5 Isotopes of an atom have
(a) same mass number (b) different atomic number (c) same atomic number (d) none of the above

Q.6 Chemical name of baking soda is
(a) sodium chloride (b) sodium carbonate (c) sodium bicarbonate (d) none of above

CHAPTER - IV

DIPLOMA PROGRAMME (SET-II/SET-IV)

4. DIPLOMA PROGRAMME

The objective of the Diploma Programme is to produce supervisory level technical manpower. More emphasis is given on practical oriented class work with an extensive training in industry.

(a) Entry Qualification: The minimum qualification for admission to the Diploma Programmes is 10+2 pass with Physics, Chemistry & Mathematics from a board/university recognized by MHRD, Government of India or a Certificate pass from SLIET in any trade. Minimum Marks in the qualifying examination is **50% (45% in case of candidates belonging to reserved categories).** The candidates who have studied Biotechnology or Computer Science or Biology instead of Chemistry at 10+2 level are also eligible.

(b) Duration: The duration of Diploma programme is 2 years.

(c) Disciplines & Seats: Available disciplines and information regarding distribution of seats in Diploma programmes are given in **Table 4.1. General principles relating to reservations are given in Section 2.9.**

(d) Territorial Quota:

Seats meant for diploma courses are bifurcated for the candidates of the State of Punjab and for the candidates belonging to other States, respectively in the following proportion:

Diploma Programme	
Quota for Punjab State (excluding Chandigarh)	50%
Quota for Other States and U.T. (including Chandigarh)	50%

(e) Admission Procedure: There are two categories of seats in this programme as per **Table 4.1**

(i) Vertical Entry Seats (ii) Direct Entry Seats

The admission procedure for these two categories is as under:-

(i) Vertical Entry Seats (*Only for SLIET students admitted in the year 2010*): There will be vertical mobility of 50% of the sanctioned strength in each Certificate Programme to Diploma Programme. The linkage between Certificate and Diploma modules is illustrated in **Table 4.2**. For vertical promotion from Certificate course to Diploma course against these reserved seats, the Certificate course students shall apply in entrance test (SET-IV) in order to enter into the Diploma stream as per **Table 4.2.** The merit of such candidates shall be based on 50% weightage of their score in the entrance test and 50% weightage of their score in the qualifying Certificate course provided that student had got admission in Certificate course in 2010-2011 and not earlier and had completed the course in the prescribed period of normal study i.e. two years and by availing only prescribed chances to clear a subject. Prescribed chances to clear a subject are one regular and two supplementary chances. However, a student having supplementary in 4^{th} semester i.e. the last semester shall be given only one supplementary chance for the purpose of promotion to Diploma module. **The students admitted under NRI / PWD category will not be eligible for promotion under SET-IV.**

(ii) Direct Entry Seats (*For outside candidates and SLIET students*): All India SLIET Entrance Test (SET-II) shall be conducted by the institute for admission to these seats on the basis of merit. Non-SLIET candidates with qualification as per 4(a) and SLIET students admitted before 2010-2011 in Certificate course are eligible to get admission against these seats. Even a SLIET student admitted in Certificate course in 2010-2011 is entitled to apply for admission under direct entry seat in any Diploma Programme but he/she will be considered for direct entry seat in that Diploma Programme which is not available to him/her by way of vertical promotion. The SLIET students competing for direct entry seats shall have to appear in SET-II examination and shall be treated completely at par with the outside (Non-SLIETian) candidate for admission to this category without any weightage to their score in the qualifying Certificate course.

For this academic year (2012-13), there will be common paper for SET-II and SET-IV. However, SLIET students eligible for vertical entry can apply for Vertical Entry (SET-IV), Direct Entry (SET-II) OR both for Vertical Entry (SET-IV) & Direct Entry (SET-II). Separate merit lists for SET-II and SET-IV will be prepared as mentioned in clause (e) above.

TABLE 4.1 : Distribution of Seats for Diploma Programme for the Academic Session 2012-13

Sr.No.	Discipline	Sanctioned Seats	Seats for Vertical Entry	Seats for Direct Entry
1	Chemical Technology (**DCT**)	46	23	23
2	Food Technology (**DFP**)	46	23	23
3	Computer Science & Applications (**DCA**)	46	29	17
4	Computer Science & Engineering (**DCE**)	47	29	18
5	Electronics & Communication Engineering (**DEC**)	47	29	18
6	Instrumentation & Process Control (**DIN**)	46	29	17
7	Mechanical Engineering (Specialization in Industrial & Production Engineering) (**DIP**)	46	35	11
8	Mechanical Engineering (Specialization in Maintenance & Plant Engineering) (**DMP**)	46	34	12
9	Mechanical Engineering (Specialization in Welding Technology) (**DWT**)	46	23	23
10	Mechanical Engineering (Specialization in Foundry Technology) (**DFT**)	46	23	23
	Total	**462**	**277**	**185**

TABLE 4.2 : Linkage between various Certificate and Diploma Programme for the Academic Session 2012-2013

	CERTIFICATE PROGRAMME		DIPLOMA PROGRAMME
1.	Air Conditioning & Refrigeration Auto and Farm Machinery Tool and Die Technology	50% 50% 50%	Mechanical Engg. (Spl. in Industrial and Production Engineering) Mechanical Engg. (Spl. in Maintenance & Plant Engineering
2.	Maintenance of Television Servicing & Maint of Electronics Instruments Servicing & Maint. of Medical Instruments Maintenance of Electrical Equipments Computer Applications	50% 50% 50% 50% 50%	Computer Science & Engineering Electronics & Communication Engineering Instrumentation & Process Control Computer Science & Applications
3.	Foundry & Forging	50%	Mechanical Engg. (Spl. in Foundry & Forging)
4.	Welding Technology	50%	Mechanical Engg. (Spl. in Welding Tech.)
5.	Food Technology	50%	Food Technology
6.	Paper & Printing Technology	50%	Chemical Technology

(f) Principles of Vertical Admission (from Certificate to Diploma Programme – SET-IV)

(i) Admission to the vertical entry seats shall be 50% of the sanctioned strength of the students in a particular Certificate Programme in 2010-2011 and not earlier. If a student from promoted candidates do not claim admission in a trade or a seat falls vacant afterwards in a trade, then that seat will be offered to next eligible candidate in that trade.

(ii) A common merit list in respect of branches mentioned against **S.No.1 of Table-4.2** of all the vertically promoted students from Certificate to Diploma shall be prepared and the branches shall be allotted according to the merit and choice. Similarly, a common merit list in respect of branches mentioned against **S.No.2 of Table-4.2** of all the vertically promoted students from Certificate to Diploma shall be prepared and the branches shall be allotted according to the merit and choice.

(iii) If any seat (in the promotion quota) remains vacant/unfilled {after exhausting 4(f)(i) above} in **DIP, DMP, DFT and DWT** then a common merit list of all eligible candidates of **CAC, CAF, CTD, CFF and CWG** shall be prepared and vacant seats shall be allotted to the candidates on merit and choice from this common merit list. If any seat (in the promotion quota) remains vacant/unfilled in **DCE, DEC, DCA and DIN** then a common merit list of all eligible candidates of **CTV, CSME, CSMM, CCA and CMEE** shall be prepared and vacant seats shall be allotted to the candidates on merit and choice from this common merit list.

(iv) By exhausting the above possibilities at 4(f)(iii) above**,** if still any vertical entry seat remains vacant in any Diploma programme, then a common merit list of eligible candidates of SET-IV of all Certificate Programmes shall be prepared and vacant vertical entry seats will be allotted on the basis of the merit and choice.

Note : By exhausting the above possibilities at 4 (f) (iv), if still some vertical entry seats remain vacant in any diploma programme, then such seats can be offered under Direct Entry.

(g) Entrance Test Schedule :

Test	Date	Time
SET-II / SET-IV (Diploma)	3rd June, 2012	10.00-12.30 Hours

(h) Fee Structure for Diploma Programme (Itemized fee structure is in Section 2.10 at Page No.14) :

FEE PARTICULARS		AMOUNT (In Rupees)
A.	REFUNDABLE FEE (Without any interest)	5000
B.	NON-REFUNDABLE FEE	3575
C.	OTHER FEE: (PER SEMESTER) (Non-Refundable)	5730
GRAND TOAL (A + B + C)		**14305**

For NRI/NRI sponsored candidates in Diploma, the tuition fee and Institute Development Charges shall be as follows:

Tuition Fee	Institute Development Charges
US $ 800 per annum	US $ 500 per annum

Note : The fee structure may be revised from time to time with the approval of competent authority.

SYLLABUS OF SLIET ENTRANCE TEST (SET-II / SET-IV) FOR ADMISSION TO DIPLOMA PROGRAMME, 2012

PATTERN OF SET-II / SET-IV

SLIET Entrance Test (SET-II / SET-IV) for admission to Diploma Programme will consist of one paper of two & half hours duration. This paper will have 150 objective types questions of 150 marks from English, General Knowledge, Mathematics, Physics and Chemistry.

Note: ***Answers of the objective type questions are to be filled in the OMR answer sheet given separately during the Examination.*** ***There will be 25% negative marking for wrong answers.***

SYLLABUS AND MODEL QUESTIONS

Marks: 150 **Time : 2½ Hours**

ENGLISH, GENERAL KNOWLEDGE AND APPTITUDE

Marks: 50 (50 Questions)
Syllabus :

1. General Science
2. Idioms and Phrases
3. Events of National & International Importance
4. Fill in the blanks with suitable words/prepositions
5. Correction of sentences
6. Change of Voice
7. Current Affairs
8. Indian National Movement
9. History of India
10. Mental apptitude

MATHEMATICS

Marks: 40 (40 Questions)
Syllabus :

Algebra : Solution of quardratic equations, relationship between their roots and coefficients. Equations reducible to quadratic form. Symmetric Functions of roots. Formation of a quadratic equation with given roots. Arithmetic progression, Geometric progression and Arithmetico-Geometric series. Series of natural numbers ($\times n$, $\times n^2$, $\times n^3$). Mathematical induction. Permutations and Combinations, Binomial theorem for any index. Complex numbers. Algebra of complex numbers. Modulus and argument of a complex number. Conjugate of a complex number. Triangle inequality, representation of complex number in ARGANDÕs Diagram, polar form & exponential form. Square Root of a complex number. Cube roots of unity. De-MoivreÕs Theorem with simple applications. Vectors, their Scalar product and cross product. Scalar triple product and its applications.

Trigonometry : Trigonometric ratios and their relations. Trigonometric Identities. T-ratios of allied angles. Addition and Subtraction formulae. Transformation of product into sum or difference and vice-versa. T-ratios of multiple and sub-multiple angles. Inverse trigonometric functions. Solution of trigonometric equations. Relations between sides & Trigonometric ratios of the angles of a triangle. Solution of triangles. Heights and distances.

Matrices and Determinants : Determinants of order 2 and 3, their elementary properties. CramerÕs rule. Definition of a matrix. Types of matrices. Equality of matrices. Operations on matrices. Symmetric & Skew Symmetric matrices. Singular and non-singular matrices. Minors and cofactors. Adjoint and inverse of a matrix. Application of matrices in solving simultaneous linear equations in 2 and 3 variables.

Coordinate Geometry : Rectangular Cartesian co-ordinates. Distance between two points. Section formulae. Locus of a point. Equation of a straight line in various forms. Angle between two given lines. Condition for two lines to be parallel or perpendicular. Distance of a point from a line. Line through point of intersection of two given lines. Concurrency of lines. Equation of a circle in various forms. Intersection of a circle with a straight line. Equations of tangent and normal to a circle. Intersection of two circles. Parametric representation of equation of a circle. Equations of the parabola, ellipse and hyperbola in the standard forms & parametric form. Condition for y = mx + c to be a tangent and point of contact.

Calculus : Function, its domain and range. Limit, continuity and differentiability of a function. Derivative of sum, difference, product and quotient of two functions. Derivative of algebraic, trigonometric, exponential, logarithmic, hyperbolic and Inverse trigonometric functions. Chain rule. Derivative of functions expressed in implicit and parametric forms. Logarithmic differentiation. Tangents and Normals. Rate measure & error. Maximum and Minimum values of a function. Integration as the inverse process of differentiation. Integration by parts, by substitution and by partial fractions. Integration of rational and irrational functions. Definite integral and its application for the determination of area (simple cases). Trapezoidal & Simpson Rules.

PHYSICS

Marks: 30 (30 Questions)
Syllabus :

Units and dimensions, SI Units, displacement, velocity, acceleration. Projectiles, circular motion, concepts of relative motion; Newtonôs Law of motion, concepts of uniformly accelerated frames, momentum, frictional force and gravitational force, work, energy, power, conservation of momentum and energy. Universal law of gravitation, gravitational potential and fields, acceleration due to gravity. Angular momentum, torque, equilibrium of rigid bodies. Hookôs Law, Youngôs modulus, shear and bulk moduli, Bernoulliôs theorem and its applications. Simple concept of amplitude, frequency and phase, longitudinal and transverse waves, harmonic and wave motions, superposition of waves, progressive and stationary waves, vibration of strings and aircolumns, resonance, beats. Velocity of sound, Echoes, Doppler effect. Thermal expansion of solids, liquids and gases. Kinetic theory of gases, specific heats, Isothermal and adiabatic process, laws of thermodynamics & their applications, Stefans law and Newtonôs law of cooling, Coulombs law, electric fields and electric potentials, lines of forces. Capacitance, dielectric constant, parallel plate capacitor, capacitor in series and parallel, energy stored in capacitor, charging and discharging of capacitors. Electric current, Ohmôs law, series and parallel arrangements of resistances and cells. Kirchoffs law and its applications to network, heating effects of current. Biot-Savartôs law and its application. Force on a moving charge and on a current carrying wire in magnetic field. Magnetic moment of a current loop, effect of a uniform magnetic field on current loop, moving coil glavanometer, voltmeter, ammeter. Electromagnetic induction, Faradayôs and Lenzôs law, definitions of self and mutual-inductance. Rectilinear propagation of light. Reflection and refraction at plane and curved surface, total internal reflection and critical angles. Deviation and dispersion of light by a prism. Thin lens, combinations of mirror and lens, magnifications, microscope, telescope.

Wave nature of light, interference, diffraction and polarization, Radioactivity, alpha, beta and gamma radiations, laws of radioactivity, decay constant, half life and mean life. Photoelectric effect. Bohrôs theory of hydrogen like atoms, x-rays production and properties. Atomic nucleus, binding energy and its calculation. Fission and fusion processes. Elementary concepts of thermionic emission and work function, diode valve as a rectifier, Elementary ideas of conductor, semi-conductor and insulator, intrinsic and extrinsic semi-conductor, P-N junctions as a rectifier.

Reference Book : Physics Class XI and XII Published by NCERT.

CHEMISTRY

Marks : 30 (30 Questions)
Syllabus :

Atomic Structure & Classification of Elements: Rutherfordôs Model, spectra of hydrogen atom, Bohrôs model, quantum numbers, Pauliôs exclusion principle, Hundôs rule, Aufbauôs principle, electronic configuration of elements, shapes of s,p and d orbitals. Periods and groups, classification of elements with respect to s, p and d-block, periodicity in properties, namely atomic and ionic radii, ionization energy, electronegativity and oxidation states.

Stoichiometry : Calculations involving common oxidation reduction, neutralization and displacement reactions, use of mole concept.

Behaviour of Gases : Avogadro's Law, equation of state and ideal gas, Vander waal's equation, diffusion of gases, kinetic theory of gases, average, root mean square and most probable velocity and their relation with temperature, Gay Lussac's Law.
Solutions : Expressing concentration in terms of mole fraction, molality, molarity and normality, Raoult's Law and molecular weight determination from lowering of vapour pressure.
Chemical Equilibrium, Kinetics and Energetics: Law of mass action, equilibrium constants Kc, Kp and their relationships, Le-Chatelier's principle and its applications, ionic equilibria in aqueous solutions, solubility product, common ion effect, acid-base theories (Bronsted and Lewis), hydrolysis of salts, pH, buffer solutions. Rate of reaction, order of reaction, molecularity, rate constant and half-life period of first order reaction, variations of rate constant with temperature (Arrhenius equation). Heat of formation, heat of combustion and heat of reaction, Hess's Law, bond energy.
Electrochemistry : Faraday's Law of electrolysis, galvanic cells, cell reactions, Nernst equation, standard potential, and electrochemical series, e.m.f. of cells involving the following electrodes only: Zn/Zn^{++}, Fe^{++}/Fe^{+++}, Sn/Sn^{++}, $(Pt)H_2/H^+, Cl_2(Pt)$.
Ores and Minerals : Commercially important ores of iron, tin, silicon, aluminum, lead, iron, copper, silver and zinc with their extractive metallurgy (chemical principles and reactions only, industrial details excluded). i) Carbon reduction method (iron and tin); ii) Self reduction method (copper and lead); iii) Electrolytic reduction method (magnesium and aluminum); iv) Cyanide process (silver).
Transition elements (only the first series) definition, general characteristics properties viz. variable oxidation states, colour [details of electronic transition excluded], paramagnetism, [formation of complexes, stereochemistry excluded].
Preparation and Properties of the following Compounds : Oxides, hydroxides, carbonates, bicarbonates, chlorides and alums, oxides and chlorides of tin and lead, ferrous sulphate, Mohr's salt, ferric oxide and ferric chloride, copper sulphate, oxide and sulphate of zinc, silver nitrate and silver bromide. Hydrogen peroxide, carbon oxides and carbides, silicones and silicone carbides, nitrogen and phosphorous, oxides and oxy acids of ammonia, fertilizers, sulphur oxides, sulphurous and sulphuric acids, sodium thiosulphate and hydrogen sulphide, halogens, oxyacids of chlorine, bleaching powder.
Isolation, Preparation and Properties of Non-Metals : Silicon, nitrogen, phosphorous, oxygen, sulphur, fluorine, chlorine, bromine and iodine (properties of allotropes of carbon, preparation and properties of ozone included).
Alkanes, Alkenes, Alkynes and Benzene: Preparation of alkanes (Wurtz reaction and decarboxylation reaction), substitution reaction of alkanes (including mechanism). Preparation by dehydrohalogenation of respective alkyl halides and by dehydration of alcohols, addition reactions (Markownikoff's and anti-Markownikoff's rule including mechanism, ozonolysis). Benzene structure, properties, nitration, sulphonation, halogenation, acylation and alkylation reactions, effect of o-, p- and m- directing groups in monosubstituted benzenes.
Characteristics Reactions of following Organic Compounds: Alcohols (esterification, dehydration, oxidation, reactions with sodium, phosphorous halides and zinc-chloride/conc.HCl), phenols (halogenation, nitration, sulphonation and Reimer-Teimann reaction), aldehydes and ketones (oxidation, reduction, oxime and hydrazone formation, aldol condensation, Cannizaro's reaction, haloform and Grignard reactions).

Model Objective Type Questions

Fill the choice of the alternative you think to be correct answer in the OMR answer sheet.

Q.1 The house burnt for hours before the blaze was puté é .
(a) off (b) away (c) out (d) up

Q.2 nth derivative of a^x is:
(a) a^x (b) $a^x \log a$ (c) a^{nx} (d) $a^x(\log a)^n$

Q.3 The instrument which measures temperature by radiation is called :
(a) Thermopile (b) Thermometer (c) pyrometer (d) Galvanometer

Q.4 The reaction of formation of ethyl alcohol from ethylbromide in the presence of aq. KOH is
(a) Addition reaction (b) Elimination reaction (c) Substitution reaction (d) None of these

CHAPTER - V

DEGREE PROGRAMME (SET-III/SET-V)

5. DEGREE PROGRAMME

Degree programme is a continuation of technical expertise acquired in corresponding Diploma programmes and offers an opportunity to Diploma holders to obtain Degree in Engineering.

(a) Entry Qualification: All candidates who have passed Diploma course in any discipline from SLIET or from any other polytechnic affiliated with any State Board of Technical Education and approved by All India Council for Technical Education (AICTE), securing **50% marks (45% in case of candidates belonging to reserved categories)** are eligible to compete for admission to the appropriate Degree programmes as given in **Table 5.1**.

(b) Duration: The duration of Degree programme is 3 years.

