ANDHRA PRADESH PUBLIC SERVICE COMMISSION: HYDERABAD

NOTIFICATION NO. 19/2012, Dt:- 30/07/2012

LECTURERS IN GOVERNMENT POLYTECHNIC COLLEGES (ENGINEERING AND NON-ENGINEERING) IN A.P. TECHNICAL EDUCATION SERVICE (GENERAL RECRUITMENT)

PARA – 1:

Recruitment applications are invited On-line through the proforma Application to be made available on WEBSITE (www.apspsc.gov.in) in from **06/11/2012 to 06/12/2012 (Note: 04/12/2012 is the last date for payment of fee)** for recruitment to the post of **Lecturers in Government Polytechnic Colleges (Engg. & Non Engg).**

The desirous eligible Candidates may apply ON-LINE by satisfying themselves with the terms and conditions of this recruitment. The details are as follows:-

Post Coe	Name of the Post	No. of Vacancies	Age as on 01/07/2012 Min. Max.	Scale of Pay
01	Lecturer in Civil Engineering	133	18 –35	Rs. 15,600-39,100 + AGP 5,400 (AICTE 2006 Scales)
02	Lecturer in Mechanical Engineering	138		
03	Lecturer in Electrical & Electronics Engineering	138		
04	Lecturer in Electronics & Communication Engineering	130		
05	Lecturer in Computer Engineering	49		
06	Lecturer in Textile Technology	08		
07	Lecturer in Information Technology	04		
08	Lecturer in Automobile Engineering	05		
09	Lecturer in Footwear Technology	03		
10	Lecturer in Packing Technology	02		
11	Lecturer in Architectural Engineering	01		
12	Lecturer in Garment Technology	01		
13	Lecturer in Ceramic Technology	01		
14	Lecturer in Lithography	01		
15	Lecturer in Tannery	02		
16	Lecturer in English	60		
17	Lecturer in Mathematics	55		
18	Lecturer in Physics	60		
19	Lecturer in Chemistry	60		
20	Lecturer in Commercial & Computer Practice	18		
TOTAL		**869**		

(The details of Break up of Vacancies viz., Community, Zone Wise and Gender wise (General/Women) may be seen at Annexure-I.)

NOTE:

1. THE APPLICANTS ARE REQUIRED TO GO THROUGH THE USER GUIDE AND DECIDE THEMSELVES AS TO THEIR ELIGIBILITY FOR THIS RECRUITMENT CAREFULLY BEFORE APPLYING AND ENTER THE PARTICULARS COMPLETELY ONLINE. ALL CANDIDATES HAVE TO PAY **RS. 100/- (RUPEES ONE HUNDERED ONLY)** TOWARDS APPLICATION PROCESSING FEE AND ALL THOSE WHO ARE NOT EXEMPTED FROM PAYMENT OF FEE HAVE ALSO TO PAY **RS. 120/- (RUPEES ONE HUNDRED AND TWENTY ONLY)** TOWARDS EXAMINATION FEE.
2. APPLICANT MUST COMPULSORILY FILL-UP ALL RELEVANT COLUMNS OF APPLICATION AND SUBMIT APPLICATION THROUGH WEBSITE ONLY. THE PARTICULARS MADE AVAILABLE IN THE WEBSITE SHALL BE PROCESSED THROUGH COMPUTER AND THE ELIGIBILITY DECIDED IN TERMS OF NOTIFICATION AND CONFIRMED ACCORDINGLY.
3. THE APPLICATIONS RECEIVED ONLINE IN THE PRESCRIBED PROFORMA AVAILABLE IN THE WEBSITE AND WITHIN THE TIME SHALL ONLY BE CONSIDERED AND THE COMMISSION WILL NOT BE HELD RESPONSIBLE FOR ANY KIND OF DISCREPANCY.
4. APPLICANTS MUST COMPULSORILY UPLOAD HIS/HER OWN SCANNED PHOTO AND SIGNATURE THROUGH J.P.G FORMAT.

5. THE APPLICANTS SHOULD NOT FURNISH ANY PARTICULARS THAT ARE FALSE, TAMPERED, FABRICATED OR SUPPRESS ANY MATERIAL INFORMATION WHILE MAKING AN APPLICATION THROUGH WEBSITE.
6. IMPORTANT:- HAND WRITTEN/TYPED/PHOTOSTAT COPIES/PRINTED APPLICATION FORM WILL NOT BE ENTERTAINED.
7. ALL THE ESSENTIAL CERTIFICATES ISSUED BY THE COMPETENT AUTHORITY SHALL COMPULSORILY BE KEPT WITH THE APPLICANTS TO PRODUCE AS AND WHEN REQUIRED, ON THE DAY OF VERIFICATION DATE ITSELF FOR VERIFICATION. IF CANDIDATES FAIL TO PRODUCE THE SAME, THE CANDIDATURE IS REJECTED / DISQUALIFIED WITHOUT ANY FURTHER CORRESPONDENCE.