(c) Disciplines & Seats: Available disciplines of study and information regarding distribution of seats are given in **Table 5.2. General principles relating to reservations are given in Section 2.9.**

(d) Admission Procedure: There are two categories of seats in this programme as given in **Table 5.2.**

(i) Vertical Entry Seats (ii) Direct Entry Seats

The admission procedure to these two categories is as under:-

(i) **Vertical Entry Seats (*Only for SLIET students admitted in the year 2010*):** There shall be vertical mobility of 50% of the sanctioned strength in each Diploma programme of SLIET to Degree programme. The linkage between Diploma and Degree modules is illustrated in **Table 5.3.** For vertical promotion from Diploma to Degree against these reserved seats, the Diploma students shall apply in Entrance Test (SET-V). However, the students admitted under Persons with Disabilities (PWD) and Non Resident Indians (NRI) category will not be eligible for SET-V. The merit for vertical entry seats (i.e. vertical promotion from Diploma course to Degree course for Diploma holders from SLIET) shall be prepared on the basis of 50% weightage of their score in the entrance test (SET-V) and 50% weightage of their score in their qualifying Diploma course provided that the student had got admission to Diploma course in 2010-2011 and not earlier and had completed the Diploma course in the prescribed period of normal study i.e. two years and by availing only prescribed chances to clear a subject. Prescribed chances to clear a subject are one regular and two supplementary chances. However, a student having supplementary in 4th semester i.e. the last semester, shall be given only one supplementary chance for the purpose of promotion to higher module.

(ii) **Direct Entry Seats (*For outside candidates and SLIET students*):** All candidates possessing entry qualification prescribed as per **Table 5.1** are eligible to compete for direct entry seats for various Degree programmes as per **Table 5.2**. The admission to these seats is on the basis of merit of the All India SLIET Entrance Test (SET-III) conducted by the institute for the Degree programme. The SLIET students admitted before 2010-2011 in Diploma shall also be eligible for admission against direct entry seats. Even a SLIET student admitted in Diploma programme in 2010-2011 is entitled to apply for admission under direct entry seat in any Degree programme but such a student shall not be considered for admission against direct entry seat in that Degree programme/specialisation which is available to him/her by way of vertical promotion. The SLIET students competing for direct entry seats shall have to appear in SET- III examination and shall be treated completely at par with the outside (Non-SLIETian) candidates for admission to this category of seats without any weightage to their score in the qualifying Diploma course.

For this academic year (2012-13) there will be common paper for SET-III and SET-V. However, SLIET students eligible for vertical entry can apply for Vertical Entry (SET-V), Direct Entry (SET-III) OR both for Vertical Entry (SET-V) & Direct Entry (SET-III). Separate merit lists for SET-III and SET-V will be prepared as mentioned in clause (d) above.

Table 5.1

Engineering Group	Diploma Stream
GROUP-A : Electrical, Electronics & Computer Group For Group-A, admission will be in following courses : 1. Computer Science & Engineering (GCS) 2. Electronics & Communication Engg. (GEC) 3. Instrumentation & Control Engineering (GIN) 4. Information Technology (GIT)	Information Technology, Computer Science & Technology, Computer Engineering, Hardware Engineering / Technology, Software Engineering / Technology, Bio-Computer Engineering, Instrumentation & Measurement, Instrumentation Biomedical Engineering, Applied Electronics & Instrumentation, Telecommunication Engineering, Microwave Technology, Power Engineering, Electrical & Electronics Engineering, Instrumentation & Control Engineering, Electrical Engineering, Electronics & Communication Engineering, Computer Science & Applications, Instrumentation & Process Control OR Equivalent*.
GROUP-B : Mechanical Group For Group-B, admission will be in following courses : 1. Mechanical Engineering (Manufacturing Engineering) (GME) 2. Mechanical Engineering (Welding Technology) (GWT)	Material Science & Technology, Metallurgical Engineering, Metallurgy & Materials, Ceramic Engineering & Technology, Industrial Engineering, Automation and Robotics Engineering, Industrial Engineering & Management, Printing Technology, Automobile Engineering, Civil Engineering, Energy Management Technology, Non-conventional Engineering Technology, Manufacturing Engineering, Mechanical Engineering, Foundry Technology, Industrial & Production Engineering, Maintenance & Plant Engineering, Welding Technology OR Equivalent*.
GROUP-C : Chemical & Food Group For Group-C, admission will be in following courses : 1. Chemical Engineering (Polymer Technology) (GCT-P) 2. Chemical Engineering (GCT) 3. Food Technology (GFT)	Petroleum, Petrochemical, Biotechnology, Food Technology, Biochemical Engineering, Pulp and Paper Technology, Sugar Technology, Leather Technology, Plastics & Rubber Technology, Polymer Engineering, Polymer-science & Rubber Technology, Oil Technology, Paint Technology, Food Engineering, Agricultural Engineering, Agricultural & Food Engineering, Food Processing, Chemical Engineering & Technology OR Equivalent*.

***The decision of Admission Committee regarding equivalency shall be final and binding upon the candidate.**

TABLE 5.2 : Distribution of Seats for Degree Programme for the Academic Session 2012-13

Sr. No.	Discipline	Sanctioned Seats	Seats for Vertical Entry	Seats for Direct Entry
1.	Chemical Engineering (Polymer Tech.) **(GCT-P)**	45	11	34
2.	Chemical Engineering **(GCT)**	46	12	34
3.	Food Technology **(GFT)**	62	23	39
4.	Computer Science & Engineering **(GCS)**	92	47	45
5.	Electronics & Communication Engineering **(GEC)**	62	24	38
6.	Instrumentation & Control Engineering **(GIN)**	62	23	39
7.	(a) Mechanical Engineeringï (Manufacturing Engg.) **(GME)**	62	46	16
	(b) Mechanical Engineeringï (Welding Technology) **(GWT)**	62	46	16
8.	Information Technology **(GIT)**	46	00	46
	TOTAL	**539**	**232**	**307**

TABLE 5.3 : Linkage between various Diploma and Degree Programmes for Academic Session 2012-2013

	DIPLOMA PROGRAMME		DEGREE PROGRAMME
1.	Computer Science & Applications Computer Science & Engineering	50% 50%	Computer Science & Engineering
2.	Foundry Technology Industrial & Production Engineering Maintenance & Plant Engineering Welding Technology	50% 50% 50% 50%	Mechanical Engg. (i) Manufacturing Engineering (ii) Welding Technology
3.	Chemical Technology	50%	Chemical Engineering Chemical Engineering (Polymer Tech.)
4.	Food Technology	50%	Food Technology
5.	Electronics & Communication Engineering	50%	Electronics & Communication Engg.
6.	Instrumentation & Process Control	50%	Instrumentation & Control Engg.

(e) Principles of Vertical Admission (from Diploma to Degree – SET-V)

(i) Admission to the vertical entry seat shall be 50% of the sanctioned strength of the students in a particular Diploma Programme in 2010-2011 and not earlier. If a student from promoted candidates do not claim admission in a trade or a seat falls vacant afterwards in a trade, then that seat will be offered to next eligible candidate in that trade.

(ii) A common merit in respect of the branches mentioned against **S.No. 2 of Table 5.3** shall be prepared wherein all the vertically admitted students shall be pooled together and specialisation (i.e. Manufacturing Engineering or Welding Technology) shall be allotted as per choice and merit list prepared on the basis of 50% weightage to Entrance Test (SET-V) and 50% weightage to the score in the qualifying Diploma programme.

(iii) In case the vertical entry seat of any degree programme remain unfilled by promoting 50% of the students in the given diploma course as per linkage schedule given in **Table 5.3,** a common merit of all the feeder diploma courses shall be prepared to fill up the unfilled seats meant for vertical entry. Despite of this exercise, if seats prescribed for vertical entry remain unfilled in any degree programme, then merit lists shall be prepared amongst the eligible students of diploma Programmes in separate Groups as per **Table 5.1.**

Note : By exhausting the above possibilities at 5 (e) (iii) above, if still some vertical entry seats remain vacant in any degree programme, then such seats can be offered to Direct Entry.

(f) Entrance Test Schedule :

Test	Date	Time
SET-III / SETV (Degree)	2nd June, 2012	14.30 ï 17.00 Hours

(g) Fee Structure for Degree Programme (Itemized fee structure is in Section 2.10 at Page No.14) :

FEE PARTICULARS		AMOUNT (In Rupees)
A.	REFUNDABLE FEE (Without any interest)	5000
B.	NON-REFUNDABLE FEE	7285
C.	OTHER FEE: (PER SEMESTER) (Non-Refundable)	19925
GRAND TOAL (A + B + C)		**32210**

For NRI/NRI sponsored in Degree Programme, the tuition fee and Institute Development Charges shall be as follows:

Tuition Fee	Institute Development Charges
US $ 5000 per annum	US $ 1000 per annum

Note : The fee structure may be revised from time to time with the approval of competent authority.

SYLLABUS OF SLIET ENTRANCE TEST (SET-III / SET-V) FOR ADMISSION TO DEGREE PROGRAMME, 2012

PATTERN OF SET-III / SET-V

SLIET Entrance Test (SET-III / SET-V) for admission to Degree Programme will consist of one paper of two and half hours duration. This paper will have 150 objective type questions of 150 marks from English, General Knowledge, Mental Aptitude, Mathematics, Physics, Chemistry and Basics of Engineering (**appropriate group**).

Note : Answers of the objective type questions are to be filled in the OMR answer sheet given separately during the Examination. <u>There will be 25% negative marking for wrong answers</u>.

SYLLABUS AND MODEL QUESTIONS

Marks: 150 **Time: 2½ Hours**

GENERAL KNOWLEDGE, MENTAL APTITUDE & ENGLISH

Marks: 20 (20 Questions)
Syllabus :

The paper will include questions covering the following topics:-
1. General Science
2. Current events of National and International importance
3. History of India
4. Indian Politics and Economy
5. Indian National Movement and also General Mental ability
6. Idioms/Phrases
7. Usage of Tenses

MATHEMATICS

Marks: 20 (20 Questions)
Syllabus :

Algebra : Solution of quadratic equations, relationship between their roots and coefficients. Equations reducible to quadratic equation. Symmetric Functions of roots. Formation of a quadratic equation with given roots. Arithmetic progression, Geometric progression and Arithmetico-Geometric series. Series of natural numbers ($\times$ n, $\times$ n^2, $\times$ n^3). Mathematical induction. Permutations and Combinations. Binomial theorem for any index.

Trigonometry : Trigonometric ratios and their relations. Trigonometric Identities. T-ratios of allied angles. Addition and Subtraction formulae. Transformation of product into sum or difference and vice-versa. T-ratios of multiple and sub-multiple angles. Heights and distances. Solution of Trigonometric Equations.

Coordinate Geometry : Rectangular Cartesian coordinates. Distance between two points. Section formulae. Locus of a point. Equation of a straight line in various forms. Angle between two given lines. Condition for two lines to be parallel or perpendicular. Distance of a point from a line. Line through point of intersection of two given lines. Concurrency of lines. Equation of a circle in various forms. Intersection of a circle with a straight line. Intersection of two circles. Equations of the parabola, ellipse and hyperbola in the standard forms.

Calculus : Function, its domain and range. Limit, continuity and differentiability of a function. Derivative of sum, difference, product and quotient of two functions. Derivative of algebraic, trigonometric, exponential, logarithmic, hyperbolic and Inverse trigonometric functions. Chain rule. Derivative of functions expressed in implicit and parametric forms. Logarithmic differentiation. Maxima & Minima. Equation of tangent and normal. Integration as the inverse process of differentiation. Integration by parts, by substitution and by partial fractions. Integration of rational and irrational functions. Definite integral and its application for the determination of area (simple cases).

CHEMISTRY

Marks: 15 (15 Questions)

Atoms, Molecules and Chemical Arthmatic : Symbols, formulae, oxidation, reduction, oxidation number, balancing of simple chemical equations, mole concept, empirical formulae and molecular formulae.

Chemical families – Periodic Properties: Mendeleevûs and Modern periodic tables, classification of elements into s, p, d and f blocks, periodic properties (ionization potential, electron affinity, atomic and ionic radii, oxidation states).

Atomic Structure, Bonding and Molecular Structure: Bohrûs theory, brief description of hydrogen spectrum, the wave nature of matter, de-Broglieûs theory, Uncertainty principle, Quantum numbers, Pauliûs exclusion principle, Hundûs rule of maximum multiplicity, shapes of orbitals, electronic configuration of atoms upto atomic no. 30. Types of bonding (ionic, covalent and co-ordinate covalent), Lewis structure, VSEPR theory, orbital overlap and molecular shapes, hybridization (sp, sp^2 and sp^3) and molecular structure, hydrogen bond, metallic bond, Vander Waals forces.

PHYSICS

Marks: 15 (15 Questions)

Description of Motion : Motion in a straight line, uniform motion, speed and velocity, equation of motion in a straight line, position time graph, instantaneous velocity and acceleration, motion in two dimensions, projectile motion, uniform circular motion, torque, angular momentum, conservation of angular momentum, centripetal and centrifugal forces, centre for mass, motion of centre of mass and momentum conservation.

Moment of Inertia: Moment of Inertia (M.I.) of rigid body, radius of gyration, theorem of parallel and perpendicular axes, M.I. of a straight rod, circular ring, circular disc, relation between torque and M.I., kinetic energy, motion of point mass tied string to the wound on a cylinder, motion of cylinder rolling without slipping on an inclined plane.

Kinetic Theory of Gasses: Boyleûs and Charlesûs laws, gas equation, gas constant, pressure exerted by gas, kinetic energy of molecules, kinetic interpretation of temperature, derivation of gas laws from kinetic theory of gases.

Electromagnetic Waves, Atomic and Nuclear Physics: Production and properties of e.m. waves, spectrums, nature and velocity of e.m. waves, propagation of radio waves in earthûs atmosphere, photoelectric effect, laws of photoelectric effect, production of x-rays, soft and hard x-rays, uses of x-rays, Radio activity laws, half life and average life for radioactive materials, nuclear fission and fusions.

Objective Type Questions

Fill the choice of the alternative you think to be correct answer in the OMR answer sheet.

Q1. A ball thrown up is caught by the thrower 4s after start. The height to which the ball has risen is (assuming g =10 m/s^2)

(a) 20 m (b) 10m (c) 400m (d) 2m

Q2. What determines the nature of path followed by the particle?

(a) speed (b) velocity (c) acceleration (d) none of these

BASICS OF ENGINEERING

GROUP – A (Electrical, Electronics and Computer Group)

Marks : 80 (80 Questions)

Introduction to Computer: Block diagram, basic components, concept of primary and secondary memories, working of hard disk and magnetic tape, input/output devices; **Operating System:** Introduction to various operating systems, single user, multiuser, batch processing, time sharing, real time, multiprogramming and multiprocessing systems, distributed computing, resources management, memory management ; **System Software:** Introduction, system software, application software, compilers, assemblers, loaders, linkers; **Application Development:** Algorithms and flowcharts, program writing, debugging and execution, compilation, interpretation, programming using C language, Object Oriented Programming concepts; **Information Technology (IT):** Introduction to IT, Internet and its applications, web browser, E-mail; **Data management and organization:** Introduction to databases, architecture and structure of DBMS, data models, introduction to data structure, arrays, linked list, stacks and queues; **Networking:** Applications, introduction to OSI and TCP/IP, Networking topologies/technologies; **Latest Technologies:** Latest processor and memory configurations and related technologies. **Software Engineering:** Software Development Life Cycle, Software metrics, Coding and Testing, Number system, Boolean Algebra, K-map, Computer Architecture and organization, Instruction formats, Addressing modes, I/O interfacing, Control unit organization, Piplining, Cache and main memory, Modes of data access from RAM.

Conductors, semiconductors, insulators, Extrinsic & Intrinsic semiconductors. PN Junction Diode - its V-I characteristics Rectifiers, filters. BJT - various transistor configurations their input/output characteristics. FET, MOSFET their construction & characteristics. Modulation - Need & types of modulation (AM, FM, PM). Radio Receivers - TRF & superheterodyne. Pulse modulation PAM, PWM, PPM. Logic gates - Definition, symbols & truth table of NOR, OR, AND, NAND, EX-OR gates, various Flip Flops (SR, JK, T, D), Registers & Counters. Operational Amplifier - Inverting & Non inverting amplifiers, Op Amp as an inverter, scale changer, adder, subtractor, differentiator, integrator.

AC fundamentals: single phase, rms value, peak to peak value, average value. RL, RC & RLC circuits, Power & Power factor, power measurement. **DC& AC Bridges:** Wheatstone bridge, Maxwell's Bridge, De-Sauty's Bridge, Owen's Bridge, Kelvin's Double Bridge, Hay's Bridge. **Network Theorems:** Thevenin's, superposition, Norton, maximum power transfer theorem, reciprocity and Tellegen's theorems. **Electromagnetic & Magnetic circuits:** Principle of AC & DC machines and Transformers. **DC Circuits:** Circuit components (resistor, inductor and capacitors) and DC Circuits resonance. Errors in measurement system, Galvanometer, PMMC and Moving iron instruments, DC potentiometers, Multimeter, LED/LCD/Segment Displays, CRO, Basic components of instrumentation system, sensors & transducers, resistive, capacitive & inductive transducers. **Signal Conditioning:** A/D and D/A converters, filtering and impedance matching, operational amplifiers.

GROUP – B (Mechanical Group)

Marks : 80 (80 Questions)

Thermal Engineering: Basic concepts, thermodynamic properties: intrinsic and extrinsic, open, closed and isolated systems, heat and work, specific heat, thermal and thermodynamic equilibrium, Zeroth law and first law of thermodynamics, internal energy, entropy, enthalpy. Clausius and Kelvin-Plank statement of second law, different thermodynamic processes like isobaric, isochoric, isothermal. Elements of heat transfer, conduction, convection, radiation.

Applied Mechanics, Strength of Material and Machine Design: Concept of mechanics and applied mechanics, laws of forces, moments, friction and laws of motion. Stress & strain, concept of load, tensile, compressive, shear stress, torsion, Bending Moments and strains. Columns, Springs, Beams, stress concentration, types of loading, theories of failure, factor of safety, endurance limit, efficiency of riveted and welded joints, keys and its types, stress in shafts, design of shafts (solid and hollow).

Fluid Mechanics: Concept of fluid, fluid mechanics and hydraulics, properties of fluid (viscosity, specific weight, specific volume, specific gravity) with their units. Pascalôs law, concept of atmospheric pressure, gauge pressure, absolute pressure, vacuum and differential pressure.

Manufacturing Engineering & Management: Introduction and classification of engineering materials, thermal, chemical, electrical and mechanical properties of commonly used engineering materials. Purpose of heat treatment, hardening, case hardening, annealing, normalizing, tempering, heat treatment processes and their applications. Arc and gas welding processes, patterns, cores, basic foundry processes and powder metallurgy. Different machining operations, principles of operations, cutting tools and machine tools used to carry out turning, milling, drilling, shaping & planning operations. Quality control, control charts, acceptance sampling, TQM. Plant location, layout and line balancing. Types of plant layouts. Inventory control, Inventory classification, and EOQ and ABC analysis.

GROUP – C (Chemical and Food Group)

Marks : 80 (80 Questions)

Chemical Engineering Thermodynamics: Laws of thermodynamics, thermodynamic properties, general thermodynamic relationships. Application for open/closed systems and reversible/irreversible processes, Raoultôs Law. Chemical reaction equilibrium.

Chemical Reaction Engineering: Molecularity and order of reaction, reaction kinetics, different types of ideal reactors and their performance equations.

Heat Transfer: Different modes of heat transfer with governing relationships, Fourierôs law, Steady state heat transfer through plain and composite slab, Cylindrical and spherical surfaces, Natural and forced convection, Radiation heat transfer. Heat transfer equipments and their industrial applications.

Mass Transfer: Fickôs law of diffusion, Mass transfer operations and their applications, Molecular diffusion, eddy diffusion, diffusion in solids. Simple (differential) distillation, Rectification (Fractionating column) distillation, crystallization, drying - Moisture content on dry and wet basis, Equilibrium moisture content, Constant and falling rate phase calculations, Critical moisture content, absorption, equipment for separation and industrial application.

Unit operations: Calculation of energy required in grinding by Ritingerôs law and Bondôs law, Mixing index, Rate of mixing, agitation, Constant rate filtration, constant pressure filtration, Filter cake compressibility, Centrifuge equipment like cream separator and clarifiers used in dairy industry, crystallization.

Fluid flow: Physical properties of fluid, Classification of fluid flow, Continuity equation, Bernoulliôs theorem, Concept of Reynoldôs number and its determination, Flow through parallel plates and circular pipes, Different type of pumps like centrifugal, reciprocating, rotary and piston displacement pumps, Concept of viscosity, Newtonian and non-Newtonian fluids.

Material and Energy balance: Material and energy balance calculation in processes with recycle/bypass/purge.

Chemical Process Industries: Raw material and process description for the manufacturing of ammonia, urea, ammonium phosphate, cement, soda ash, caustic soda, glass, sulphuric acid, hydrochloric acid and nitric acid.

Process Instrumentations: Instruments for temperature, pressure, liquid level, flow and pH measurement.

Environmental Engineering and Safety: Different types of liquid, air and solid pollutions from industries, effect of chemical pollution on ecology and environment. Pollution control methods. Hazards from wastes, toxic gases, chemicals; symptoms and their remedial action. Fire, noise pollution in industry and their control.

CHAPTER - VI

M.TECH. PROGRAMME (SET-VI)

6. M.TECH. PROGRAMME

The objective of M.Tech. programme is a continuation of technical expertise acquired in qualifying Degree Programmes. This will also offer the opportunity to the candidate to acquire skill to work on R&D projects and to promote industry institute interaction.

a) Entry Qualifications:

Admission to Master of Technology (M.Tech.) course will be open to a candidate who obtains at least 55% marks (50% in case of candidates belonging to reserved catagories) in the aggregate in qualifying examination and

1) holds a B.Tech./B.E. degree of recognized University/Institute in the appropriate branch.

OR

has passed Section B of the Institution of Engineers (India) in appropriate branch or Grade IETE and has three years of professional experience in reputed organization.

2) Appropriate branches for admission in various M.Tech. courses are as under :
   - i) M.Tech. (Manufacturing Systems Engineering): Candidate should have B.E./ B.Tech. degree in Manufacturing Engineering / Mechanical Engineering / Production Engineering / Industrial Engineering or equivalent*
   - ii) M.Tech. Mechanical Engg. (Welding and Fabrication): Candidate should have B.E./ B.Tech. degree in Manufacturing Engineering / Mechanical Engineering / Production Engineering / Industrial Engineering or equivalent*
   - iii) M.Tech. (Food Engineering & Technology): Candidate should have B.E./B.Tech./ M.Sc. degree in Food Technology / Food Engineering / Agricultural & Food Engineering or equivalent*
   - iv) M.Tech. (Instrumentation & Control Engineering): Candidate should have B.E./ B.Tech. degree in Electrical Engineering or Instrumentation & Control or Electrical and Electronics Engineering or Instrumentation Engineering or Electronics Engineering or Computer Engineering or Electronics & Instrumentation Engineering or Electronics & Communication Engineering or equivalent*
   - v) M.Tech. (Polymer): Candidate should have B.E. / B.Tech. in Polymer Technology or Chemical Engineering or M.Sc. (Chemistry) or equivalent*
   - vi) M.Tech. (Electronics & Communication Engineering): Candidate should have B.E./ B.Tech. degree in Electronics & Communication Engineering or Electrical and Electronics Engineering or Electronics & Instrumentation Engineering or Computer Engineering or equivalent*

(*The decision of Admission Committee regarding equivalency shall be final and binding upon the candidate).

b) Duration: The duration of M.Tech. programme is 2 Years.

c) Disciplines & Seats: Available discipline of study and information regarding the distribution of seats are as given hereunder. General principles relating to reservations are given in **Section 2.9 but the same will not apply to Industry-Institute sponsored seats mentioned below :**

TABLE 6.1: Intake and Distribution of Seats

Name of the Department	Name of M.Tech. Programme	Sanctioned Seats	For GATE / SET-VI	Industry-Institute Sponsored (Full/Part Time)
Mechanical Engineering (ME)	(i) M.Tech. in Manufacturing Systems Engineering **(PG-MSE)**	36	31	05
	(ii) M.Tech. in Welding and Fabrication **(PG-WLF)**	25	20	05
Food Engineering & Technology (FET)	M. Tech. in Food Engineering & Technology **(PG-FET)**	36	31	05
Instrumentation and Control Engg. (ICE)	M.Tech. in Instrumentation and Control Engineering **(PG-ICE)**	25	20	05

Name of the Department	Name of M.Tech. Programme	Sanctioned Seats	For GATE / SET-VI	Industry-Institute Sponsored (Full/Part Time)
Chemical Technology (CT)	M.Tech. in Polymer **(PG-POL)**	25	20	05
Electronics & Comm. Engg. (ECE)	M.Tech. in Electronics & Communication Engineering **(PG-ECE)**	25	20	05

- *The vacant seats under industry/institute sponsored category shall not be shifted to any other category.*
- *There shall be no reservation or quota etc. on territorial basis for admission to M. Tech./P.G. Programmes.*

d) Admission Procedure:

(i) For admission to M.Tech. courses, first preference will be given to the candidates having GATE qualifying marks and relevant engineering degree and their admission shall be made on the basis of merit of GATE marks. **Such candidates have to apply for SET-VI on or before the last date i.e. 30.04.2012.** Candidates having an engineering degree without GATE or M.Sc. degree with or without GATE (if eligibility exists for M.Sc.) have to appear in SET-2012 (SET-VI).

(ii) If seats remain vacant then admission will be on the basis of all India SLIET Entrance Test (SET-VI).

(iii) Conditions for Industry-Institute Sponsored Category

- The qualifications / eligibility criterion, fee structure and other details will be similar as for other categories as mentioned in this Chapter.
- Preference will be given to those who have qualified in GATE and then to SET (concerned yearõs only) qualified on the basis of merit. If still seats remain vacant, then the admission will be made on the basis of merit of Qualifying Examination.
- The candidate must have a minimum of two years full time experience (after completion of Degree) in a registered Firm/Company/Industry/Education and Research Institutions/any Government Deptts. or Government Autonomous Organizations in the relevant field in which admission is being sought.
- A letter from the employer must be furnished alongwith application stating that the candidate is being sponsored to get admission. The employer should also indicate that the candidate would not be withdrawn mid-way till the completion of the course **(sample attached at Appendix IV)**.
- Candidate will be required to submit his/her last monthõs verified salary slip from the employer, alongwith the application.
- In case of any dispute the decision of the Admission Commiittee will be treated to be final and binding upon the candidate(s).
- The candidate to be admitted under this category is require to submit Tuition Fee as ₹ 20,000/- per semester in place of normal ₹ 8000/- which has already been clarified in the FEE STRUCTURE.
- The admission to this category may be offered on Part-Time basis subject to approval of Senate / Board of Management (BOM) of the Institute.

(e) Entrance Test Schedule :

Test	Date	Time
SET-VI (M.Tech.)	3rd June, 2012	10.00 ï 12.30 Hours

(f) Fee Structure for M.Tech. Programmes (Itemized fee structure is in Section 2.10 at Page No.14) :

FEE PARTICULARS		AMOUNT (In Rupees)
A.	REFUNDABLE FEE (Without any interest)	5000
B.	NON-REFUNDABLE FEE	7285
C.	OTHER FEE: (PER SEMESTER) (Non-Refundable)	15425
GRAND TOAL (A + B + C)		**27710***
	*** For Non-Gate Candidates : 27710, For Gate Candidates: 25210**	

- For Industry sponsored candidates in M.Tech, the tuition fee shall be ₹ 20,000/- per semester.
- For NRI/NRI sponsored in M.Tech, the tuition fee and Institute Development Charges shall be as follows:

Tuition Fee	Institute Development Charges
US $ 5000 per annum	US $ 1000 per annum

Note 1 : The fee structure may be revised from time to time with the approval of competent authority.

Note 2 : Admission on the basis of GATE does not guarantee the GATE Scholarship. However, Scholarship shall be offered as sanctioned by AICTE, New Delhi.

SYLLABUS OF SLIET ENTRANCE TEST (SET-VI)
For admission to M.Tech Programme-2012

Pattern of SET-VI

SLIET Entrance Test (SET-VI) for admission to M.Tech. Programme will consist of one paper of two and half hours duration. This paper will have 150 objective type questions of 150 marks in Engineering Mathematics, Mental Aptitude and Engineering subject (appropriate branch).

Note : Answers of the objective type questions are to be filled in the OMR answer sheet given separately. There will be 25% negative marking for wrong answers.

Syllabus

Marks: 150 (150 Questions) **Time : 2½ Hours**

Engineering Mathematics

Marks: 25 (25 Questions)

Linear Algebra: Matrix Algebra, Systems of linear equations, Eigen values and eigen vectors.
Calculus: Mean value theorems, Theorems of integral calculus, Evaluation of definite and improper integrals, Partial Derivatives, Maxima and minima, Multiple integrals, Fourier series. Vector identities, Directional derivatives, Line, Surface and Volume integrals, Stokes, Gauss and Green's theorems.
Differential equations: First order equation (linear and nonlinear), Higher order linear differential equations with constant coefficients, Method of variation of parameters, Cauchy's and Euler's equations, Initial and boundary value problems, Partial Differential Equations and variable separable method.
Complex variables: Analytic functions, Cauchy's integral theorem and integral formula, Taylor's and Laurent' series, Residue theorem, solution integrals.
Probability and Statistics: Sampling theorems, Conditional probability, Mean, median, mode and standard deviation, Random variables, Discrete and continuous distributions, Poisson, Normal and Binomial distribution, Correlation and regression analysis.
Numerical Methods: Solutions of non-linear algebraic equations, single and multi-step methods for differential equations.
Transform Theory: Fourier transform, Laplace transform, Z-transform.

MENTAL APPTITUDE

Marks: 25 (25 Questions)

a) Language and Communication Skills
b) Arithmetic and Quantitative Skills
c) Critical Reasoning & General Intelligence
d) General Awareness

MANUFACTURING SYSTEMS ENGINEERING / MECHANICAL ENGINEERING (WELDING AND FABRICATION)

Marks:100 (100 Questions)

Engineering Mathematics: Laplace transformation & Fourier series, partial differential equations, vector calculus, curve fitting, regression analysis & linear correlation.

Engineering Mechanics: Statics Laws of equilibrium, centroids & centre of gravity, friction, moment of inertia, virtual work. Dynamics**:** Kinematics of particle, Newtonôs second Law of motion, work & energy, impulse & momentum, force & acceleration.

TOM & SOM: Simple mechanisms, velocity & acceleration in mechanisms, cams, balancing & vibrations, stress and strains, Mohrôs circle, complex stresses, bending & deflection of beams, curved beams, shear centre, unsymmetrical bending, Castiglianoôs Theorem, pressures vessel, rotating rings.

Fluid Mechanics & Machines: Introduction, static pressure, gauges, flow of liquids through orifices & pipes, working principles of hydraulic machines & pumps.

Material Science: Bonding in solids & crystals, structure of material, imperfection in solids, heat treatment, magnetic materials, dielectric and other materials.

Thermal Science: Basics I.C. Engines, steam nozzles, steam turbines, compressors & gas turbines, different modes of heat transfer.

Operation Research:- Linear programming, network models, queuing theory, PERT,CPM

Metal Cutting & Forming: Tool nomenclature, orthogonal & oblique cutting, chip formation and types of chips, force system in turning, milling, tool wear, tool life and machinability. Fundamentals of dynamometry, temperature measurement in machining, types & application of different cutting fluids, plasticity, theories of failure, rolling, forging, extrusion and drawing processes.

Measurement & Quality Control: Standards of measurements, measurement of displacement, speed, stress strain, force, torque, spur gears etc., introduction of quality control, control charts, OC curve, acceptance sampling, TQM, reliability.

Work Study & Ergonomic: Productivity, methods study, time study, work sampling, ergonomics.

Manufacturing Processes: Metal casting & fabrication; types of molding sand, solidification of metals, design of Risers, various molding & casting processes. Arc welding process, TIG,MIG,CO_2,Plasma, resistance welding, welding defects, powder metallurgy.

Non-Conventional Machining Processes: EDM, ECM, CHM, USM, AJM, WJM, EBM, IBM, LBM and PAM.

Industrial Automation: Introduction, pneumatics, pneumatic actuators & valves, basic pneumatic circuits, fluidics & fluid logic, pneumatic sensors, programmable logic controllers, encoders.

CAD/CAM: Fundamentals of CAD,NC Machine tools, group technology, components of CIM, computer aided part programming, adaptive control system.

FOOD ENGINEERING & TECHNOLOGY

Marks:100 (100 Questions)

Technology of Fruit and Vegetable Processing: Extraction and preservation of fruit juices, jam, jelly and marmalades, Intermediate moisture products, Canning of fruits and vegetables, Drying and Dehydration of fruits & vegetables, Freezing, Chutney, Pickles and tomato products, Utilization of byproducts.

Dairy Engineering: Cleaning and sanitation in dairy industries, Homogenization, Pasteurization, Sterilization, Evaporation and Drying of milk, Utilization of byproducts.

Food Chemistry: Physico-chemical characteristics of food constituents, Changes in food constituents during processing and their determination methods, Enzymes and their applications in food processing.

Heat and Mass Transfer in Food Processing: Modes of heat transfer-Principles and practices in food engineering, Heat exchangers and their application in food processing, Mass transfer-Fickôs law of diffusion of mass transfer, natural and forced convective mass transfer.

Food Packaging and Storage Engineering: Properties of packaging materials, Packaging equipment and machinery, Food packaging systems, Packaging standards and Role of packing in environmental pollution, Storage requirements and structures, Handling equipments, Management Practices.

Biotechnology: Principles of biochemistry, Microbial products, Techniques of genetic engineering, Enzyme technology, Tissue culture technology, Environmental biotechnology.

Animal Products Technology: Meat processing and preservation, Sausage, Meat Plant sanitation and safety, Fish processing and preservation, Fish products, Utilization of by-products.

Food Biochemistry: Cell biochemistry, Metabolism of carbohydrates, lipids and proteins.

Food Analysis and Quality Control: Quality attributes and measurements, Consistency and viscosity, Modern techniques of food analysis, Measurements of various properties, sensory quality and analysis, Food laws and regulations.

Technology of Cereals and Pulses: Structure and composition, Wheat milling technology, Rice Milling, Milling of pulses, Cereal based extruded products, Utilization of by-products.

Industrial Microbiology : Techniques of strain development, Microbial growth, Food spoilage, Microbial products. **Biochemical Engineering**: Media sterilization, Air Sterilization, Enzyme Kinetics, Bioreactor fermenter, Aeration and Agitation.

Food Processing Plant Layout and Design: Network analysis of processes, Evaluation of layouts, Plant Buildings, Cost analysis, Plant layout of different industries.

Beverage Technology: Non-alcoholic beverages, Alcoholic beverages, Instrumentation and process control in beverage industry.

Food Engineering: Material and energy balance, Flow of fluids, Thermal processing, Freezing, Fluidization, Refrigeration and air conditioning, Leaching & Extraction.

INSTRUMENTATION AND CONTROL ENGINEERING

Marks:100 (100 Questions)

Electrical Technology and Networks: Introduction to electrical systems, DC and AC circuits, basic electrical components, electromagnetism alternating quantities, AC power, single phase series and parallel circuits, resonance circuit, nodal and mesh analysis, network theorems, superposition. Thevenin, Norton, reciprocity, Millmanôs, Tellegenôs theorems, star-delta transformation, steady state sinusoidal analysis using phasors, Fourier series, linear constant coefficient differential and difference equations; time domain analysis and frequency domain analysis of RLC series and parallel circuits, convolution, 2-port network parameters, driving point and transfer functions, state equation for networks, attenuators (lattice, T-type, P-type, L-type, ladder type, balanced), conventional filters, passive network synthesis (positive real functions, LC network, synthesis of dissipative network, two terminal R-L and R-C network).

Electronics Principles: Characteristics and equivalent circuits (large and small signal) of diodes (pn junction, zener, schottky, varactor), BJT, JFETs, thyristor, UJT, and MOSFET; clipping, clamping, rectifier; biasing and bias stability of transistor and FET amplifiers, single and multistage coupling, differential, operational, feedback and power. Analysis of amplifiers, frequency response of amplifiers. op-amp circuits, filters, sinusoidal oscillators, criterion of oscillation, function generators and wave-shaping circuits, power supplies, display units.

Digital electronics and microprocessors : Number systems and arithmetic (binary, Gray , BCD , Excess-3). Boolean algebra, minimization of Boolean functions, logic gates, IC families, combinational and sequential circuits, sample and hold circuits, ADCs and DACs, semiconductor memories, ALU design, microprocessor (8085), architecture, programming, memory and I/O interfacing chips (8155, 8255, 8253, 8251, 8257, 8279, 8259), introduction to microprocessor 8086 and microcontroller 8051.

Transducers and Instrumentation: Measurement of voltage, current, power, energy and power factor for Bridges and potentiometers, PMMC moving iron, dynamometer and induction type instruments, instrument transformer, digital voltmeters and multi-meters, phase, time and frequency measurement, Q-meter, oscilloscope, potentiometric recorders, error analysis, transducers-elastic, resistive, inductive, capacitive, thermo-electric, piezo-electric, photo-electric, electro-mechanical, electro-chemical and ultrasonic measurement of displacement, velocity, acceleration, shock, vibration, force, torque, power, strain, stress, pressure, flow, temperature, humidity, viscosity and density.

Control Theory : Basic control system components, block diagram description, signal flow graphs, reduction of block diagrams, input test signals, properties of systems, linearity, time-invariance, stability, open loop and closed loop (feedback) systems, properties of linear time-invariant (LTI) systems, transient and steady state analysis of LTI system and frequency response. LTI control system analysis, root loci, Routh Hurwitz criterion, polar plots, Bode and Nyquist plots, elements of lead and lag compensations, state space representation of systems, state equations, decomposition, direct, cascade and parallel, solution of state equations, Laplace method, Calay-Hamilton method, diagonalization method and Sylvester method.

Programming concepts: Algorithms, programming in C and C++, data types, console/file input and output, arrays, structures, pointers, functions, command line arguments, passing of parameters from one function to other, concept of OOPs.

POLYMER

Marks:100 (100 Questions)

Chemistry: Physical chemistry: Properties of gases, heat & thermodynamics, chemical equillibrium, chemical kinetics. Organic chemistry: classification & nomenclature of organic compound, functional groups & derivatives, stereochemistry.

Polymer Technology: Concept and classifications of polymers, average molecular weight and concept of M_n M_w M_v M_z. Functionality principle, addition polymerization; free radical, Ionic, coordination, condensation polymerization and co-polymerization, methods of polymerization techniques ï bulk, solution, emulsion and suspension. Structure property relationship and applications of following polymers, PE, PP, PS, PVC, ABS, PMMA, PC, PTFE, Nylon, Polyester, PF, UF, MF, polyurethane, Epoxy, plastics, Natural rubber, SBR, Nitrile rubber, silicon, Butyl, Polyisobutylene, EPDM rubbers. Newtonian and non-Newtonian fluids, Maxwell and Voigt model, creep and stress relaxation properties, capillary and rotational rheometer, basic understanding of polymer processing Techniques such as extrusion, injection, blow, rotational, calendering, thermoforming, compression moulding, types of spinning techniques for fibres. Mechanical properties such as Tensile, compressive, impact, shear fatigue test, thermal properties such as: heat deflection temperature, vicat softening temperature, brittleness temperature; electrical properties: dielectric strength, dissipation factor, insulation resistance, arc resistance; Chemical properties such as stress, stain resistance and environmental stress cracking resistance. Thermal analysis of polymers, DSC, TGA, TMA, Concept of degradation. Application of polymers in various fields like packaging, automobiles, insulation, agriculture, biomedical etc.

Chemical Engineering: Review of types of flow and fluids, Stokeôs law, concept of boundary layers. Flow measurement by orifice, venturi, pitot tube and rotameter, screening: types of screen, capacity and effectiveness of screen; principle of size reduction: Compression, impact, rubbing, cutting. Fourier law in one dimension, heat conduction through composite having plane wall, spherical and cylinderical geometry. Forced and free convection, concept of thermal boundary layer, overall heat transfer coefficient, distribution of radiant energy, emmissivity, absorptivity, reflectivity, transmitivity, Plankôs Law, Kirchoffôs law, Stefan Boltzmann Law, drop wise and film wise condensation, concept of heat exchanger and evaporation. Relative volatility, Raultôs law, Reflux ratio, Fickôs Law of diffusion, Multistage tray towers in distillation, method of McCabe & G-L operations i.e. packed towers, spray towers, tray towers etc. differential distillation, flash evaporation, Azeotropic and extractive distillation, types and nature of adsorption. Effect of temperature and pressure, Freundlich and Langmuir isotherm, drying: Batch and continuous, types of dryers, basic concepts of extraction, leaching, gas absorption. Importance of instrument in chemical industries and their classifications, pressure measurement by manometers, gauges and pressure transducers, Temperature measurement: Expansion thermometer, Resistance thermometer, Thermocouple, and pyrometers, measurement of viscosity, conductivity, humidity and pH.