The following blank formats (Proforma) are available in the Commission's Website (www.apspsc.gov.in) The candidates can use, if required.

i) **Community, Nativity and Date of Birth Certificate**
ii) **Declaration by the Un-Employed**
iii) **School Study Certificate**
iv) **Certificate of Residence**
v) **Creamy Layer Certificate**

IMPORTANT NOTE: Distribution of vacancies among roster points is subject to variation and confirmation from the Unit Officer/ Appointing authority.

NOTE ON IMPORTANT LEGAL PROVISIONS GOVERNING THE RECRUITMENT PROCESS:

1) Vacancies: The recruitment will be made to the vacancies notified only. There shall be no waiting list as per G.O.Ms.No. 81 General Administration (Ser.A) Department, Dated 22/02/1997 and Rule 6 of APPSC Rules of procedure. The vacancies are subject to variation and confirmation by the Unit Officer, till such time as decided by the Commission. In any case, no cognisance will be taken by Commission of any vacancies arising or reported after the completion of the selection and recruitment process or the last date as decided by the Commission as far as this Notification is concerned, and these will be further dealt with as per G.O. & Rule cited above.

2) The Recruitment will be processed as per this Notification Instructions issued by the Government and also as decided by the Commission from time to time in terms of respective Special Rules/Adhoc Rules governing the Recruitment and G.O.Ms.No. 178, Higher Education (TE-1) Department, dated 09/12/2005 and as per Government orders issued from time to time, and other related G.Os, Rules etc., applicable in this regard.

3) Rules: All are informed that the various conditions and criterion prescribed herein are Governed by the General Rules of A.P. State and Subordinate Service Rules, 1996 read with the relevant Special Rules applicable to any particular service in the departments. Any guidelines or clarification is based on the said Rules, and in case of any necessity, any matter will be processed as per the relevant General and Special Rules cited as in force.

4) The Commission is empowered under the provisions of Article 315 and 320 of the Constitution of India read with relevant Laws, Rules, Regulations and executive instructions and all other enabling legal provisions in this regard to conduct examination for appointment to the posts notified herein, duly following the principle of order of merit as per Rule 3(vi) of the APPSC Rules of Procedure read with relevant statutory provisions and ensuring that the whole recruitment and selection process is carried out with utmost regard to maintain more of secrecy and confidentiality so as to ensure that the principle of merit is scrupulously followed. A candidate shall be disqualified for appointment, if he himself or through relations or friends or any others has canvassed or endeavored to enlist for his candidature, extraneous support, whether from official or non-official sources for appointment to this service.

5) **Zonal/Local:** In terms of Para 8 of the G.O., A.P. Public Employment (Organisation of Local Cadres and Regulation of Direct Recruitment) Order, 1975 (G.O.Ms.No. 674, G.A. (SPF-A) Dept., dated: 28/10/1975) read with G.O.Ms.No.124, General Administration (SPF-A) Department, dated: 07/03/2002, and other orders/instructions issued by the Government in this regard, 70% of posts are to be filled by local cadre candidates and 30% of posts are open for which local and non-local are to be considered on the basis of combined merit list.

6) The persons already in Government Service/ Autonomous bodies/ Government aided institutions etc., whether in permanent or temporary capacity or as work charged employees are however required to inform in writing, their Head of Office/ Department, that they have applied for this recruitment.

7) The Commission is also empowered to invoke the penal provisions of the A.P. Public Examinations (Prevention of Malpractices) and unfair means Act 25/97 and for matters connected therewith or incidental thereto in respect of this Notification.