ELECTRONICS & COMMUNICATION ENGINEERING

Marks:100 (100 Questions)

Networks: A.C. and D.C. fundamentals, nodal and mesh analysis. Network theorems: superposition, Thevenin and Norton's maximum power transfer, Wye-Delta transformation. Steady state sinusoidal analysis using phasors. Linear constant coefficient differential equations; time domain analysis of simple RLC circuits, Solution of network equations using Laplace transform: frequency domain analysis of RLC circuits. 2-port network parameters: driving point and transfer functions. State equations for networks.

Electronic Devices: Semiconductor physics, diffusion current, drift current, mobility, and resistivity. Generation and recombination of carriers. p-n junction diode, Zener diode, tunnel diode, BJT, JFET, MOS capacitor, MOSFET, LED, p-i-n and avalanche photo diode, Basics of LASERs. Device technology: integrated circuits fabrication process, oxidation, diffusion, ion implantation, photolithography.

Analog Circuits: Small Signal Equivalent circuits of diodes, BJTs, MOSFETs and analog CMOS. Simple diode circuits, clipping, clamping, rectifier. Biasing and bias stability of transistor and FET amplifiers. Amplifiers: single and multi-stage, differential and operational, feedback, and power. Frequency response of amplifiers. Simple op-amp circuits. Filters. Sinusoidal oscillators; criterion for oscillation; single-transistor and op-amp configurations. Function generators and wave-shaping circuits, 555 Timers. Power supplies.

Digital Circuits: Boolean algebra, minimization of Boolean functions; logic gates; digital IC families (DTL, TTL, ECL, MOS CMOS). Combinatorial circuits: arithmetic circuits, code converters, multiplexers, decoders, PROMs and PLAs. Sequential circuits: latches and flip-flops, counters and shift-registers. Sample and hold circuits, ADCs, DACs. Semiconductor memories. Microprocessor (8085): architecture, programming, memory and I/O interfacing.

Signals and Systems: Definitions and properties of Laplace transform, continuous-time and discrete-time Fourier series, continuous-time and discrete-time Fourier Transform, DFT and FET, z-transform. Sampling theorem. Linear Time-Invariant (LTI) Systems: definitions and properties; causality, stability, impulse response, convolution, poles and zeros, parallel and cascade structure, frequency response, group delay, phase delay. Signal transmission through LTI systems.

Control Systems: Basic control system components; block diagrammatic description, reduction of block diagrams. Open loop and closed loop (feedback) systems and stability analysis of these systems. Signal flow graphs and their use in determining transfer functions of systems; transient and steady state analysis of LTI control systems and frequency response. Tools and techniques for LTI control system analysis: root loci, Routh-Hurwitz criterion, Bode and Nyquist plots. Control system compensators: elements of lead and lag compensation, elements of Proportional-Integral-Derivative (PID) control. State variable representation and solution of state equation of LTI control systems.

Communications: Random signals and noise: probability, random variables, probability density function, Auto-correlation, power spectral density. Analog communication systems: amplitude and angle modulation and demodulation systems, spectral analysis of these operations, super heterodyne receivers; elements of hardware, realizations of analog communication systems; signal-to-noise ratio (SNR) calculations for amplitude modulation (AM) and frequency modulation (FM) for low noise conditions. Fundamentals of information theory and channel capacity theorem. Digital communication systems: pulse code modulation (PCM), differential pulse code modulation (DPCM), digital modulation schemes: amplitude, phase and frequency shift keying schemes (ASK, PSK, FSK), matched filter receivers, bandwidth consideration and probability of error calculations for these schemes. Basics of TDMA, FDMA and CDMA and GSM.

Electromagnetics: Elements of vector calculus: divergence and curl; Gauss' and Stokes' theorems, Maxwell's equations: differential and integral forms. Wave equation, Poynting vector. Plane waves: propagation through various media; reflection and refraction; phase and group velocity; skin depth. Transmission lines: characteristics impedance; impedance transformation; Smith chart; impedance matching; S parameters, pulse excitation. Waveguides: modes in rectangular waveguides; boundary conditions; cut-off frequencies; dispersion relations. Basics of propagation in dielectric waveguide and optical fibers. Basics of Antennas: Dipole antennas; radiation pattern; antenna gain.

CHAPTER - VII

M.B.A. and M.Sc. PROGRAMMES (SET-VII)

7.1 M.B.A. PROGRAMME:

(a) Entry Qualification : A recognized Bachelorʹs (three years) / Post-Graduate degree in any discipline or a pass in the final examination conducted by ICAI/ICWI/ICSI or AMIE. Minimum marks in the qualifying examination is **55% (50% in case of candidates belonging to reserved categories**). Candidates appearing in final year Degree examination are eligible to apply and can take the test provisionally.

(b) Duration : The duration of the M.B.A. programme is 2 years.

(c) Disciplines and Number of Seats: Total number of seats is 50 in four specializations as mentioned below. **General principles relating to reservations are given in Section 2.9.**

Maximum 10 seats out of 50 will be allocated on the basis of valid CAT Score for CAT candidates.

Specialization	No. of Seats
Marketing Management	10
Human Resource Development	10
Material Management	10
Labour Welfare and Industrial Relations	20

(d) Admission Procedure :

i) For admission to MBA Programmes, candidates will have to appear in All India SLIET Entrance Test (SET-VII) followed by Group Discussion and Interview.

ii) The candidates having valid CAT score / percentile will also be considered for admission and such candidates need not to appear in Entrance Test (SET-VII) of SET-2012. However, these candidates have to appear in Group Discussion and Interview. **All the candidates aspiring to get admission through CAT will have to fill the Application Form of SET-2012 on or before the last date i.e. 30.04.2012.**

7.2 M.Sc Programmes :

The four semester (two years) M.Sc. Programmes based on credit system comprise of a number of core and elective courses and project work. The focus of various M.Sc. Programmes offered by Science Departments would be to generate post-graduates who are confident of applying their knowledge to practical problems of industry including R&D organizations. The curriculum maintains a balance between basic & applied aspects of the subject concerned to develop analytical skills of the students which shall be helpful in their career option in academic, research & teaching also.

(a) Entry Qualification:

The minimum qualification for admission to Master of Science (M.Sc.) Programmes will be open to a candidate who obtains at least **55% marks (50% in case of candidates belonging to reserved categories)** in the aggregate in qualifying examination as mentioned hereunder:

(i) **M.Sc.(Physics) :** Recognized Bachelorʹs Degree with **Physics** as main subject.
(ii) **M.Sc.(Chemistry) :** Recognized Bachelorʹs Degree with **Chemistry** as main subject.
(iii) **M.Sc.(Mathematics) :** Recognized Bachelorʹs Degree (B.A./B.Sc.) with Mathematics

(b) Duration: The duration of the M.Sc. Programmes is 02 years

(c) Disciplines & Seats: Available disciplines of study and distribution of seats are as under. **General principles relating to reservations are given in Section 2.9.**

Disciplines	No. of Seats
M.Sc. in Physics **(PG-PHY)**	20
M.Sc. in Chemistry **(PG-CHY)**	20
M.Sc. in Mathematics **(PG-MATH)**	20

(d) Admission Procedure:

- Admission to all M.Sc. Programmes shall be made on merit basis through All India SLIET Entrance Test (SET-VII). Candidate who qualifies in the Entrance Test will be admitted in the same discipline in which he/she has appeared and not in any other discipline.

7.3 Entrance Test Schedule :

Test	Date	Time
SET-VII (MBA/M.Sc.)	2nd June, 2012	10.00 ï 12.30 Hours

7.4 Fee Structure for MBA / M.Sc. Programmes (Itemized fee structure is in Section 2.10 at Page No.14) :

FEE PARTICULARS		AMOUNT (In Rupees)
A.	REFUNDABLE FEE (Without any interest)	5000
B.	NON-REFUNDABLE FEE	7285
C.	OTHER FEE: (PER SEMESTER) (Non-Refundable)	15425
GRAND TOAL (A + B + C)		**27710**

Note : The fee structure may be revised from time to time with the approval of competent authority.

SYLLABUS OF SLIET ENTRANCE TEST (SET-VII)
For admission to MBA & M.Sc. Programme-2012

Pattern of SET-VII

Note : Answers of the objective type questions are to be filled in the OMR answer sheet given separately during the Examination. <u>There will be 25% negative marking for wrong answers</u>.

M.B.A.

1. **There will be one paper consisting of 150 objective type questions of 150 marks and of two & half hours duration.**
2. **Group Discussion (GD) (25 Marks)**
3. **Interview (25 Marks)**

Syllabus for M.B.A.

Marks: 150 (150 Questions) **Time : 2½ Hours**

The paper will include questions covering the following topics (minimum 35 questions from each topic) :-
a) Language and Communication Skills
b) Arithmetic and Quantitative Skills
c) Critical Reasoning & General Intelligence
d) General Awareness

Group Discussion (GD) [25 Marks]:

The Group Discussion is primarily aimed at assessing the oral communication skills, convincing power and other managerial capability of candidate. The GD will fetch 25 marks and time allowed for one GD will be 30 minutes. A group of 10 candidates on random basis would be selected to participate in each GD out of the candidates qualifying the Written Objective Type Test. The topics given for the GD would be from current affairs, economics and management. The Panel of Judges would be consisting of senior faculty members and one person from industry.

Interview [25 Marks]:

The final stage of the selection process will be an Interview for the candidates going through earlier two stages. The interview will be conducted by a panel of three interviewers again consisting of three members including eminent faculty members and industrialists.

Note: *Result for admission to M.B.A. Programme will be prepared on the basis of marks obtained in all the above three components i.e. written test (SET-VII for M.B.A.), group discussion and interview.*

M.Sc.

There will be one paper consisting of 150 objective type questions of 150 marks and of two & half hours duration.

Syllabus for M.Sc.

Marks: 150 (150 Questions) **Time : 2½ Hours**

Common for all M.Sc.

Marks: 30 (30 Questions – Minimum 07 from each topic)
a) Language and Communication Skills
b) Arithmetic and Quantitative Skills
c) Critical Reasoning & General Intelligence
d) General Awareness

M.Sc. (Physics)

Marks: 120 (120 Questions)

1. Basic Concepts of Classical Mechanics: Mechanics of a particle, Mechanics of a system of particles, constraints, Holonomic and non-holonomic constrants, virtual work, D'Alembert's principle, Lagrange's equations, simple applications of the Lagrangian formulation.
2. De Broglie waves and uncertainty principle: De Broglie Waves, Wave function, De Broglie wave velocity, wave and group velocities, Heisenberg's uncertainty principle and its applications.
3. Schrodinger equation: The wave function, schrodinger equation – time dependent form Expectation values, operators, Schrödinger equation– steady state form, Eigen values and eigen functions.
4. Application of Schrödinger equation: The particle in a box – energy quantization, wave functions, momentum quantization. The Harmonic oscillator – Energy levels, wave functions, Hydrogen atom, Schrodinger equation for the hydrogen atom, separation of variables, quantum numbers – Total quantum number, orbital quantum number, magnetic quantum number, The normal Zeeman effect.
5. Atomic Spectra: Spectra of hydrogen, alkali atoms, spectral terms, doublet fine structure, screening constants of alkali spectra for s, p, d, f states, selection rules singlet, triplet fine structure in alkaline earth spectra, L-S and J-J coupling.
6. Molecular Spectra: Molecular spectra – experimental study, Rotational Spectra, Intensities of rotational lines, vibrational spectra, rotational and vibrational bands and their theoretical explanation. Raman spectra – Raman effects, Introduction, Experimental Study, Results of Raman effect, Nature of Raman effect, Theoretical explanation of Raman effect, Practical importance of Raman effect, Raman effect and molecular constitution.
7. Nuclear Physics: Nuclear models and accelerators – Introduction to nuclear forces, Nuclear binding energy, shell model and liquid drop model, Nuclear reactions, Fission and Fusion, Particle accelerators – linear accelerator and cyclotron. Elementary Particles – Introduction to elementary particles and their conservative principles, Theory of electron, Antiparticles, mesons, mesons and mesons, Symmetries of elementary particles, conservative principles.
8. Crystal Structure: Crystal lattice and translation vectors, unit cell, Basis, symmetry operations, Point groups and space groups, Types of lattices (Plane lattice and space lattice with bcc and fcc) Lattice directions and planes, Interplanar spacings Miller indices, simple crystal structures, close packed structures, Hexagonal close packed structures.
9. Bonding in Solids: Introduction, concept of inter-atomic forces, cohesive energy and types of bonding, primary bonds (ionic bonds, covalent bond and metallic bonds), Secondary bonds (Vander wall's bonds and hydrogen bonds)
10. Heat Capacity: Classical theory of lattice heat capacity (concept and comparison with experimental value), concepts of Einstein's theory of lattice heat capacity, Density of modes of vibrations (in 1-D, 2-D and 3-D), Debye's model of lattice heat capacity (derivation), Limitations of Debye's model.
11. Electrical properties of metals: Classical free electron theory of metals, Drawbacks of classical theory, Quantum theory of free electron, sommerfield's model for free electron (one-dimensional solid, generalization for three-dimensional solid) Fermi-Dirac statistics and electron distribution in solids, Density of energy states and Fermi energy f(E) at $E=E_F$, $E<E_F$ and $E>E_F$, Fermi-Dirac distribution function, Mean energy of electron gas at absolute zero.
12. Band Theory of Solids: The Bloch theorem (only statement and properties), The kronig – Penny model, Energy versus wave-vector relationship – different representations (Brillouin Zones), Distinction between metals, insulators and semoconductors.
13. Magnetic Properties of Solids: Concept of Magnetic permeability, magnetization, susceptibility, Electric current in atoms, Bohr Magnetron, Electron Spin and Magnetic Moment, Magnetic moment due to nuclear spin, classical theory of diamagnetism and paramagnetism, Quantum theory of paramagnetism, Domain theory of ferromagnetism, Experimental demonstration of domain structure, I-H curve.
14. Bipolar Junction Transistor – BJT : BJT (Revision), Load line, Transistor biasing, voltage divider bias, Hybrid parameters (or h parameters) Determination of h-parameters, common – emitter amplifier, Analysis of common emitter amplifier and common – collector amplifier using h-parameters current gain, voltage gain, power gain, input resistance and output resistance)
15. Digital Electronics: Binary and Hexadecimat number system, Binary Arithmetic, Basic logic gates (NOT, OR, AND using electrical switch circuit only), Derived logic gates (NAND, NOR, EXOR using electrical switch circuit only) De Morgan's theorem, NAND gate as a universal building block, half adder and full adder, RS flip flop and JK flip flop (using logic gates only)
16. Second law of Thermodynamics: Conversion of work in to heat and vice versa, Kelvin-Planck and Clausius statements of Second law of Thermodynamics and their equivalence, Carnot.s cycle, Carnot.s theorem and coreollary, thermodyanamic scale of temperature, absolute zero and efficiency, gasoline engine(Otto),Diesel engine, reversibility and irreversibility, condition for reversibility.

17. Entropy: Reversible part of the second law, Entropy, principle of carateodory, entropy of an ideal gas -- T- S diagram of entropy and reversibility, entropy and irreversibility, irreversible part of second law, heat and entropy of irreversible processes, entropy and nonequilibrium states,principle of increase of entropy, applications of entropy principle, entropy and disorder, enthalpy, Helmholtz and Gibb.s functions, maxwell.s relations, T DS equations, internal energy equation, heat capacity equation.

18. Interference by Division of Amplitude: Interference in thin films, the cosine law, nonreflecting films, high reflectivity by thin film deposition, interference by wedge shaped film.Newton.s rings.the Michelson interferometer

19. Fraunhoffer and Fresnel Diffraction: Single slit, double slit, N slit diffraction patterns.positions of maxima and minima.width of the principal maxima.the diffraction grating.resolving power of grating.resolving power of a prism, Fresnel half period zones.zone plate.diffraction at a straight edge.Fresnel diffraction by a circular aperture.

20. Polarization and double refraction: Introduction-production of polarized light, polarization by reflection, polarization by double refraction, polarization by scattering, Malus law, Superposition of two disturbances, Mathematical analysis, Double refraction, Normal incidence, oblique incidence, interference of polarized light, QWP, HWP, Analysis of Polarised light, Optical activity.

M.Sc. (Chemistry)

Marks: 120 (120 Questions)

Inorganic Chemistry

Atomic Structure and Chemical bonding: Schrodinger wave equation; H atom; Radial and angular wave functions: quantum numbers and concept of orbitals; Slater orbitals; Periodic trends and properties: Size, Ionization Energy, Electron Affinity, Electronegativity, Lattice and Hydration Energies; Chemical Bonding: VB and MO approach of H_2 molecule; MO treatment of homonuclear and heteronuclear (CO & NO) diatomic molecules; VSEPR theory; Structure of simple molecules and ions of main group elements; theories of bonding in metals; Free electron, VB and Band theories; Hydrogen bonding and Vander Waalos interactions.

Chemistry of elements: *s* and *p*-block: Alkali and alkaline earth metals, Hydrides and Complexation tendencies, Structural features of hydrides, halides, oxides and oxyacids;

d-block: Salient features, characteristic properties of 3*d*-elements and general comparative treatment of 4d and 5d elements with reference to oxidation states, colour, magnetic behaviour, and complex formation tendency, methods of determining magnetic susceptibility, Correlation of magnetic moment data and stereochemistry of Co(II) and Ni(II) complexes.

f - block: Comparative study of lanthanides and actinide elements with respect to electronic configuration, atomic and ionic radii, oxidation states and complex formation, occurrence and principles of separation.

Coordination chemistry: Nomenclature, Wernerøs theory, Iso*merism*. Sidgwickøs EAN concept and Valence Bond Theory, Limitations of valence bond theory; Crystal-field theory and crystal-field splitting in octahedral, tetrahedral and square planar complexes, Jahn-Teller distortion, Factors affecting the crystal-field splitting; Stereochemistry of coordination compounds with coordination no. 4, 5 and 6; thermodynamic and kinetic stabilities of metal complexes and factors affecting the stability; Types of electronic transitions, selection rule for d-d transitions, spectroscopic ground states.

Organometallic Chemistry: Definition, nomenclature and classification of organometallic Compounds; Preparation, properties, bonding and applications

Bioinorganic Chemistry: Essential and trace element in biological process, oxygen transport with reference to haemoglobin; synthetic models of O_2 carriers, Biological role of alkali metals ions; Vitamin B-12

Organic Chemistry

Concepts: Atomic orbitals, hybridization, Polarity of bonds: Inductive, resonance and steric effects, hyperconjugation, and their influence on acidity and basicity of organic compounds; Fischer, Saw-horse and Newman projection formulae, Chirality-optical activity, enantiomersim and diasteroisomerism involving one and two chiral centres; Configuration; D/L, erythrose, threose and R/S nomenclatures; Geometrical isomerism and E/Z nomenclatures; Conformations of n-butane; Aromaticity and Huckel rule - A general concept; Molecular orbital picture of benzene, Nomenclature of organic compounds

Chemistry of organic compounds- Hydrocarbons: Alkanes, Alkenes, alkylenes and benzene: Preparation and properties; Alkyl Halides: Nucleophilic substitution: SN1, SN2 mechanisms; Eliminations reactions: E1and E2 mechanisms, Elimination versus substitution reactions; energy profile diagrams-transition states (general considerations). Grignard reagents:

Preparation and synthetic applications; Chlorobenzene, electrophilic and nucleophilic aromatic substitutions; side chain chlorination of toluene, DDT and BHC; Alcohols: Comparative study of substitution, dehydration, oxidation, and esterification of primary, secondary and tertiary alcohols; Phenols: General methods of preparation and reactions; Reimer-Tiemann and Kolbe reactions; Relative acidity of phenol, alcohol and carboxylic acid; Carbonyl compounds: Preparations and reactions: addition and condensation reactions; Cannizzaro, Perkin, aldol, benzoin, haloform, oxidation and reduction reactions;

Important reactions of acids, HVZ reaction, Relative reactivity of acid chlorides, acid anhydrides, amides and esters; Comparative acidity of carboxylic and sulphonic acids; Nitrogen containing compounds: Nitronbenzene and reduction products; Comparative basicity of aliphatic and aromatic amines; Diazonium Salts: Preparation and synthetic applications.
Reactive intermediates and related Rearrangement reactions: Generation, stability and reactivity of Free radicals (Anti Markovnikov's, Birch Reduction, Bouveault-Blanc reduction, oxidation of phenol by metal ions); *Carbocations* (Pinacol-Pinacolone, Wagner-Meerwein Rearrangement, Baeyer-Villiger oxidation, Hydroperoxide reaction and Beckmann.) and *Carbanions (*Robinson Anuulation and Michael Addition); *Carbenes* and *Nitrenes* (Hofmann, Curtius reactions); Ylides: Sulphur ylides, phosphorous ylides, Michaelis-Arbuzov phosphonate synthesis, Witting reactions, Mitsunobu reaction.
Chemistry of Bio-molecules: Amino acids-preparative methods, physical properties, dipolar nature, chemical reactions and configuration; peptide linkage, peptide synthesis and structure of poly peptides, General characteristics and secondary structure; Carbohydrates -Characteristic reactions of aldoses and ketoses; Glucose- structure (Open and Cyclic), Fructose (only reactions), Mutarotations, Sucrose, starch and cellulose (Structural aspects only).
Application of Spectroscopic Techniques: Infrared Spectroscopy: Working and experimental considerations in spectral recording; Characteristic group frequencies; carbonyl frequencies; effect of structure: aldehydes, ketones; esters, amides, acid anhydrides, carboxylics acids, acid chlorides; effect of conjugation; cyclization; ambi-dentate ligands and metal carbonyls.
Ultraviolet and Visible Spectroscopy: Basic working principle and measurement technique; ů-ů*, ´ -´ *, n-ů* and n-´ * transitions, dienes and conjugated poly-enes; Woodward-Fieser rules; spectra of transition metal complexes (*d-d* transitions).
NMR Spectroscopy: Working principle and method of measurement; factors influencing chemical shift, spin-spin splitting; applications.

Physical Chemistry

States of Matter: Gaseous state: Kinetic theory of gases, ideal gas laws based on kinetic theory, mean free path, collision diameter, collision number; van der Waalôs equation and critical state,
Liquid State: Surface tension of liquids - capillary action, temperature effect on surface tension; Viscosity of liquids, experimental determination of viscosity coefficient, variation with temperature.
Solid State: Crystal lattices, space lattice, unit cell, crystal systems, law of rational indices, Miller indices, crystals and x-rays (the Braggs equation); Crystal structure of NaCl, graphite, and diamond; Types of crystal (molecular, covalent, metallic, ionic); Imperfection in crystals: point defect-Schottky and Frankel defects.
Thermodynamics: First Law of thermodynamics and internal energy, heat and work, Enthalpy, heat changes at constant volume and constant pressure, heat capacities (CV, CP). Thermodynamic quantities (w, q, qU, qH) for isothermal and adiabatic reversible expansion of ideal gases, Relation between qU and qH, variation of heat of reaction with temperature (Kirchhoffôs equation); Second Law of Thermodynamics, Carnot cycle, entropy, entropy changes in reversible and irreversible processes and of universe and changes of an ideal gas in different processes; Free energy and its concept, Gibbs and Helmholtz free energies and their relationship, variation of free energy with temperature and pressure; Free energy and equilibrium constant, Maxwellôs relations, Gibbs-Helmholtz equations, Chemical potential, Fugacity and activity.
Thermodynamics of colligative properties: Ideal solutions and their characteristic properties, Duhem-Margules equation and its application, Henry and Raoultôs laws, Freezing point depression, elevation of boiling point, osmotic pressure, vanô Hoff equation, Measurement of osmotic pressure and determination of molecular weight of macromolecules.
Electrochemistry: Arrhenius theory of electrolytic dissociation, Hydrolysis of salts, hydrolysis constant, Bronsted-Lowry and Lewis concepts of acids and bases, HSAB theory and applications buffer solutions, indicators and theory of acid-base indicators, degree of dissociation and dissociation constant of weak electrolytes/acids, solubility of sparingly soluble salts; Migration of ions: transference number and its determination by Hittorf methods; Conductance of electrolyte solutions, Kohlrausch law of independent migration of ions, ionic mobility; Single electrode potential (Nernst equation), Emf of reversible cell from electrode potentials and its applications; Types of reversible electrodes, reference electrodes; Concentration cells with and without transference; Liquid junction potential and its elimination, Qualitative idea of Debye-Huckel theory of ion-ion interactions.

Phase Equilibria: Thermodynamics of phase transition-Clapeyron-Clausius equation and its applications, Phase rule, phase, component, degree of freedom, thermodynamic derivation of phase rule, phase diagrams of one-component system (water), two component systems (phenolwater,lead-silver). The distribution law, solvent extraction, equilibrium constant from distribution coefficient ($KI + I_2 = KI_3$).
Chemical Kinetics: Order and molecularity of chemical reactions, pseudo order, Kinetic law for second order reactions, determination of the rate constant and order of reaction from kinetic data, Effect of temperature on rate of reaction: collision theory of rates of bimolecular reactions and its comparison with Arrheninus equation.
Photochemistry: Law of photochemical equivalence, quantum efficiency, reasons for low and high quantum efficiency; Kinetics of photochemical reaction ($H_2+Br_2=HBr$), photostationary state, Chemical actinometers (uranyl oxalate).

Quantum Chemistry: Postulates of quantum mechanics, Schrödinger's wave equation, Eigen functions and Eigen values, Orthogonality of wave functions, Particle in a one dimensional box problem.
Molecular Spectroscopy: Region of electromagnetic spectrum, Emission and absorption spectra,Transition probabilities and selection rules; Width and intensity of spectral transitions Pure rotational spectra, Diatomic molecules-Rigid rotor & non-rigid rotors. Vibrational- rotational spectra ofdiatomic molecules, Harmonic oscillator-rigid rotor approximation, Anharmonicity, Normal modes of vibration, Infrared spectra of linear and bent AB2 molecules; Electronic spectra of diatomic molecules, Franck-Condon principle; Nuclear Magnetic Resonance Spectroscopy: Principle, Chemical shifts, Spin-spin splitting, Relaxation times.

M.Sc. (Mathematics)

Marks: 120 (120 Questions)

Sequences and Series: Sequences of real numbers. Cauchy's criteria for convergence. Convergent sequences.
Series. Tests for convergence. Absolute and conditional convergence. Uniform convergence.
Differential Calculus: Limit. Continuity. Differentiability. Successive differentiation. Asymptotes. Curvature. Envelopes and evolutes. Mean value theorem. Taylor's theorem. Maxima and minima of functions of a single variable. Functions of two and three variables. Partial derivatives, maxima and minima. Tangent plane and normal to a surface. Errors and Approximations.
Integral Calculus: Integration. Reduction formulae. Quadrature and rectification. Double and triple integrals, Surface areas and volumes. Centre of gravity. Moment of inertia. Root mean square value. Beta, Gamma and error functions.
Vector Calculus: Scalar and vector triple products. Vector differentiation and integration. Gradient, divergence and curl. Green's, Stokes and Gauss theorems.
Differential Equations: Ordinary differential equations of the first order. Linear differential equations of higher order with constant coefficients. Methods of variation of parameters and undetermined coefficients. Series solution of differential equations. Bessel's and Legendre's equations. Orthogonality and recurrence relations of Bessel's functions and Legendre polynomials.
Partial differential equations. Lagrange's linear PDE. Non-linear PDE of first order. Charpit's method. Homogenous linear and non-linear PDEs. Application of ODE and PDE.
Algebra: Groups, subgroups and normal subgroups, Lagrange's Theorem for finite groups, group homomorphisms and basic concepts of quotient groups, rings, ideals, quotient rings and fields.
Linear Algebra: Systems of linear equations. Matrices, rank, determinant, inverse. Eigenvalues and eigenvectors. Cayley Hamilton theorem. Finite dimensional vector spaces over real and complex numbers. Basis. Dimension. Linear transformations.
Analysis: Riemann integral. Fundamental and mean value theorems of integral calculus. Improper integrals. Open and closed sets, limit points, completeness of R. Limit of a complex function. Differentiation. Analyticity. Cauchy-Riemann equations. Harmonic functions. Conformal mapping. Some special transformations - translation, inversion and rotation. Bilinear transformation.
Laplace Transform and Fourier series: Laplace transforms and its properties. Inverse Laplace transforms. Convolution theorem. Unit step function and unit impulse function. Applications to differential equations.
Fourier series. Change of interval. Even and odd functions. Half-range series. Applications to standard waveforms.
Solid Geometry: Sphere. Cone. Cylinder. Conicoid. Tangent plane and normal. Reduction of second degree equations to standard forms.
Mechanics: Coplaner forces. Virtual work. Catenary. Equilibrium. Wrenches. Simple harmonic motion. Elastic strings. Central orbits. Kepler's law of motion.
Statistics: Measures of central tendency and dispersion. Skewness and kurtosis. Correlation and regression.
Probability theory. Bayes' theorem. Binomial, Poisson and Normal distributions.

CHAPTER - VIII

Ph.D. PROGRAMME (SET-VIII)

8. Ph.D. Programmes

Creative and productive enquiry is the basic concept underlying the research work. The award of the Ph.D. degree is in respect of high achievements, independent research and application of scientific knowledge to the solution of scientific and technical problems.

(a) Entry Qualification:

Masterôs Degree in Engineering / Technology / Science / Humanities / Management with **60% of marks (55% for reserved categories).**

(b) Departments and Seats* : Ph.D. programmes are available in following departments on :

(i) Full Time (with fellowship)
(ii) Full Time (without fellowship)
(iii) Part Time

Number of seats* available for the session 2012-13 are mentioned against each department. **Reservations will be as per Section 2.9 for Full Time (with fellowship).**

Sr. No.	Department	No. of seats for Full Time with Fellowship**	No. of seats*** for Full Time (without fellowship) / Part-time	Name of P.G. Degree from a recognized University (in relevant branch)
1	**Chemical Technology (Ph.D -CT)**	05	10	M.Tech.
2	**Chemistry (Ph.D-CHY)**	02	05	M.Sc.
3	**Electrical & Instrumentation Engineering (Ph.D-EIE)**	02	--	M.Tech. / M.E.
4	**Electronics & Communication Engineering (Ph.D-ECE)**	03	02	M.Tech. / M.E.
5	**Humanities (English) (Ph.D-ENG)**	01	--	M.A.
6	**Food Engineering & Technology (Ph.D-FET)**	03	10	M.Tech./ M.E. / M.Sc. (However M.Tech. / M.E. students will be preferred)
7	**Management (Ph.D-MGT)**	01	--	MBA
8	**Mathematics (Ph.D–MATH)**	01	--	M.Sc.
9	**Mechanical Engineering (Ph.D-ME)**	05	04	M.Tech. / M.E. / M.Sc. Engg.
10	**Physics (Ph.D-PHY)**	02	--	M.Sc.

***Seats are subject to the vacancy available in the relevant specialization in the departments.**

****These are the maximum number of seats given in the department for the session 2012-13. Director, SLIET reserves the rights not to fill the seats if suitable candidates are not found.**

***** These seats are indicative only. The actual number of seats may differ depending upon the availability of supervisors in particular department.**

(d) Admission Procedure:

(I) Admission to all Ph.D. Programmes shall be made on merit basis through All India Entrance Test (SET-VIII). However, those candidates who have passed UGC / CSIR(JRF) examination / NET with fellowship / SLET with fellowship/ SET with fellowship / GATE with validity & qualifying marks or teacher fellowship are exempted from appearing for the entrance examination provided that they submit the proof of passing of these examinations. But they will have to appear for the interview. **The candidates who have only passed NET / Any other Test for Lecturership / Assistant Professorship have to appear in the SLIET Entrance Test (SET)-2012.**

(II) The Entrance Test will assess the depth of the candidateôs knowledge of the relevant subject.

(III) **MERIT List (in case of candidates appearing for the SLIET Entrance Test [SET-VIII]):**

(a) Total percentage of marks secured in the Post Graduate Degree Examination will be converted out of 50.
(b) Total marks secured in the SLIET Entrance test (SET-VIII) will be converted out of 50.
(c) The marks secured in the interview out of 50.
(d) Merit list will be prepared based on the total marks [(a)+(b)+(c)] secured by the candidate).

(IV) **MERIT List (in case of candidates exempted from appearing the Entrance Test) :**

(a) The merit list will be prepared on the basis of:
(i) Total percentage of marks* secured in National Level Test (converted out of 50).
(ii) Post Graduate examination marks (converted out of 50).
(iii) The marks secured in the interview (converted out of 50).
(iv) Total marks will be out of 150.

*In case no marks / grade is mentioned on the Certificate of National Level Test and only qualifying criterion is there, then such candidate will be awarded 50 marks against this component [8(d) (IV) a(i)] to calculate the overall merit.

If the Post Graduate Degree is awarded without percentage, class / grade point, then his / her merit will be decided on the basis of total percentage of marks secured in National Level Test / SET-VIII converted out of 50 and the marks secured in the interview out of 100 marks.

(V) The interview will be applicable to all the candidates. Admission will be given on the basis of the combined merit list prepared on the basis of above (III), (IV) and recommendations of interviewing selection panel in each department.
(VI) Part-time admissions are meant for regular employees only.
(VII) All part-time admissions shall be valid on production of No Objection Certificate (NOC) from present employer.
(VIII) Decision of interview selection panel will be final in respect of suitability of candidate and his / her qualifications for given department.
(IX) The selected candidate can join the institute strictly as per the academic calendar of the Institute after receiving an offer letter. The merit list for admission to Ph.D. programmes will be valid for an academic year i.e. 2012-13.
(X) **Course Work :** All the regular Ph.D. candidates will have to complete the courses within one year from his/her date of registration. In case of part time students, they have to complete the course work within two years. The course RM-10000 Research Methodology is compulsory for all the Ph.D. candidates enrolled as per the notification by the UGC (The Gazette of India, July 11, 2009).
(XI) The ordinances, rules & regulations for Ph.D. programmes of SLIET, Longowal shall be applicable to all the successful candidates as in force time to time.

(e) Entrance Test Schedule :

Test	Date	Time
SET-VIII (Ph.D.)	2nd June, 2012	14.30 ï 17.00 Hours

(f) FEE STRUCTURE FOR Ph.D. PROGRAMME FOR ACADEMIC YEAR 2012-2013

REGULAR STUDENTS

	₹
A. REFUNDABLE FEES (Without any interest):	
Caution Money Institute/Hostel/Mess	**5,000.00**
B. NON – REFUNDABLE FEE(At the time of Admission):	
Admission Fee /Registration Fee	1,000.00
Identity Card	50.00
Convocation Fee	100.00
Swimming Pool Fee	160.00
Transport Fees	300.00
Student Welfare Fund	1,200.00
Medical Fee	300.00
Magazine Charges & Library Activities	600.00
Cable T.V. Charges	150.00
Library Fee	300.00
Alumni Association Fee	150.00
Total	**4,310.00**
C. OTHER FEE (PER SEMESTER Non-refundable)	
Tuition Fee	2,500.00
Sports Fee & Extra Curricular Activities Fee	300.00
Examination FeeÀ	4,000.00
Total	**6,800.00**
D. HOSTEL FEE (PER SEMESTER Non-refundable) §ú	
Hostel Seat Rent & Common Room Charges	600.00
Electricity & Water Charges	560.00
Hostel Establishment Charges	350.00
Internet Charges	600.00
Total	**2,110.00**
GRAND TOTAL (A+B+C+D):	**18,220.00**

PART TIME STUDENTS

A. REFUNDABLE FEES: (Without any interest)	₹
Caution Money Institute/Hostel/Mess §	**5,000**.00
B. NON – REFUNDABLE FEE(At the time of Admission):	
Enrolment fee	1,000.00
C. OTHER FEE (PER SEMESTER Non-refundable)	
Tuition Fee	2,500.00
Examination Fee À	4,000.00
TOTAL (A+B+C):	**12,500.00**

ÀTo be deposited at the time of thesis submission and it includes postal charges
§ Not applicable to institute employees and day-scholars.
ú Self financed students requiring hostel facility have to pay hostel fee as mentioned at D above.

Note: The fee structure may be revised from time to time with the approval of competent authority. Any exemption, in any type of fee shall be as per Rules & Regulations for Ph.D. of SLIET Longowal.

SYLLABUS OF SLIET ENTRANCE TEST (SET-VIII)
For admission to Ph.D. Programme-2012

Pattern of SET-VIII

SLIET Entrance Test (SET-VIII) for admission to Ph.D. Programme will consist of one paper of two and half hours duration. This paper will have 150 objective type questions of 150 marks.

Note : Answers of the objective type questions are to be filled in the OMR answer sheet given separately during the Examination. <u>There will be 25% negative marking for wrong answers</u>.

SYLLABUS

Marks: 150 (150 questions) **Time : 2½ Hours**

Ph.D. (Chemical Technology)

Marks: 150 (150 questions)

Process Calculations and Thermodynamics:
Laws of conservation of mass and energy; use of tie components; recycle, bypass and purge calculations; degree of freedom analysis. First and Second laws of thermodynamics.
First law application to close and open systems. Second law and Entropy, Thermodynamic properties of pure substances: equation of state and departure function, properties of mixtures: partial molar properties, fugacity, excess properties and activity coefficients; phase equilibria: predicting VLE of systems; chemical reaction equilibria.

Fluid Mechanics and Mechanical Operations:
Fluid statics, Newtonian and non-Newtonian fluids, Bernoulli equation, Macroscopic friction factors, energy balance, dimensional analysis, shell balances, flow through pipeline systems, flow meters, pumps and compressors, packed and fluidized beds, elementary boundary layer theory, size reduction and size separation; free and hindered settling; centrifuge and cyclones; thickening and classification, filtration, mixing and agitation; conveying of solids.

Heat Transfer:
Conduction, convection and radiation, heat transfer coefficients, steady and unsteady heat conduction, boiling, condensation and evaporation; types of heat exchangers, evaporators and their design.

Mass Transfer:
Fick's law, molecular diffusion in fluids, mass transfer coefficients, film, penetration and surface renewal theories; momentum, heat and mass transfer analogies; stagewise and continuous contacting and stage efficiencies; HTU & NTU concepts design and operation of equipment for distillation, absorption, leaching, liquid-liquid extraction, drying, humidification, dehumidification and adsorption.

Chemical Reaction Engineering:
Theories of reaction rates; kinetics of homogeneous reactions, interpretation of kinetic data, single and multiple reactions in ideal reactors, non-ideal reactors; residence time distribution, single parameter model; non-isothermal reactors; kinetics of heterogeneous catalytic reactions; diffusion effects in catalysis.

Instrumentation and Process Control:
Measurement of process variables; sensors, transducers and their dynamics, transfer functions and dynamic responses of simple systems, process reaction curve, controller modes (P, PI, and PID); control valves; analysis of closed loop systems including stability, frequency response and controller tuning, cascade, feed forward control.

Plant Design and Economics:
Process design and sizing of chemical engineering equipment such as compressors, heat exchangers, ultistage contactors; principles of process economics and cost estimation including total annualized cost, cost indexes, rate of return, payback period, discounted cash flow, optimization in design.

Chemical Technology:
Inorganic chemical industries; sulfuric acid, NaOH, fertilizers (Ammonia, Urea, SSP and TSP); natural products industries (Pulp and Paper, Sugar, Oil, and Fats); petroleum refining and petrochemicals; polymerization industries; polyethylene, polypropylene, PVC and polyester synthetic fibers.

Ph.D. (Chemistry)

Marks: 150 (150 questions)

Physical Chemistry

Basic principles and applications of quantum mechanics ï hydrogen atom, angular momentum; Basics of atomic structure, electronic configuration, shapes of orbitals, Hydrogen atom spectra; Theoretical treatment of atomic structures and chemical bonding; Chemical applications of group theory; Basic principles and application of spectroscopy ï rotational, vibrational, electronic, Raman, ESR, NMR; Chemical thermodynamics; Phase equilibria; Chemical equilibria; Electrochemistry ï Nernst equation, electrode kinetics, electrical double layer, Debye-Hückel theory; Chemical kinetics ï empirical rate laws, Arrhenius equation, theories of reaction rates, determination of reaction mechanisms, experimental techniques for fast reactions; Concepts of catalysis; Polymer chemistry; Molecular weights and their determinations; Kinetics of chain polymerization; Solids - structural classification of binary and ternary compounds, diffraction techniques, bonding, thermal, electrical and magnetic properties; Colloids and surface phenomena.