8) **Caste & Community:** Community Certificate issued by the competent authority in terms of G.O.Ms No. 58, SW (J) Dept., dt: 12/5/97 should be submitted at appropriate time. As per General Rules for State and Subordinate Service Rules, Rule-2(28) Explanation: No person who professes a religion different from Hinduism shall be deemed a member of Scheduled Caste. **BCs, SCs & STs belonging to other States are not entitled for reservation, Candidates belonging to other States shall pay the prescribed fee of Rs. 120/- (Rupees One Hundred and Twenty Only) through Challan and upload as indicated at Para-4. Otherwise such applications will not be considered and no correspondence on this will be entertained.**
9) Reservation and eligibility in terms of General Rule 22 & 22 (A) of A.P. State and Subordinate Service Rules are applicable.
10) Reservation to Disabled persons is not applicable as per the Departmental Special Rules.
11) The Reservation to Women will apply as per General Rules and Special Rules.
12) Reservation to BC-E group will be subject to the adjudications of the litigation before the Honorable Courts including final orders in Civil Appeal No: (a) 2628-2637 of 2010 in SLP. No. 7388-97 of 2010, dated. 25/03/2010 and orders from the Government.
13) Government have issued orders in G.O. Ms. No. 3, Backward Classes Welfare(C-2) Department, dated 4/4/2006, laying down the criteria to determine Creamy Layer among Backward Classes in order to exclude from the provisions of reservations. Government of Andhra Pradesh has adopted all the criteria to determine the Creamy Layer among Backward Classes as fixed by the Government of India. In view of the Government orders, in G.O. Ms. No. 3, Backward Classes Welfare(C-2) Department, dated 4/4/2006, the candidates claiming as belong to Backward Classes have to produce a Certificate regarding their exclusion from the Creamy Layer from the competent authority (Tahasildar). Certificate excluding from Creamy Layer has to be produced at an appropriate time. **B.C. Candidates whose Parent's income is less than 4.00 Lakhs per annum come under Non-Creamy Layer.** In case of failure to produce the same on day of verification, the Candidature is rejected without further correspondence.
14) The Candidates who have obtained Degrees through Open Universities / Distance Education mode are required to have recognition of Joint Committee i.e., AICTE, UGC,DEC and IGNOU. Unless such Degrees had been recognised by the D.E.C. they will not be accepted for purpose of Educational Qualification. The onus in case of doubt, of Proof of recognition by the D.E.C. that their Degrees / Universities have been recognised, rests with the Candidate.

PARA-2: EDUCATIONAL QUALIFICATIONS:

Applicants must possess the qualifications from a recognized University/Board as detailed below or equivalent thereto, subject to various specifications in the relevant Service Rules and as indented by the department as on the date of Notification.

PC. No.	Name of the Post	Educational Qualifications
01	Lecturer in Civil Engineering	Must possess a First Class Bachelor's Degree in the appropriate Branch of Engineering/Technology as recognized by All India Council for Technical Education or its equivalent.
02	Lecturer in Mechanical Engineering	
03	Lecturer in Electrical & Electronics Engineering	
04	Lecturer in Electronics & Communication Engineering	
05	Lecturer in Computer Engineering	
06	Lecturer in Textile Technology	
07	Lecturer in Information Technology	
08	Lecturer in Automobile Engineering	
09	Lecturer in Footwear Technology	
10	Lecturer in Packing Technology	
11	Lecturer in Architectural Engineering	

12	Lecturer in Garment Technology	A First Class Bachelors Degree in Textile Technology or First Class Master's Degree in Home Science with Clothing and Textile as a subject from an university in India recognized by UGC/AICTE.
13	Lecturer in Ceramic Technology	Must possess a First Class Bachelors Degree in Ceramic Technology or a pass in Section A and B of the examination conducted by the Indian Institute of Ceramic on the lines of AMIE as recognized by All India Council for Technical Education or its equivalent.
14	Lecturer in Lithography	A First Class Bachelors Degree in Printing Technology
15	Lecturer in Tannery	A First Class Bachelors Degree in Leather Technology.
16	Lecturer in English	A First Class Master's Degree in English from an University in India recognized by UGC.
17	Lecturer in Mathematics	A First Class Master's Degree in Mathematics from an University in India recognized by UGC.
18	Lecturer in Physics	A First Class Master's Degree in Physics from an University in India recognized by UGC.
19	Lecturer in Chemistry	A First Class Master's Degree in Chemistry from an University in India recognized by UGC.
20	Lecturer in Commercial and Computer Practice	i) A First Class Master's Degree in Commerce. ii) Typewriting in Higher Grade in English and Shorthand Higher Grade in English Conducted by the State Board of Technical Education and Training.

Note: Relaxation of 5% marks is available for the candidates belonging to SC/ST, i.e., 55% marks is enough for the purpose of eligibility.

PARA-3 AGE: Minimum 18 years & Maximum 35 years as on 01/07/2012

N.B: The Candidate shall complete 18 years and shall not be more than 35 years of age.