Inorganic Chemistry

Chemical periodicity; Structure and bonding in homo- and heteronuclear molecules, including shapes of molecules; Concepts of acids and bases; Chemistry of the main group elements and their compounds. Allotropy, synthesis, bonding and structure; Chemistry of transition elements and coordination compounds ï bonding theories, spectral and magnetic properties, reaction mechanisms; Inner transition elements ï spectral and magnetic properties, analytical applications; Organometallic compounds - synthesis, bonding and structure, and reactivity; Organometallics in homogenous catalysis; Cages and metal clusters; Analytical chemistry- separation techniques. Spectroscopic electro- and thermoanalytical methods; Bioinorganic chemistry ï photosystems, porphyrines, metalloenzymes, oxygen transport, electron- transfer reactions, nitrogen fixation; Physical characterisation of inorganic compounds by IR, Raman, NMR, EPR, Mössbauer, UV-, NQR, MS, electron spectroscopy and microscopic techniques; Nuclear chemistry ï nuclear reactions, fission and fusion, radio-analytical techniques and activation analysis.

Organic Chemistry

IUPAC nomenclature of organic compounds; Principles of stereochemistry, conformational analysis, isomerism and chirality; Reactive intermediates and organic reaction mechanisms; Concepts of aromaticity; Pericyclic reactions; Named reactions; Transformations and rearrangements; Principles and applications of organic photochemistry; Free radical reactions; Reactions involving nucleophotic carbon intermediates; Oxidation and reduction of functional groups; Common reagents (organic, inorganic and organometallic) in organic synthesis; Chemistry of natural products such as steroids, alkaloids, terpenes, peptides, carbohydrates, nucleic acids and lipids; Selective organic transformations ï chemoselectivity, regioselectivity, stereoselectivity, enantioselectivity; Protecting groups; Chemistry of aromatic and aliphatic heterocyclic compounds; Physical characterisation of organic compounds by IR, UV-Vis, MS, and NMR.

Ph.D. (Computer Science & Engineering)

Marks: 150 (150 questions)

Programming Concepts: Programming in C; Functions, Recursion, Parameter passing, Scope, Binding; Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary search trees, Binary heaps.

Theory of Computation: Regular languages and finite automata, Context free languages and Push-down automata, Recursively enumerable sets and Turing machines, NP completeness. Distributed Computing, Introduction to Grid and Cloud Computing, Issues of Grid and Cloud Computing.

Digital Logic: Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Number representation and computer arithmetic (fixed and floating point).

Computer Organization and Architecture: Machine instructions and addressing modes, ALU and data-path, CPU control design, Memory interface, I/O interface (Interrupt and DMA mode), Instruction pipelining, Cache and main memory, Secondary storage.

Algorithms: Analysis, Asymptotic notation, Notions of space and time complexity, Worst and average case analysis; Design: Greedy approach, Dynamic programming, Divide-and-conquer; Tree and graph traversals, Connected components, Spanning trees, Shortest paths; Hashing, Sorting, Searching.

Operating System: Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, CPU scheduling, Memory management and virtual memory, File systems, I/O systems, Protection and security.

Databases: ER-model, Relational models, Database design (integrity constraints, normal forms), Query languages (SQL), Transactions and concurrency control. Data Warehouse environment, Architecture of a data warehouse methodology" analysis, design, construction and administration, Extracting models and patterns from large databases, data mining techniques, regression, clustering, summarization, dependency modeling, link analysis, sequencing analysis, mining scientific and business data.
Computer Networks: LAN technologies (Ethernet, Token ring), Flow and error control techniques, Routing algorithms, Congestion control, TCP/UDP and sockets, Basic concepts of hubs, switches, gateways, and routers. Mobile Ad-hoc Networks, Technologies for Ad-hoc Network, Issues in Ad-hoc wireless Networks, IEEE 802.11 Basic Sensor Network Architectural Elements, Applications of Sensor Networks, Comparison with Wireless Networks, Challenges and Hurdles. Architecture of Wireless Sensor Networks (WSNs), Hardware components
Image Processing: Digital Image Fundamentals, image formation, geometric and photometric models, digitization including sampling, quantization and digital image visual details.

Ph.D. (Electrical and Instrumentation Engineering)

Marks: 150 (150 questions)

Electrical Technology and Networks: Introduction to electrical systems, DC and AC circuits, basic electrical components, electromagnetism alternating quantities, AC power, single phase series and parallel circuits, resonance circuit, Comparison between Magnetic and Electric circuits, Electromagnetic Induction, Magnetic Effects of Electric Current, Current carrying conductor in Magnetic field, Law of Electromagnetic Induction, Self Inductance, Mutual Inductance ,Coupling Coefficient between two magnetically coupled Circuits, Transformer:principle,construction,working,efficiency,application. D.C. Generator: principle, construction, working, application, D.C. Motor: principle, construction, working, application. Three phase Induction Motor: principle, construction, working, application. Nodal and mesh analysis, network theorems, superposition. Thevenin, Norton, reciprocity, Millmanôs, Tellegenôs theorems, star-delta transformation, steady state sinusoidal analysis using phasors, Fourier series, linear constant coefficient differential and difference equations; time domain analysis and frequency domain analysis of RLC series and parallel circuits, convolution, 2-port network parameters, driving point and transfer functions, state equation for networks, attenuators (lattice, T-type, P-type, L-type, ladder type, balanced), conventional filters, passive network synthesis (positive real functions, LC network, synthesis of dissipative network, two terminal R-L and R-C network).
Electronics Principles: Characteristics and equivalent circuits (large and small signal) of diodes (pn junction, zener, schottky, varactor), BJT, JFETs, thyristor, UJT, and MOSFET; clipping, clamping, rectifier; biasing and bias stability of transistor and FET amplifiers, single and multistage coupling, differential, operational, feedback and power. Analysis of amplifiers, frequency response of amplifiers. op-amp circuits, filters, sinusoidal oscillators, criterion of oscillation, function generators and wave-shaping circuits, power supplies, display units.
Power Electronics- Introduction to thyristor family V-I characteristics of SCR, SUS, PUT, SCS, GTO, LASCR, DIAC and TRIAC. Principle of operation of SCR. Two transistor analogy. Turn on methods of a thyristor Switching characteristics of thyristors during turn-on and turn-off. Gate characteristics. Firing of thyristors. Gate triggering circuits. Series and parallel, operation of SCRs and their triggering circuits. Thyristor specifications; such as latching current and bolding current, dv/dt and di/dt, PTV etc. Protection of SCR from over voltage and over current. Snubber circuits. Power dissipation. Introduction to phase angle control. Single phase half wave controlled rectifiers. Single phase half controlled and full controlled bridge rectifiers. Three phase full controlled bridge rectifiers. Effect of resistive, inductive and resistive cum inductive loads. Basic circuit and principle of operation of Dual Converter, circulating current mode and non-circulating current mode of operation. Introduction to inverter. Operating principle and already state analysis of single phase, voltage source, bridge inverter. Modified Mcmurray half-bridge and full bridge inverter. Three phase bridge inverter. Voltage control (PWM control etc.) and reduction of harmonics in the inverter output voltage.
Digital electronics and microprocessors : Number systems and arithmetic (binary, Gray , BCD , Excess-3). Boolean algebra, minimization of Boolean functions, logic gates, IC families, combinational and sequential circuits, sample and hold circuits, ADCs and DACs, semiconductor memories, ALU design, microprocessor (8085), architecture, programming, memory and I/O interfacing chips (8155, 8255, 8253, 8251, 8257, 8279, 8259), introduction to microprocessor 8086 and microcontroller 8051.
Transducers and Instrumentation: Measurement of voltage, current, power, energy and power factor for Bridges and potentiometers, PMMC moving iron, dynamometer and induction type instruments, instrument transformer, digital voltmeters and multi-meters, phase, time and frequency measurement, Q-meter, oscilloscope, potentiometric recorders, error analysis, transducers-elastic, resistive, inductive, capacitive, thermo-electric, piezo-electric, photo-electric, electro-mechanical, electro-chemical and ultrasonic measurement of displacement, velocity, acceleration, shock, vibration, force, torque, power, strain, stress, pressure, flow, temperature, humidity, viscosity and density.

Control Theory : Basic control system components, block diagram description, signal flow graphs, reduction of block diagrams, input test signals, properties of systems, linearity, time-invariance, stability, open loop and closed loop (feedback) systems, properties of linear time-invariant (LTI) systems, transient and steady state analysis of LTI system and frequency response. LTI control system analysis, root loci, Routh Hurwitz criterion, polar plots, Bode and Nyquist plots, elements of lead and lag compensations, state space representation of systems, state equations, decomposition, direct, cascade and parallel, solution of state equations, Laplace method, Calay-Hamilton method, diagonalization method and Sylvester method. Digital control, Configuration of the basic Digital control scheme, Principles of signal conversion, Basic Discrete-Time signals, Time-Domain Models for Discrete ï Time Systems, Transfer function Model, Stability in the Z-Plane & Jury stability criterion, Sampling as impulse modulation, Sampled spectra & Aliasing, Filtering, Practical aspects of the choice of sampling rate, Principles of Discretization,

Programming concepts: Algorithms, programming in C and C++, data types, console/file input and output, arrays, structures, pointers, functions, command line arguments, passing of parameters from one function to other, concept of OOPs.

Ph.D. (Electronics & Communication Engineering)

Marks: 150 (150 questions)

Electronic Devices and Circuits: Semiconductor physics, diffusion current, drift current, mobility, and resistivity. Generation and recombination of carriers. p-n junction diode, Zener diode, tunnel diode, BJT, JFET, MOS capacitor, MOSFET, LED, p-i-n and avalanche photo diode, Basics of LASERs. Device technology: integrated circuits fabrication process, oxidation, diffusion, ion implantation, photolithography. Small Signal Equivalent circuits of diodes, BJTs, MOSFETs and analog CMOS. Simple diode circuits, clipping, clamping, rectifier. Biasing and bias stability of transistor and FET amplifiers. Amplifiers: single and multi-stage, differential and operational, feedback, and power. Frequency response of amplifiers. Simple op-amp circuits. Filters. Sinusoidal oscillators; criterion for oscillation; single-transistor and op-amp configurations. Function generators and wave-shaping circuits, 555 Timers. Power supplies.

Digital Systems: Boolean algebra, minimization of Boolean functions; logic gates; digital IC families (DTL, TTL, ECL, MOS, CMOS). Combinatorial circuits: arithmetic circuits, code converters, multiplexers, decoders, PROMs and PLAs. Sequential circuits: latches and flip-flops, counters and shift-registers. Sample and hold circuits, ADCs, DACs. Semiconductor memories. Microprocessor(8085): architecture, programming, memory and I/O interfacing.

Signal Processing: Laplace transform, continuous-time and discrete-time Fourier series, continuous-time and discrete-time Fourier Transform, DFT and FFT, z-transform. Sampling theorem. Linear Time-Invariant (LTI) Systems: definitions and properties; causality, stability, impulse response, convolution, poles and zeros, parallel and cascade structure, frequency response, group delay, phase delay. Signal transmission through LTI systems.

Control Theory: Basic control system components; block diagrammatic description, reduction of block diagrams. Open loop and closed loop (feedback) systems and stability analysis of these systems. Signal flow graphs and their use in determining transfer functions of systems; transient and steady state analysis of LTI control systems and frequency response. Tools and techniques for LTI control system analysis: root loci, Routh-Hurwitz criterion, Bode and Nyquist plots. Control system compensators: elements of lead and lag compensation, elements of Proportional-Integral-Derivative (PID) control. State variable representation and solution of state equation of LTI control systems.

Communication Systems: Random signals and noise: probability, random variables, probability density function, Auto-correlation, power spectral density. Analog communication systems: amplitude and angle modulation and demodulation systems, spectral analysis of these operations, superheterodyne receivers; elements of hardware, realizations of analog communication systems; signal-to-noise ratio (SNR) calculations for amplitude modulation (AM) and frequency modulation (FM) for low noise conditions. Fundamentals of information theory and channel capacity theorem. Digital communication systems: pulse code modulation (PCM), differential pulse code modulation (DPCM), digital modulation schemes: amplitude, phase and frequency shift keying schemes (ASK, PSK, FSK), matched filter receivers, bandwidth consideration and probability of error calculations for these schemes. Basics of TDMA, FDMA and CDMA, wireless and cellular communication, GSM, wireless networks and sensors.

Electromagnetics & Microwaves: Elements of vector calculus: divergence and curl; Gaussô and Stokesô theorems, Maxwellôs equations: differential and integral forms. Wave equation, Poynting vector. Plane waves: propagation through various media; reflection and refraction; phase and group velocity; skin depth. Transmission lines: characteristic impedance; impedance transformation; Smith chart; impedance matching; S parameters, pulse excitation. Waveguides: modes in rectangular waveguides; boundary conditions; cut-off frequencies; dispersion relations. Basics of propagation in dielectric waveguide and optical fibers. Strip line structures, Basics of Antennas: Dipole antennas, antenna parameters, microwave components and circuits.

Ph.D. (English)

Marks: 150 (150 questions)

Unit-1 Literary Critical Theory: Main features and major exponents/works

1. New Criticism
2. Stylistics
3. Structuralism
4. Deconstruction
5. Discourse Analysis
6. Feminism
7. Post Colonialism

Unit-II Study of Language

1. Study of Language
2. Speech Mechanism
3. Vowels
4. Consonants
5. Varieties of Language: Dialects, Register etc.
6. ELT

Unit-III Indian English Literature

1. Nissim Ezekiel, Kamala Das, A.K. Ramanujan
2. Mulk Raj Anand, Raja Rao, R.K. Narayan, Bhabani Bhattacharya, Manohar Magonkar
3. Anita Desai, Arun Joshi, Nayantara Sehgal, Shashi Deshpande, Shobha De, Amitav Ghosh, Kiran Desai, Githa Hariharan
4. Girish Karnad, Mahesh Dattani, Vijay Tendulkar
5. Nirad C. Chaudhary

UNIT-IV Drama

1. British Drama
2. Greek Drama
3. Shakespearean Drama
4. Jacobean Drama
5. Restoration Drama
6. Absurd Drama
7. American Drama

Unit-V: Poetry

1. Chaucer
2. Metaphysical Poetry
3. Neo Classical Poetry
4. Romantic Poetry
5. Victorian Poetry
6. Post Modernist Poetry
7. American Poetry

Unit-VI: Fiction

1. Women Novelists
2. Victorian Novelists
3. Early 20th Century Novelists
4. English Novelists of Post 1950ès
5. American Novelists

Unit-VII: Diasporic Literature

2. V.S. Naipaul
3. Salman Rushdie
4. Bharti Mukharjee
5. Vikram Seth
6. Rohinton Mistri

Unit-VIII Post Colonial Literature

1. Chinua Achebe
2. Wole Soyinka
3. Nadine Gordimer
4. Michael Ondaatje
5. Margaret Atwood

Ph.D. (Food Engineering &Technology)

Marks: 150 (150 questions)

Physico-chemical characteristics of food constituents, Changes in food constituents during processing and their determination methods, Enzymes and their applications in food processing. Principles of biochemistry, Cell biochemistry, Metabolism of carbohydrates, lipids and proteins. Microbial products, Alcoholic beverages, Instrumentation and process control in beverage industry. Techniques of genetic engineering, Enzyme technology, Tissue culture technology, Environmental biotechnology. Techniques of strain development, Microbial growth, Food spoilage, Microbial products. Media sterilization, Air Sterilization, Enzyme Kinetics, Bioreactor fermenter, Aeration and Agitation.

Material and energy balance, Flow of fluids, Thermal processing, Freezing, Fluidization, Refrigeration and air conditioning, Leaching & Extraction. Modes of heat transfer-Principles and practices in food engineering, Heat exchangers and their application in food processing, Mass transfer-Fick's law of diffusion of mass transfer, natural and forced convective mass transfer. Properties of packaging materials, Packaging equipment and machinery, Food packaging systems, Packaging standards and Role of packing in environmental pollution, Storage requirements and structures, Handling equipments, Management Practices. Cleaning and sanitation in dairy industries, Homogenization, Pasteurization, Sterilization, Evaporation and Drying of milk, Utilization of byproducts.
Extraction and preservation of fruit juices, jam, jelly and marmalades, Intermediate moisture products, Canning of fruits and vegetables, Drying and Dehydration of fruits & vegetables, Freezing, Chutney, Pickles and tomato products, Non-alcoholic beverages, Utilization of byproducts. Meat processing and preservation, Sausage, Meat Plant sanitation and safety, Fish processing and preservation, Fish products, Utilization of by-products. Structure and composition, Wheat milling technology, Rice Milling, Milling of pulses, Cereal based extruded products, Utilization of by-products.
Quality attributes and measurements, Consistency and viscosity, Modern techniques of food analysis, Measurements of various properties, sensory quality and analysis, Food laws and regulations.

Ph.D. (Management)

Marks: 150 (150 questions)

Unit-1

Managerial Economics-Demand Analysis
-Production Function
-Cost-Output relation
-Market Structures
-Pricing Theories
-Capital Budgeting

The concept and significance of organizational behavior
Personality-Perception-Values-Attitude-Learning & Motivation
Communication-Leadership-Managing Change
-Organizational Development
-Concepts & perspectives on HRM
HRP- Objectives, Process & Techniques
Job Analysis-Selection-Induction-Training & Development
Performance Appraisal & Evaluation
Industrial Relations & Trade Unions
Dispute resolution and Grievance management

Unit-2

Financial Management-Nature & Scope
Capital Budgeting Decisions
Capital Structure & Cost of capital
Dividend policy-Determinants
Mergers & Acquisitions

Marketing Information System & marketing research
Demand measurement & Forecasting
Market Segmentation-Targeting & positioning
Product life cycle
Pricing methods & strategies
Marketing Management, Marketing Mix
Customer Relation shift Management
Role & Scope of Production management
Facility Locations- Layout Managing & Analysis
Production Scheduling
Statistical Quality Control

Unit-3

Probability Theory, Probability, Distribution-Binomial, Poisson, Normal
Correlation & Regression Analysis.
Sampling Theory & Sampling Distribution
Tests of Hypothesis-t, Z,F, chi-square tests
Concepts of corporate streategy-Ans offûs growth vector, BCG Model, Porters generic strategies
Competitive strategy & Corporate Strategy
Competitive advantage of nations
RTP & WTO
Innovation & Entrepreneurship
Concept of Govt. Policy for promotion of small & Tiny Enterprises
Detailed Business Plan Preparation ï Managing small industries ï sickness in small enterprises

Unit-4

Ethics & Management System
Value based organizations, Ethical pressure on individual in organization Environmental ethics, Social responsibilities of Business
Corporate Governance
Research-Meaning, types, objectives, process survey based research-types of survey-specific-periodic & transaction drivers
Identification of research problem analysis of research problem
-Categorization & sampling
Planning a survey Project-resources budget-schedule
Preparation of Questionnaire
-Data Collection analysis & compilation of Survey report.

Ph.D (Mathematics)

Marks: 150 (150 questions)

Linear Algebra: Finite dimensional vector spaces; Linear transformations and their matrix representations, rank; systems of linear equations, eigen values and eigen vectors, minimal polynomial, Cayley-Hamilton theroem, diagonalisation, Hermitian, Skew-Hermitian and unitary matrices; Finite dimensional inner product spaces, Gram-Schmidt orthonormalization process, self-adjoint operators.
Complex Analysis: Analytic functions, conformal mappings, bilinear transformations; complex integration:Cauchy's integral theorem and formula; Liouville's theorem, maximum modulus principle; Taylor and Laurent's series; residue theorem and applications for evaluating real integrals.
Real Analysis: Sequences and series of functions, uniform convergence, power series, Fourier series, functions of several variables, maxima, minima; Riemann integration, multiple integrals, line, surface and volume integrals, theorems of Green, Stokes and Gauss; metric spaces, completeness, Weierstrass approximation theorem, compactness; Lebesgue measure, measurable functions; Lebesgue integral, Fatou's lemma, dominated convergence theorem.