NOTE: The upper age limit prescribed above is relaxable in the following cases:

Sl. No.	Category of candidates	Relaxation of age permissible
1	2	3
1.	Retrenched temporary employees in the State Census Department with a minimum service of 6 months.	3 Years
2.	A.P. State Government Employees (Employees of APSEB, APSRTC, Corporations, Municipalities etc. are not eligible).	5 Years based on the length of regular service.
3.	Ex-Service men	3 years & length of service rendered in the armed forces.
4.	N.C.C.(who have worked as Instructor in N.C.C.)	3 Years & length of service rendered in the N.C.C.
5.	SC/ST and BCs	5 Years

EXPLANATION:

After provision of the relaxation of Age in Col. No. 3 of table above; the age shall not exceed the maximum age prescribed for the post for the candidates at Sl.No. 3 & 4.

The age relaxations for Ex-Servicemen is applicable for those who have been released from Armed Forces otherwise than by way of dismissal or discharge on account of misconduct or inefficiency.

PARA-4: (a) FEE: (Remittance of Fee) Each applicant must pay Rs. **100/- (Rupees One Hundred Only)** towards Application Processing Fee and Examination Fee **RS.120/- (RUPEES ONE HUNDRED AND TWENTY ONLY)** (if Candidates are not exempted from payment of Fee). Payment of **Rs**. **100/- (Rupees One Hundred Only)** towards application processing fee is compulsory for all Applicants.

b) Mode of Payment of Fee:

I Step:-The Candidate has to logon to the WEBSITE **(www.apspsc.gov.in)** and enter his/her Basic Personal Details like Name, Father's Name, Date of Birth, and Community.

II Step:-Immediately on entering the above details the Applicant will get (downloadable)- Challan Form to pay the Fee at AP Online centers /State Bank of India.

III Step:-The Applicant should pay the prescribed Fee in any one of the A.P. Online centers / State Bank of India and obtain Fee paid challan with Journal Number in the first instance.

IV Step:-**On the next working day** after payment of Fee the Applicant should again visit WEBSITE and enter the Journal Number to get the format of Application. The applicant has to invariably fill all the columns in the Application and should submit ON-Line. Even after making payment of fee, candidate fails to submit the bio-data particulars, such applications shall be rejected without giving any notice.

V Step:- If any candidate fails to enter "Community" for any reason, they will be treated as an OC without giving any notice.

NOTE ON EXEMPTIONS: The following category of candidates are exempted from payment of fee:

a) SC, ST, BC, & Ex-Service Men.
b) Families having Household Supply White Card issued by Civil Supplies Department, A.P. Government. (Residents of Andhra Pradesh)
c) Un employed youth in the age group of 18 to 35 years as per G.O.Ms.No. 439, G.A.(Ser.A) Dept., dated: 18/10/1996 should submit declaration at an appropriate time to the Commission.
d) Applicants belonging to the categories mentioned above (except Ex-Service Men) hailing from other States are not entitled for exemption from payment of fee and not entitled for claiming any kind of reservation.

PARA-5: PROCEDURE OF SELECTION:

THE SELECTION OF CANDIDATES FOR APPOINTMENT TO THE POSTS WILL BE MADE IN TWO SUCCESSIVE STAGES VIZ.,

i) Written Examination (Objective Type)
and
ii) Oral Test in the shape of Interview only for those qualified as per Rules.

THE FINAL SELECTION OF THESE POSTS WILL BE BASED ON THE WRITTEN AND ORAL MARKS PUT TOGETHER.

1. Only those candidates who qualify in the Written Examination by being ranked high will be called for interview in 1:2 ratio. The minimum qualifying marks for interview / selection are OCs 40%, BCs 35% SCs, and STs 30% or as per Rules. The minimum qualifying marks are relaxable in the case of SC/ST/BC at the discretion of the Commission.
2. The candidates will be selected and allotted to the Service as per their rank in the merit list and as per zonal preference for allotment of candidates against vacancies and for the vacancies available.

N.B.: Mere securing minimum qualifying marks does not vest any right in a candidate for being called for interview.