Ordinary Differential Equations: First order ordinary differential equations, existence and uniqueness theorems, systems of linear first order ordinary differential equations, linear ordinary differential equations of higher order with constant coefficients; linear second order ordinary differential equations with variable coefficients; method of Laplace transforms for solving ordinary differential equations, series solutions; Legendre and Bessel functions and their orthogonality.
Algebra: Normal subgroups and homomorphism theorems, automorphisms; Group actions,Sylow's theorems and their applications; Euclidean domains, Principle ideal domainsand unique factorization domains. Prime ideals and maximal ideals in commutative rings; Fields, finite fields.
Functional Analysis: Banach spaces, Hahn-Banach extension theorem, open mapping and closed graph theorems, principle of uniform boundedness; Hilbert spaces, orthonormal bases, Riesz representation theorem, bounded linear operators.
Numerical Analysis: Numerical solution of algebraic and transcendental equations: bisection, secant method, Newton-Raphson method, fixed point iteration; interpolation: error of polynomial interpolation, Lagrange, Newton interpolations; numerical differentiation; numerical integration: Trapezoidal and Simpson rules, Gauss Legendre quadrature, method of undetermined parameters; least square polynomial approximation; numerical solution of systems of linear equations: direct methods (Gauss elimination, LU decomposition); iterative methods (Jacobi and Gauss-Seidel); matrix eigenvalue problems: power method, numerical solution of ordinary differential equations: initial value problems: Taylor series methods, Euler's method, Runge-Kutta methods.
Partial Differential Equations: Linear and quasilinear first order partial differential equations, method of characteristics; second order linear equations in two variables and their classification; Cauchy, Dirichlet and Neumann problems; solutions of Laplace, wave and diffusion equations in two variables; Fourier series and Fourier transform and Laplace transform methods of solutions for the above equations.
Mechanics: Generalized coordinates, Lagrangeôs equations, Hamiltonôs canonical equations,Hamiltonôs Principle and principle of least action, Two dimensional motion of rigid bodies, Eulerôs dynamical equations for the motion of rigid body about an axis, theory of small oscillations.
Topology: Basic concepts of topology, product topology, connectedness, countability and separation axioms, Urysohn's Lemma. Compactness.

Probability and Statistics: Probability space, conditional probability, Bayes theorem, independence, Random variables, joint and conditional distributions, standard probability distributions and their properties, expectation, conditional expectation, moments, Sampling distributions, Testing of hypotheses, standard parametric test based on normal χ^2 ,t, F-distributions.
Linear programming: Linear programming problem and its formulation, convex sets and their properties, graphical method, basic feasible solution, simplex method, big-M and two phase methods; infeasible and unbounded LPP's, alternate optima; Dual problem and duality theorems, Balanced and unbalanced transportation problems, u -u method for solving transportation problems; Hungarian method for solving assignment problems.
Calculus of Variation and Integral Equations: Variation problems with fixed boundaries; sufficient conditions for extremum, linear integral equations of Fredholm and Volterra type, their iterative solutions.

Ph.D. (Mechanical Engineering)

Marks: 150 (150 questions)

Part- A (20 % of Content)

Linear Algebra: Matrix algebra, Systems of linear equations, Eigen values and eigen vectors.
Calculus: Functions of single variable, Limit, continuity and differentiability, Mean value theorems, Partial derivatives, Total derivative, Maxima and minima, Gradient, Divergence and Curl, Vector identities, Directional derivatives, Line, Surface and Volume integrals, Stokes.
Differential equations: First order and higher order linear differential equations with constant coefficients, Cauchy's and Euler's equations, Laplace transforms, Solutions of one dimensional heat and wave equations and Laplace equation.
Complex variables: Analytic functions, Cauchy's integral theorem.
Probability and Statistics: Definitions of probability and sampling theorems, Conditional probability, Mean, median, mode and standard deviation, Random variables, Poisson, Normal and Binomial distributions.
Numerical Methods: Numerical solutions of linear and non-linear algebraic.

Part-B (30 % of content)

Engineering Materials: Structure and properties of engineering materials and their applications; effect of strain, strain rate and temperature on mechanical properties of metals and alloys; heat treatment of metals and alloys, its influence on mechanical properties.

Engineering Mechanics: Free body diagrams and equilibrium; trusses and frames; virtual work; kinematics and dynamics of particles and of rigid bodies in plane motion, including impulse and momentum (linear and angular) and energy formulations; impact.

Strength of Materials: Stress and strain, stress-strain relationship and elastic constants, Mohr's circle for plane stress and plane strain, thin cylinders; shear force and bending moment diagrams; bending and shear stresses; deflection of beams; torsion of circular shafts; Euler's theory of columns; strain energy methods; thermal stresses.

Theory of Machines and Design: Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of slider-crank mechanism; gear trains; flywheels.

Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; *principles* of the design of machine elements such as bolted, riveted and welded joints, shafts, spur gears, rolling and sliding contact bearings, brakes and clutches.

Vibrations: Free and forced vibration of single degree of freedom systems; effect of damping; vibration isolation; resonance, critical speeds of shafts.

Thermal Engineering: Fluid mechanics - fluid statics, Bernoulli's equation, flow through pipes, equations of continuity and momentum; thermodynamics - zeroth, first and second law of thermodynamics, thermodynamic system and processes, calculation of work and heat for systems and control volumes; air standard cycles; basics of internal combustion engines and steam turbines; heat transfer - fundamentals of conduction, convection and radiation, heat exchangers.

Part-C (50 % of Content)

Metal Casting: Casting processes - types and applications; patterns - types and materials; allowances; moulds and cores - materials, making, and testing; casting techniques of cast iron, steels and nonferrous metals and alloys; solidification; design of casting, gating and risering; casting inspection, defects and remedies.

Metal Forming: Stress-strain relations in elastic and plastic deformation; concept of flow stress, deformation mechanisms; hot and cold working - forging, rolling, extrusion, wire and tube drawing; sheet metal working Processes, analysis of rolling, forging, extrusion and wire /rod drawing; metal working defects.

Advanced Welding Processes: Welding processes - manual metal arc, MIG, TIG, plasma arc, submerged arc, electro slag, thermit, resistance, forge, friction, and explosive welding, inspection of welded joints, defects and remedies; - ultrasonic, electron beam, laser beam; thermal cutting.

Machining and Machine Tool Operations: Basic machine tools; machining processes, mechanics of machining ,Merchant's analysis; selection of machining parameters; tool materials, tool wear and tool life, thermal aspects of machining, cutting fluids, machinability; principles and applications of nontraditional machining processes - USM, AJM, WJM, EDM and Wire cut EDM, LBM, EBM, PAM, CHM, ECM.

Metrology and Inspection: Limits, fits, and tolerances, interchangeability, selective assembly; linear and angular measurements by mechanical and optical methods, comparators; design of limit gauges; interferometry; measurement of straightness, flatness, roundness, squareness and symmetry; surface finish measurement; inspection of screw threads and gears; alignment testing of machine tools.

Computer Integrated Manufacturing: Basic concepts of CAD, CAM, CAPP, cellular manufacturing, NC, CNC, DNC, Robotics, FMS, and CIM. Principles of good product design, tolerance design; quality and cost considerations; product life cycle; concurrent engineering.

Facility Design: Facility location factors and evaluation of alternate locations; types of plant layout and their evaluation; computer aided layout design techniques; assembly line balancing; materials handling systems.

Production Planning and Inventory Control: Forecasting techniques ,aggregate production planning; MRP and MRP-II; order control and flow control; routing, scheduling and priority dispatching; push and pull production systems, concept of JIT manufacturing system; logistics, distribution, and supply chain management; inventory models,

Operations Research: Linear programming, simplex method, duality and sensitivity analysis; transportation and assignment models; network flow models, constrained optimization and Lagrange multipliers; simple queuing models; dynamic programming; simulation - manufacturing applications; PERT and CPM,

Quality Management: Quality - concept and costs, quality circles, quality assurance; statistical quality control, acceptance sampling, zero defects, six sigma; total quality management; ISO 9000; design of experiments - Taguchi method.

Reliability and Maintenance: Reliability, availability and maintainability; distribution of failure and repair times; determination of MTBF and MTTR, reliability models; system reliability determination; preventive maintenance and replacement, total productive maintenance - concept and applications.

Ph.D. (Physics)

Marks: 150 (150 questions)

I. **Mathematical Methods of Physics :**
Dimensional analysis; Vector algebra and vector calculus; Linear algebra, matrices, Cayley Hamilton theorem, eigenvalue problems; Linear differential equations; Special functions (Hermite, Bessel, Laguerre and Legendre); Fourier series, Fourier and Laplace transforms; Elements of complex analysis: Laurent series-poles, residues and evaluation of integrals; Elementary ideas about tensors; Introductory group theory, SU(2), O(3); Elements of computational techniques: roots of functions, interpolation, extrapolation, integration by trapezoid and Simpsonôs rule, solution of first order differential equations using Runge-Kutta method; Finite difference methods; Elementary probability theory, random variables, binomial, Poisson and normal distributions.

II. **Classical Mechanics**
Newtonôs laws; Phase space dynamics, stability analysis; Central-force motion; Two-body collisions, scattering in laboratory and centre-of-mass frames; Rigid body dynamics, moment of inertia tensor, non-inertial frames and pseudoforces; Variational principle, Lagrangian and Hamiltonian formalisms and equations of motion; Poisson brackets and canonical transformations; Symmetry, invariance and conservation laws, cyclic coordinates; Periodic motion, small oscillations and normal modes; Special theory of relativity, Lorentz transformations, relativistic kinematics and massï energy equivalence.

III. **Electromagnetic Theory**
Electrostatics: Gaussô Law and its applications; Laplace and Poisson equations, boundary value problems; Magnetostatics: Biot-Savart law, Ampere's theorem, electromagnetic induction; Maxwell's equations in free space and linear isotropic media; boundary conditions on fields at interfaces; Scalar and vector potentials; Gauge invariance; Electromagnetic waves in free space, dielectrics, and conductors; Reflection and refraction, polarization, Fresnelôs Law, interference, coherence, and diffraction; Dispersion relations in plasma; Lorentz invariance of Maxwellôs equations; Transmission lines and wave guides; Dynamics of charged particles in static and uniform electromagnetic fields; Radiation from moving charges, dipoles and retarded potentials.

IV. **Quantum Mechanics**
Wave-particle duality; Wave functions in coordinate and momentum representations; Commutators and Heisenberg's uncertainty principle; Matrix representation; Diracôs bra and ket notation; Schroedinger equation (time-dependent and time-independent); Eigenvalue problems such as particle-in-a-box, harmonic oscillator, etc.; Tunneling through a barrier; Motion in a central potential; Orbital angular momentum, Angular momentum algebra, spin; Addition of angular momenta; Hydrogen atom, spin-orbit coupling, fine structure; Time-independent perturbation theory and applications; Variational method; WKB approximation; Time dependent perturbation theory and Fermi's Golden Rule; Selection rules; Semi-classical theory of radiation; Elementary theory of scattering, phase shifts, partial waves, Born approximation; Identical particles, Pauli's exclusion principle, spin-statistics connection; Relativistic quantum mechanics: Klein Gordon and Dirac equations.

V. **Thermodynamic and Statistical Physics**
Laws of thermodynamics and their consequences; Thermodynamic potentials, Maxwell relations; Chemical potential, phase equilibria; Phase space, micro- and macrostates; Microcanonical, canonical and grand-canonical ensembles and partition functions; Free Energy and connection with thermodynamic quantities; First- and second-order phase transitions; Classical and quantum statistics, ideal Fermi and Bose gases; Principle of detailed balance; Blackbody radiation and Planck's distribution law; Bose-Einstein condensation; Random walk and Brownian motion; Introduction to nonequilibrium processes; Diffusion equation.

VI. **Electronics**
Semiconductor device physics, including diodes, junctions, transistors, field effect devices, homo and heterojunction devices, device structure, device characteristics, frequency dependence and applications; Optoelectronic devices, including solar cells, photodetectors, and LEDs; High-frequency devices, including generators and detectors; Operational amplifiers and their applications; Digital techniques and applications (registers, counters, comparators and similar circuits); A/D and D/A converters; Microprocessor and microcontroller basics.

VII. **Experimental Techniques and data analysis**

Data interpretation and analysis; Precision and accuracy, error analysis, propagation of errors, least squares fitting, linear and nonlinear curve fitting, chi-square test; Transducers (temperature, pressure/vacuum, magnetic field, vibration, optical, and particle detectors), measurement and control; Signal conditioning and recovery, impedance matching, amplification (Op-amp based, instrumentation amp, feedback), filtering and noise reduction, shielding and grounding; Fourier transforms; lock-in detector, box-car integrator, modulation techniques.

VIII. **Atomic & Molecular Physics**

Quantum states of an electron in an atom; Electron spin; Stern-Gerlach experiment; Spectrum of Hydrogen, helium and alkali atoms; Relativistic corrections for energy levels of hydrogen; Hyperfine structure and isotopic shift; width of spectral lines; LS & JJ coupling; Zeeman, Paschen Back & Stark effect; X-ray spectroscopy; Electron spin resonance, Nuclear magnetic resonance, chemical shift; Rotational, vibrational, electronic, and Raman spectra of diatomic molecules; Frank ï Condon principle and selection rules; Spontaneous and stimulated emission, Einstein A & B coefficients; Lasers, optical pumping, population inversion, rate equation; Modes of resonators and coherence length.

IX. **Condensed Matter Physics**

Bravais lattices; Reciprocal lattice, diffraction and the structure factor; Bonding of solids; Elastic properties, phonons, lattice specific heat; Free electron theory and electronic specific heat; Response and relaxation phenomena; Drude model of electrical and thermal conductivity; Hall effect and thermoelectric power; Diamagnetism, paramagnetism, and ferromagnetism; Electron motion in a periodic potential, band theory of metals, insulators and semiconductors; Superconductivity, type ï I and type - II superconductors, Josephson junctions; Defects and dislocations; Ordered phases of matter, translational and orientational order, kinds of liquid crystalline order; Conducting polymers; Quasicrystals.

X. **Nuclear and Particle Physics**

Basic nuclear properties: size, shape, charge distribution, spin and parity; Binding energy, semi-empirical mass formula; Liquid drop model; Fission and fusion; Nature of the nuclear force, form of nucleon-nucleon potential; Charge-independence and charge-symmetry of nuclear forces; Isospin; Deuteron problem; Evidence of shell structure, single-particle shell model, its validity and limitations; Rotational spectra; Elementary ideas of alpha, beta and gamma decays and their selection rules; Nuclear reactions, reaction mechanisms, compound nuclei and direct reactions; Classification of fundamental forces; Elementary particles (quarks, baryons, mesons, leptons); Spin and parity assignments, isospin, strangeness; Gell-Mann-Nishijima formula; C, P, and T invariance and applications of symmetry arguments to particle reactions, parity non-conservation in weak interaction; Relativistic kinematics.

APPENDIX - I

INSTRUCTIONS FOR FILLING ONLINE APPLICATION FORM AND SENDING THE REGISTRATION PAGE BY POST

A. Candidate shall log on to **www.sliet.ac.in / www.sliet.net.in** and click proceed from SET-2012.

B. Click on to **new registration** and for already register users, enter Login & Password.

C. Before you proceed to register yourself, you must ensure that you have read and understood the eligibility criteria & reservation policy for the COURSE / PROGRAMME you are applying.

D. Candidate should fill his / her basic details like Date of Birth (DOB), Address, State, City, Contact / Mobile Numbers and Email very carefully.

E. Choose your password at least 6-10 characters. Please remember your password and donôt share with others.

F. Before final submission of online Registration Form, read the declaration given in the website carefully and given your consent on it, failing which you will not be able to complete your registration. So, you must check the information details carefully before final submission of Registration Form.

G. Please note that after successfully submitting the Registration Form, the candidate will get a SMS on his / her Mobile that will ensure his/her provisional registration successfully with a Form Number and Password. For this, candidate should provide valid mobile number.

H. After successfully submitting Online Registration Form for SET-2012, kindly note down your Form Number for future reference. The processing of Application Form will begin only after the successful payment of Application Fee.

I. Select from a mode of fee payment and make the payment.

J. Once the payment is confirmed, the online Registration Page for PRINT shall be available to the candidate.

K. Take PRINT of Registration Page.

L. OVERWRITING, CUTTINGS, ERASING IN THE REGISTRATION PAGE OR INCOMPLETE REGISTRATION PAGE MAY LEAD TO REJECTION OF FORM AND SHOULD BE AVOIDED. ANY ERROR ARISING ON THIS ACCOUNT SHALL BE THE RESPONSIBILITY OF THE CANDIDATE.

M. The Registration Page duly filled in should be sent to THE CHAIRMAN SET-2012, SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY (SLIET), LONGOWAL ï 148106 (DISTT. SANGRUR), PUNJAB in the envelope by Registered/Speed Post only, so as to reach **positively by 30th April, 2012**. The candidate must retain photocopy of his / her filled in Registration Page for future correspondence, if required.

N. If a candidate submits more than one Registration Page, his / her candidature shall liable to be cancelled and debarred for future examination(s). No communication will be sent in this regard.

O. **Photograph :** Firmly affix two recent high contrast passport size coloured photograph (taken on or after 01.10.2011) with gum / fevicol (not to be pinned or stapled) in the space provided for it in the Registration Page. The photograph must indicate clearly the name of the candidate along with the date of taking the photograph. It should be without cap or goggles. Spectacles are allowed. **Polaroid photos are not acceptable.** Candidates not complying with these instructions or with unclear photograph are liable to be rejected. Candidates shall keep 10 identical photographs in reserve for use at the time of Entrance Examination / Counselling / Document Verification / Admission.

P. Request for change or correction of any information, once given in the Registration Page, shall not be entertained under any circumstances. The SLIET will not be responsible for any consequences arising out of non-acceptance of any correction / addition / deletion in any particular once filled in the application form, whatsoever the reasons may be.

APPENDIX - II

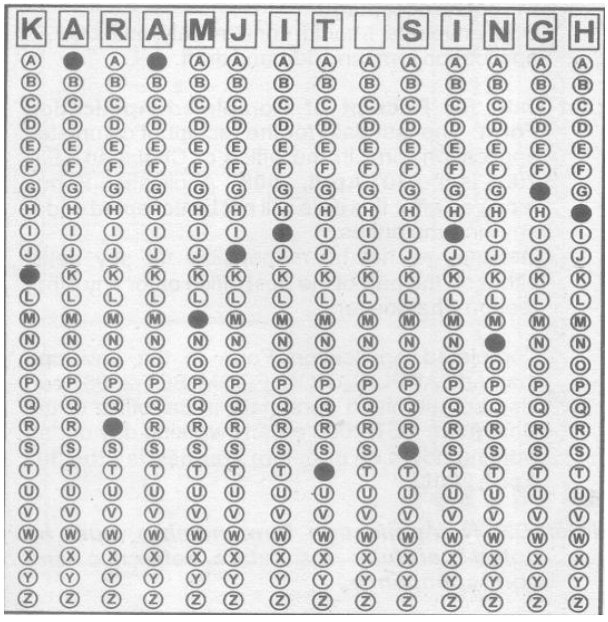
INSTRUCTIONS FOR FILLING-UP AND TO DESPATCH OFFLINE O.M.R. APPLICATION FORM

Please read carefully the INSTRUCTIONS given below before filling the OFFLINE Optical Mark Recognition (O.M.R.) Application Form

- Candidates should first write the relevant information in the boxes (□) ball point pen (blue / black) only, in BLOCK LETTERS. While writing name, leave one box blank between the first name and middle name, and between the middle name and surname. However, the corresponding circle (◯) are to be darkened completely using **HB Pencil** only, as the machine picks up only dark pencil marks. Do not use ink pen or ball pen to darken the circles.
- *Darken the circles very carefully. In case of any discrepancy in circle and the corresponding text, the circle marking will be taken as final.*
- Do not fold, staple, pin, wrinkle or scribble anything on the O.M.R. Application Form. Do not paste any piece of paper anywhere on top portion of the O.M.R. form.
- Options once filled by the candidate in the form cannot be changed at a later stage.
- Photograph, signature etc. will be scanned by a machine which reads only black images and from the specified areas of the form only. Your colour photograph must be of good quality and pasted inside the box. Ensure that you have given the correspondence address and have signed in the block number 13 and 14 respectively, in blue / black ink.

1. Name of the Candidate :

Write your name IN BLOCK LETTERS in full as entered in High School or equivalent Certificate in the boxes and darken the corresponding circles, as per example given below: KARAMJIT SINGH



2. Father's Name :

Write the name of your father IN BLOCK LETTERS in full as entered in High School or equivalent Certificate in the boxes and darken the corresponding circles.