3. The appearance in all the papers at the Written Examination and also for interview in case called upon, if qualified, as per Rules is compulsory. Absence in any of the above tests will automatically render his candidature as disqualified.
4. Candidates have to produce Original documents and other particulars for verification as and when required and called for. If the particulars furnished in the Application do not tally with the Original documents produced by the candidate, the candidature will be rejected. As candidature for the recruitment is processed through Computer/Electronic devices based on the particulars furnished in the Application Form, the candidate is advised to fill in all the relevant particulars carefully.
5. While the Commission calls for preference of candidates in respect of posts, zones etc., in the Application Form, it is hereby clarified that the said preferences are only indicative for being considered to the extent possible but not binding or limiting the Commission's powers enjoyed under Article 315 and 320 of the Constitution of India. Therefore, the Commission has the power to assign a successful candidate to any of the notified posts for which he is considered by them to be qualified and eligible, subject to fulfilling the selection criterion. Mere claim of preference for any Zone for allotment against vacancy does not confer a right to selection for that Zone in particular or any Zone in general.
6. The appointment of selected candidates will be subject to their being found medically fit in the appropriate medical classification, and if he is of sound health, active habits, free from any bodily infirmity.

PARA-6: RESERVATION TO LOCAL CANDIDATES: Reservation to the Local candidates is applicable as provided in the Rules and as amended from time to time as in force on the date of notification. The candidates claiming reservation as Local candidates should obtain the required Study certificates (from IV Class to X Class or SSC) OR Residence Certificate in the Proforma

only for those candidates who have not studied in any Educational Institutions as the case may be. The relevant certificates may be got ready with authorized signature and kept with the candidates to produce as and when required.

DEFINITION OF LOCAL CANDIDATE:

(A) (i) "LOCAL CANDIDATE" means a candidate for direct recruitment to any post in relation to that Local areas where he/she has studied in Educational Institution(s) for not less than four consecutive academic years prior to and including the year in which he/she appeared for S.S.C or its equivalent examination. If however, he/she has not studied in any educational institution during the above four years period, it is enough if he/she has resided in that area which is claimed as his/her local area during the above said period.

(ii) In case Candidate does not fall within the scope of above then, if he/she has studied for a period of not less than seven years prior to and inclusive of the year in which he/she has studied SSC or its equivalent, he/she will be regarded has local candidate on the basis of the maximum period out of the said period of seven years AND where the period of his/her study in two or more local areas or equal such local area where he/she has studied last in such equal periods will be taken for determining the local candidature. Similarly, if he/she has not studied during the above said period in any Educational Institution(s) the place of residence during the above period will be taken into consideration and local candidature determined with reference to the maximum period of residence or in the case of equal period where he/she has resided last in such equal periods.

(iii) If the claim for local candidature is based on study, the candidate is required to produce a certificate from the Educational Institution(s) where he/she has studied during the said 4/7-year period. If, however, it is based on residence, a certificate should be obtained from an officer of the Revenue Department not below the rank of a Mandal Revenue Officer in independent charge of a Mandal.

(iv) If, however, a candidate has resided in more than one Mandal during the relevant four/seven years period but within the same District or Zone as the case may be separate certificates from the Mandal Revenue Officers exercising jurisdiction have to be obtained in respect of different areas.

NOTE:

(A) Single certificate, whether of study or residence would suffice for enabling the candidate to apply as a "**LOCAL CANDIDATE**".

(B) RESIDENCE CERTIFICATE WILL NOT BE ACCEPTED, IF A CANDIDATE HAS STUDIED IN ANY EDUCATIONAL INSTITUTION UPTO S.S.C. OR EQUIVALENT EXAMINATION, SUCH CANDIDATES HAVE TO PRODUCE STUDY CERTIFICATES INVARIABLY. THE CANDIDATES, WHO ACQUIRED DEGREE FROM OPEN UNIVERSITIES WITHOUT STUDYING SSC/ MATRICULATION OR EQUIVALENT IN EDUCATIONAL INSTITUTIONS, HAVE TO SUBMIT RESIDENCE CERTIFICATE ONLY. EDUCATIONAL INSTITUTIONS MEANS A RECOGNIZED INSTITUTION BY THE GOVERNMENT/UNIVERSITY/COMPETENT AUTHORITY.

(C) Candidates are advised to refer provisions of the PRESIDENTIAL ORDER 1975 in this regard

(D) Each of the following Zones comprises the Districts mentioned against each Zone.