3. Nationality :

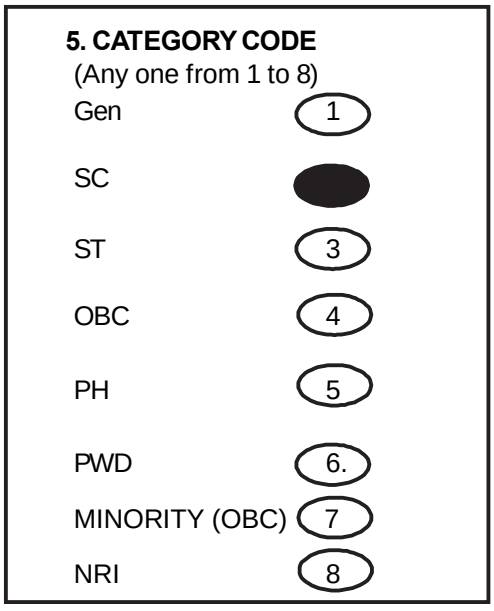
Fill-up appropriate circle for your nationality in the given space.

4. Sex :

Fill-up Male / Female circle as the case may be.

5. Category Code :

Fill-up the category code in the box provided. (Abbreviations : Gen = General; SC = Scheduled Caste; ST = Scheduled Tribe; OBC = Other Backward Classes; PH = Physically Handicapped; PWD = Person with disability). A candidate belonging to SC category will fill-up as shown below :



Please note that the benefit of only one category will be given, if applicable

6. Admission Sought For :

Fill-up appropriate circle for the course you are applying for.

7. Educational Qualification :

Fill-up appropriate circle for your qualification in the given space (Note that matriculation pass are eligible for Certificate, 10+2 pass are eligible for Diploma, Diploma pass are eligible for Degree, Degree pass are eligible for M.Tech./ MBA / M.Sc. programmes and Masterûs / Post-Graduate pass are eligible for Ph.D. Programmes **(however, detailed eligibility criteria for each programme is given in the corresponding Chapters)**.

8. State of Passing Qualifying Examination :

Fill-up the State from where you have passed the qualifying examination (refer 2.9.3(ii) in Chapter-II). The candidate is entirely responsible to prove his/her eligibility for claiming reservation under any of the reserved categories.

9. Choice for Degree Course :

The candidate appearing in SET-III must fill the choice of Degree Course. There are three GROUPS. **Please refer Table 5.1 in Chapter-V for selection of your GROUP.**

10. Choice of M.Tech. Course:

The students appearing in SET-VI must fill the choice of M.Tech. Course. The abbreviations for various M.Tech. Courses are :

POL = Polymer
ECE = Electronics & Communication Engineering
FET = Food Engineering & Technology
ICE = Instrumentation & Control Engineering
ME = Mechanical Engineering (Both for Manufacturing Systems Engineering and Welding & Fabrication)

11. Choice of MBA / M.Sc. Course:

The students appearing in SET-VII must fill the choice of MBA or M.Sc. Course. The Abbreviations used are as under:

MBA = Master of Business Administration
M.Sc. (Math) = M.Sc. (Mathematics)
M.Sc. (Chem.) = M.Sc. (Chemistry)
M.Sc. (Physics) = M.Sc. (Physics)

12. Choice of Ph.D. Course:

The students appearing in SET-VIII must fill the choice of Ph.D. Course. The abbreviations for various Departments offering Ph.D. Courses are :

ME = Mechanical Engineering Department
PHY = Physics Department
ECE = Electronics & Comm. Engg. Department
CHY = Chemistry Department
EIE = Electrical & Instrumentation Engg. Department
MATH= Mathematics Departemnt
FET = Food Engineering & Technology Department
MGMT = Management Studies
CT = Chemical Technology Department
ENG = Humanities (English)

13. Complete Postal Address for Correspondence :

Write your **complete postal address for correspondence** including your **NAME and PIN CODE** inside the box only **IN CAPITAL LETTERS**. This address will be used for despatch of Admit Card and other purposes. Please note that this block will be copied photographically and therefore, it should be written very clearly in black / blue ink only. In case any mistake is occurred in the correspondence address then paste an exact size white paper slip and write your name & address on that.

14. Signature of the Candidate :

Please put your signature in black ball point pen only in the box provided for the purpose.

Photograph :

Firmly affix recent high contrast passport size coloured photograph (taken on or after 01.10.2011) with gum / fevicol (not to be pinned or stapled) in the space provided for it. Note that the photograph must not be larger than the space (box) provided for pasting it. The photograph must indicate clearly the name of the candidate along with the date of taking the photograph. It should be without cap or goggles. Spectacles are allowed. **Polaroid photos are not acceptable.** Candidates not complying with these instructions or with unclear photograph are liable to be rejected. Candidates shall kept 10 identical photographs in reserve for use at the time of Entrance Examination / Counselling / Document Verification / Admission.

DO NOT GET THE PHOTOGRAPH ATTESTED.

15. Mother's Name :

Write the name of your mother IN BLOCK LETTERS in full as entered in High School or equivalent Certificate or in other records in the boxes and darken the corresponding circles.

16. Are you GATE / CAT Qualified (applicable for M.Tech / MBA / Ph.D Programmes only) :

If you are GATE (for M.Tech. & Ph.D.) / CAT (for MBA) qualified, darken the corresponding circles and give your GATE marks / CAT percentile in the boxes provided.

17. Information Brochure Payment Details :

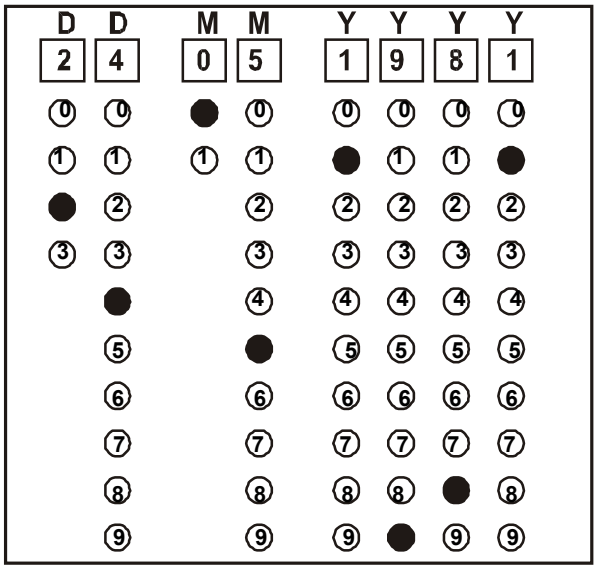
Fill-up the Information of Receipt date, bank name and amount at the appropriate place in the boxes. The candidates belonging to SC/ST categories have to fill-up the circle for ₹ 600/- whereas all other candidates are to fill-up the circle for ₹ 1100/- as amount. **There is no Examination Fee for the Candidates applying under Persons-with-Disability (PWD) Category in Certificate and Diploma Programmes only.**

18.Choice of Centres :

A list of Examination Centres for SET-2012 is given at point **2.3** in **Chapter-II**. Fill-up the correct choices both in boxes and circles very carefully. Please note that in each case three choices must be filled in order of preference (give city code numbers only). Director, SLIET / Chairman, SET reserves the right to scrap any centre and allot any other centre to the candidate without assigning any reason. **THE REQEUST FOR CHANGE OF EXAMINATION CENTRE WILL NOT BE CONSIDERED IN ANY CASE WHATSOEVER IT MAY BE.**

19.Date of Birth :

Enter the date, month and year of your birth as per English calendar as recorded in High School or equivalent certificate in the boxes and darken the corresponding circles. **Wrong filling of Date of Birth in Application Form will lead to disqualification.** For example 24.05.1981 be entered as follows:



20.Parmanent Address of the Candidate :

Write your complete personal / permanent address including your name and pincode inside the box in capital letters with black point ball pen in the application form.

21.Telephone No. / Email :

Write your Telephone number with STD code, Mobile numbers and Email ID in the boxes provided.

22.Declaration :

The declaration is to be signed by the candidate and countersigned by parent / guardian. **Unsigned forms will not be accepted.** The thumb impression (Left, in case of male and Right in case of female) is to be put by the candidate at the proper place on OMR Application Form.

DESPATCH OF APPLICATION FORM :

Candidate should write / fill the relevant entries in the space provided on the envelope marked for sending the APPLICATION FORM SET-2012. The application form must be sent in this envelope by **Registered Post / Speed Post only** so as to reach the office of the Chairman, SET-2012 on or before the last date. **DO NOT SEND THE APPLICATION FORM BY ORDINARY POST / COURIER.**

One envelope should contain only one O.M.R. Application Form.

Last Date for Receipt of Completed Application Form :

The last date for the receipt of completed application form in the office of the Chairman, SET-2012 is **30th April, 2012.** Application Forms received after this date will not be accepted under any circumstances. Institute will not be responsible for any delay either on the part of the post office or for any other reason whatsoever. **Completed Application Form in the envelope marked "APPLICATION FORM SET-2012" can also be submitted personally in the Office of the Chairman, SET-2012 on any working day during working hours (including Saturdays) on or before 30th April, 2012 (Monday).**

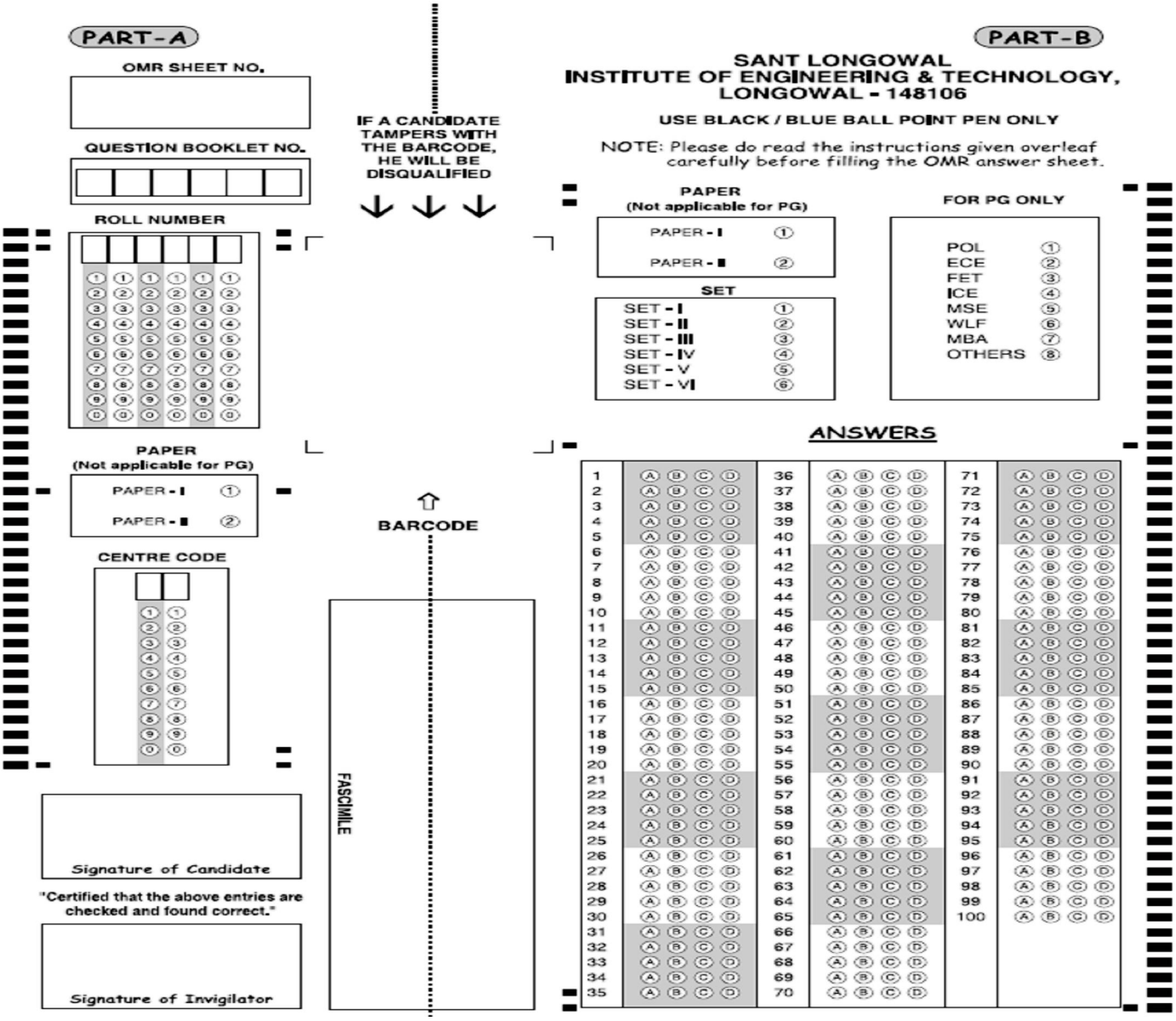
APPENDIX - III

INSTRUCTIONS FOR FILLING-UP OMR ANSWER SHEET DURING EXAMINATION

OMR Sheet will be given in the examination hall for answering the objective type questions with multiple choice. Please carefully read the following instructions for filling up of this OMR Sheet at the time of entrance test.

Fill your Question Booklet No., Roll Number, Centre Code No. and Paper No. in Part A. Also put your signature in the box provided for this purpose.

In Part B give answers of the objective type questions by darkening the suitable circle out of the four given against each question no.



Note : This OMR Answer Sheet is only specimen. The actual OMR may differ.

APPENDIX - IV

SAMPLE FORMAT OF CERTIFICATE for candidates applying for M.Tech. Programmes under INDUSTRY / INSTITUTE SPONSORED CATEGORY

(This Certificate should be on the Letter Pad of the Industry / Institute by the Competent Authority)

-.

TO WHOM IT MAY CONCERN

This is to certify that Mr./Ms. é é é é é é é é é é é é é é é é é son/daughter of Shé é é é é é é é é é é é é é é é resident of é é é é é é é é é é é é é é é é é é is presently employed in this organization as é é é ..é é é é é é é é é é é é é .. from é é .é é é é é é é é é ... He/She will be granted study leave for pursuing the M.Tech. Programme in é é .é é é é é é é é é é é é é é .. at Sant Longowal Institute of Engineering and Technology (SLIET), Longowal. The candidate would not be withdrawn mid-way till the completion of the course and all the expenses during complete course of study will be borne by the ________________________.

Placeé é é é é é é é é

Dateé é é é é é é é é ..

Signature

Name & Designation

(with official seal)

APPENDIX - V

OBC Certificate Format

FORM OF CERTIFICATE TO BE PRODUCED BY OTHER BACKWARD CLASSES APPLYING FOR ADMISSION IN THE INSTITUTES UNDER GOVERNMENT OF INDIA

This is to certify that Shri / Smt. / Kum. _____Son / Daughter of Shri / Smt. _____ of Village/Town _____ District/Division _____ in the _____ State belongs to the _____Community which is recognized as a backward class under:

(i) Resolution No. 12011/68/93-BCC(C) dated 10/09/93 published in the Gazette of India Extraordinary Part I Section I No. 186 dated 13/09/93.
(ii) Resolution No. 12011/9/94-BCC dated 19/10/94 published in the Gazette of India Extraordinary Part I Section I No. 163 dated 20/10/94.
(iii) Resolution No. 12011/7/95-BCC dated 24/05/95 published in the Gazette of India Extraordinary Part I Section I No. 88 dated 25/05/95.
(iv) Resolution No. 12011/96/94-BCC dated 9/03/96.
(v) Resolution No. 12011/44/96-BCC dated 6/12/96 published in the Gazette of India Extraordinary Part I Section I No. 210 dated 11/12/96.
(vi) Resolution No. 12011/13/97-BCC dated 03/12/97.
(vii) Resolution No. 12011/99/94-BCC dated 11/12/97.
(viii) Resolution No. 12011/68/98-BCC dated 27/10/99.
(ix) Resolution No. 12011/88/98-BCC dated 6/12/99 published in the Gazette of India Extraordinary Part I Section I No. 270 dated 06/12/99.
(x) Resolution No. 12011/36/99-BCC dated 04/04/2000 published in the Gazette of India Extraordinary Part I Section I No. 71 dated 04/04/2000.
(xi) Resolution No. 12011/44/99-BCC dated 21/09/2000 published in the Gazette of India Extraordinary Part I Section I No. 210 dated 21/09/2000.
(xii) Resolution No. 12015/9/2000-BCC dated 06/09/2001.
(xiii) Resolution No. 12011/1/2001-BCC dated 19/06/2003.
(xiv) Resolution No. 12011/4/2002-BCC dated 13/01/2004.
(xv) Resolution No. 12011/9/2004-BCC dated 16/01/2006 published in the Gazette of India Extraordinary Part I Section I No. 210 dated 16/01/2006.

Shri / Smt. / Kum. _____ and / or his family ordinarily reside(s) in the _____ District / Division of _____ State. This is also to certify that he/she does not belong to the persons/sections (Creamy Layer) mentioned in Column 3 of the Schedule to the Government of India, Department of Personnel & Training O.M. No. 36012/22/93-Estt.(SCT) dated 08/09/93 which is modified vide OM No. 36033/3/2004 Estt.(Res.) dated 09/03/2004.

Dated: _____

District Magistrate / Deputy Commissioner / Competent Authority
Seal

NOTE:
(a) The term ôOrdinarilyôused here will have the same meaning as in Section 20 of the Representation of the People Act, 1950.
(b) The authorities competent to issue Caste Certificates are indicated below:
(i) District Magistrate / Additional Magistrate / Collector / Deputy Commissioner / Additional Deputy Commissioner / Deputy Collector / Ist Class Stipendiary Magistrate / Sub-Divisional magistrate / Taluka Magistrate / Executive Magistrate / Extra Assistant Commissioner (not below the rank of Ist Class Stipendiary Magistrate).
(ii) Chief Presidency Magistrate / Additional Chief Presidency Magistrate / Presidency Magistrate.
(iii) Revenue Officer not below the rank of Tehsildarôand
(iv) Sub-Divisional Officer of the area where the candidate and / or his family resides.

APPENDIX - VI

ADMISSIONS UNDER PERSONS WITH DISABILITY (PWD) SCHEME

Under Persons with Disabilities Scheme of the Government of India 25 seats are available in different two year regular Diploma (12 seats) and Certificate Programmes (13 seats) for persons having more than 40% disability. If the seats remain vacant in one programme, the same will be filled from the other programme. Maximum number of seats in any particular branch of Certificate/Diploma Course shall be three. D e tails of branches/courses is available in this brochure. It is to clarify that no vertical promotion system is available to students in the Persons with Disabilities Scheme. Incentives to students under the Scheme:

- No Tuition Fee
- No Hostel Fee
- Mess Bill Payment upto 1000/- PM
- Scholarship @250/- PM
- Books and Uniform Allowance @3000/- per annum

Essential qualifications:

For Diploma Programme:

The minimum qualification for admission to the Diploma Programmes is 10+2 pass with Physics, Chemistry & Mathematics from a board/university recognized by MHRD, Government of India or a Certificate pass from SLIET in any trade. Minimum Marks in the qualifying examination is **50% (45% in case of candidates belonging to reserved categories).** The candidates who have studied Biotechnology or Computer Science or Biology instead of Chemistry at 10+2 level are also eligible.

For Certificate Programme:

The minimum qualification for admission to the Certificate Programme is Matric pass (Pass in English, Mathematics and Science is compulsory) from a State Education Board / CBSE / ICSE / National Open School or an equivalent examination recognized / approved by MHRD, Government of India.

Application/Admission Procedure

Step 1: Interested candidates may apply for issuance of brochure free of cost if they satisfy the above eligibility conditions.

Step 2: Brochure may be studied carefully and application form contained in the brochure should be filled accordingly. Candidates desirous of getting admission under the PWD Scheme must mark the PWD column in the OMR Application Form. Choice of centre for exam may also be filled carefully.

Step 3: Duly filled in application form shall be submitted at the address given in this brochure by the due date. No fee is to be paid for the Entrance Examination.

Step 4: Details of SLIET Entrance Test 2012 and the prescribed syllabi are given in this brochure. The candidates seeking admission in certificate & diploma programme are required to appear for SET-I & SET-II, respectively. Applicants shall prepare for entrance test accordingly.

Step 5: Applicants will be sent an Admit Card mentioning their roll number and centre.

Step 6: Applicants shall appear for the SLIET Entrance Test 2012 at the centre allotted to them. They are advised to reach the centre well in time alongwith the admit card.

Step 7: Result of the Entrance Examination will be declared on the date mentioned in this brochure and the candidates must reach for counseling on the prescribed date and time.