Zones:

1. Srikakulam, Visakhapatnam and Vizianagaram. (SKM, VSP, VZM)
2. East Godavari, West Godavari and Krishna. (EG, WG, KST)
3. Guntur, Prakasam and Nellore. (GNT, PKM, NLR)
4. Chittoor, Cuddapah, Anantapur and Kurnool. (CTR, CDP, ATP, KNL)
5. Adilabad, Karimnagar, Warangal and Khammam. (ADB, KRMN, WGL, KMM)
6. Hyderabad, Ranga Reddy, Nizamabad, Mahaboobnagar, Medak and Nalgonda. (HYD, RRD, NZB, MBNR, MDK, NLG)

City Cadre: City of Hyderabad consists of Hyderabad Division, Secunderabad Division of Municipal Corporation of Hyderabad, Secunderabad Contonment area, O.U.Campus, Fatehnagar, Bowenpally, Macha Bolarum, Malkajgiri, Uppal Khalsa, Alwal, Balanagar, Moosapet, Kukatpally Panchayat Areas and Zamistanpur and Lallaguda villages. (HYD)

NB: Where City Cadre is not organized separately Candidates belonging to City Cadre – City of Hyderabad will be considered under Zone-VI

PARA-7: SCHEME OF EXAMINATION:- The Scheme & Syllabus for the examination has been shown in Annexure-II.

PARA-8: HOW TO APPLY:

A) HOW TO UPLOAD THE APPLICATION FORM:

i) The Applicants have to read the User Guide for Online Submission of Applications and then proceed further.

I Step: The Candidate has to logon to the WEBSITE **(www.apspsc.gov.in)** and enter his/her Basic Personal Details like Name, Father's Name, Date of Birth, and Community.

II Step: Immediately on entering the above details the Applicant will get (downloadable)- Challan Form to pay the Fee at AP Online centers /State Bank of India.

III Step: The Applicant should pay the prescribed Fee in any one of the A.P. Online centers / State Bank of India and obtain Fee paid challan with Journal Number in the first instance.

IV Step: **On the next working day** after payment of Fee the Applicant should again visit WEBSITE and enter the Journal Number to get and fill the format of Application and should submit ON-LINE.

V Step: Affix your recent Colour Passport Size Photograph on a White Paper and then sign below the photograph with Black Pen. Scan the above Photo and Signature and Upload in the appropriate space provided (JPG Format) in Application Form.

VI Step: The applicants have to invariably fill all the relevant columns in the Application and should submit ON-LINE.

ii) **Hand written/ Typed/ Photostat copies/ outside printed Application Form will not be accepted and liable for rejection**.

iii) Only applicants willing to serve anywhere in the Andhra Pradesh should apply.

iv) For any problems related to Online submission and downloading of Hall-Tickets please contact 040-23557455 ((Call Time: 9.30 A.M to 1.00 P.M & 1.30 P.M to 5.30 P.M) or mail to **appschelpdesk@gmail.com**.

NOTE:

1. The Commission is not responsible, for any discrepancy in submitting through Online. The applicants are therefore, advised to strictly follow the instructions and User guide in their own interest.
2. The particulars furnished by the applicant in the Application Form will be taken as final, and data entry processed, based on these particulars only by Computer. Candidates should, therefore, be very careful in Uploading / Submitting the Application Form Online.
3. INCOMPLETE/INCORRECT APPLICATION FORM WILL BE SUMMARILY REJECTED. THE INFORMATION IF ANY FURNISHED BY THE CANDIDATE SUBSEQUENTLY WILL NOT BE ENTERTAINED BY THE COMMISSION UNDER ANY CIRCUMSTANCES. APPLICANTS SHOULD BE CAREFUL IN FILLING-UP THE APPLICATION FORM AND SUBMISSION. IF ANY LAPSE IS DETECTED DURING THE SCRUTINY, THE CANDIDATURE WILL BE REJECTED EVEN THOUGH HE/SHE COMES THROUGH THE FINAL STAGE OF RECRUITMENT PROCESS OR EVEN AT A LATER STAGE.
4. Before Uploading/Submission Application Form, the Candidates should carefully ensure his/her eligibility for this examination. NO RELEVANT COLUMN OF THE APPLICATION FORM SHOULD BE LEFT BLANK, OTHERWISE APPLICATION FORM WILL NOT BE ACCEPTED.
5. The Commission reserves the right to create centre(s) for examination and also to call the Candidates for the test at any other centre.

PARA-9: CENTRES FOR THE WRITTEN EXAMINATION:

1. The Written Examination will be held at the following Five Centres:
   1- HYDERABAD 2- VISAKHAPATNAM 3- VIJAYAWADA
   4- TIRUPATI 5- WARANGAL.
2. Applicants should choose only one of the above centres. Centre once chosen shall be final. The Commission however reserves the right to allot candidates to any centre other than centre chosen by the applicant or abolish a centre and/or to create a new centre for administrative reasons.
3. The Written Examination will be held on **06/01/2013.**

PARA-10: INSTRUCTIONS TO CANDIDAxTES:

1) The candidates must note that his/her admission to the examination is strictly provisional. The mere fact that an Admission has been issued to him/her does not imply that his/her candidature has been finally cleared by the Commission or that the entries made by the candidate in his/her application have been accepted by the Commission as true and correct. The candidates have to be found suitable after verification of original certificates; and other eligibility criteria. The Applicants have to upload the his/her scanned recent colour passport photo and signature to the Application Form. Failure to produce the same photograph, if required, at the time of interview/ verification, may lead to disqualification. Hence the

candidates are advised not to change their appearance till the recruitment process is complete.

2) The candidates should go through the instructions given on the cover page of test booklet and carefully write his/her Register Number, Subject / Subject Code, Booklet Series, Name of the Examination Centre etc., in the Answer Sheet, which will be provided to him/her in the examination hall.
3) Since the answer sheets are to be scanned (valued) with Optical Mark Scanner system, the candidates have to USE BALL POINT PEN (BLUE/BLACK) ONLY FOR MARKING THE ANSWERS. The candidates will be supplied OMR Sheet consists of two copies i.e., the Original Copy (Top Sheet) and Duplicate Copy (Bottom Sheet). The candidate is required to use Ball Point Pen (Blue or Black) for filling the relevant blocks in the OMR Sheet including bubbling the answers. After writing the examination the candidate has to handover the original OMR sheet (Top Sheet) to the invigilator in the examination hall, if any candidate takes away the original OMR Sheet (Top Sheet) his/her candidature will be rejected. However the candidate is permitted to take away the duplicate OMR Sheet (Bottom Sheet) for his/her record. The candidates should bring Ball Point Pen (Blue/Black and smooth writing pad) to fill up relevant columns on the Answer Sheet. The candidate must ensure encoding the Register Number, Subject/Subject Code, Booklet Series, Name of the Examination Centre, Signature of the Candidate and Invigilator, etc., on the O.M.R. Answer sheet correctly, failing which the Answer sheet will be rejected and will not be valued. Use of whitener on OMR Sheet will lead to disqualification.
4) The OMR Sheets have to bubble only by Ball Point Pen (Blue/Black). Bubbling by Pencil / Ink Pen / Gel Pen is not permitted in this examination.
5) The candidates should satisfy the Invigilator of his identity with reference to the signature and photographs available on the Nominal Rolls and Hall Ticket.
6) The candidates should take their seats 20 minutes before the commencement of the examination and are not to be allowed after 10 minutes of the scheduled time. They should not leave the examination hall till expiry of fulltime. The candidates are allowed to use the calculators in the examination hall (not programmable calculators). Loaning and interchanging of articles among the candidates is not permitted in the examination hall. Cell phones and Pagers are not allowed in the examination hall.
7) The candidates are expected to behave in orderly and disciplined manner while writing the examination. If any candidate takes away Answer Sheet, the candidature will be rejected and in case of impersonation/ disorder/ rowdy behaviour during Written Examination, necessary F.I.R. for this incident will be lodged with concerned Police Station, apart from disqualifying appointment in future.

   Merit is the only criteria that decides the selections. Candidates trying to use unfair means shall be disqualified from the selection. No correspondence whatsoever will be entertained from the candidates.
8) The Commission would be analyzing the responses of a candidate with other appeared candidates to detect patterns of similarity. If it is suspected that the responses have been shared and the scores obtained are not genuine/ valid, the Commission reserves the right to cancel his/ her candidature and to invalidate the Answer Sheet.
9) If the candidate noticed any discrepancy printed on Hall ticket as to community, date of birth etc., they may immediately bring to the notice of Commission's officials/Chief Superintendent in the examination centre and necessary corrections be made in the Nominal Roll, in the Examination Hall against his/her Hall Ticket Number for being verified by the Commission's Office.

PARA-11: DEBARMENT:

a) Candidates should make sure of their eligibility to the post applied for and that the declaration made by them in the format of Application regarding their eligibility is correct in all respects. Any candidate furnishing in-correct information or making false declaration regarding his/her eligibility at any stage or suppressing any information is liable TO BE DEBARRED FOR FIVE YEARS FROM APPEARING FOR ANY OF THE EXAMINATIONS CONDUCTED BY THE COMMISSION, and summarily rejection of their candidature for this recruitment.
b) The Penal Provisions of Act 25/97 published in the A.P. Gazette No. 35, Part-IV.B Extraordinary dated: 21/08/1997 shall be invoked if malpractice and unfair means are noticed at any stage of the Recruitment.
c) The Commission is vested with the constitutional duty of conducting recruitment and selection as per rules duly maintaining utmost secrecy and confidentiality in this process and any attempt by anyone causing or likely to cause breach of this constitutional duty in such manner or by such action as to violate or likely to violate the fair practices followed and ensured by the Commission will be sufficient cause for rendering such questionable means as ground for debarment.

d) Any candidate is or has been found impersonating or procuring impersonation by any person or resorting to any other irregular or improper means in connection with his / her candidature for selection or obtaining support of candidature by any means, such a candidate may in addition to rendering himself/ herself liable to criminal prosecution, will be liable to be debarred permanently from any examination or selection held by the Service Commissions in the country.

e) **MEMORANDUM OF MARKS:** Memorandum of Marks is issued on payment of Rs.25/- (Rupees Twenty Five Only) through crossed Indian Postal Order only drawn in favour of the Secretary, A.P. Public Service Commission, Hyderabad. Request for Memorandum of Marks from candidates, will be entertained within two months from the date of publication of the final selections. Such a request must necessarily be accompanied by a Xerox copy of the Hall-ticket. Request for revaluation or recounting will not be undertaken under any circumstances. Invalid, disqualified, ineligible candidates will not be issued any Memorandum of Marks and fees paid by such candidates, if any, will be forfeited to Government account, without any correspondence in this regard.

If any candidate fails to mark the Booklet Series, Roll Number etc., in the OMR Answer Sheet, the Commission reserves the right to invalidate such Answer Sheets as Answer Sheets are valued by Optical Mark Scanner. In case of rejection/ invalidation due to omission on the part of the candidate, the decision of the Commission is final and request for Memorandum of Marks in such cases will be intimated accordingly. No request for reconsideration of such rejected/invalidated cases will be entertained under any circumstances whatsoever.

PARA-12: COMMISSION'S DECISION TO BE FINAL:

The decision of the Commission in all aspects and all respects pertaining to the Application and its acceptance or rejection as the case may be, conduct of examination and at all consequent stages culminating in the selection or otherwise of any candidate shall be final in all respects and binding on all concerned, under the powers vested with it under Article 315 and 320 of the Constitution of India. Commission also reserves its right to alter and modify regarding time and conditions laid down in the notification for conducting the various stages up to selection, duly intimating details thereof to all concerned, as warranted by any unforeseen circumstances arising during the course of this process, or as deemed necessary by the Commission at any stage.

HYDERABAD, **Sd/-**
DATE: 30/07/2012 **SECRETARY**

ANNEXURE – I

NOTIFICATION NO. 19/2012

Breakup of provisional vacancies for Lecturers in Government Polytechnic Colleges (Engineering and Non-Engineering) in A.P. Technical Education Service (General Recruitment)

PC.NO.1: LECTURER IN CIVIL ENGINEERING

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I	1																1		1
II	5	3	2		1					1		1	2	1	1		11	6	17
III	9	3	1	1	1				2		1		2	1	1		17	5	22
IV	18	8	2	1	4	3	1		2	1	1	1	6	3	3	1	37	18	55
V	7	2	1	1		1			1		1		2	1		1	12	6	18
VI	5	4	1		2				1	1	1		3	1	1		14	6	20
Total	45	20	7	3	8	4	1		6	3	4	2	15	7	6	2	92	41	133

PC.NO.2: LECTURER IN MECHANICAL ENGINEERING

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I	2			1		1			1		1			1			4	3	7
II	9	4	1		2				2				2	1	2		18	5	23
III	2	2			1										1		4	2	6
IV	14	8	3		3	2			2	1	1		5	3	2	1	30	15	45
V	9	4	2		2				1	1	1		4	1	1	1	20	7	27
VI	9	5	2		2	1			2	1	1		3	2	2		21	9	30
Total	45	23	8	1	10	4			8	3	4		14	8	8	2	97	41	138

PC.NO.3: LECTURER IN ELECTRICAL & ELECTRONICS ENGINEERING

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I	2	1	1										1		1		5	1	6
II	3	2	2		1								1	1	1		8	3	11
III	4	3	2		1					1		1	2	1	1		10	6	16
IV	23	12	3	1	4	3	1		3	2	2		8	3	2	2	46	23	69
V	3	2			1				1	1			1	1			6	4	10
VI	7	4	2		2	1			1	1	1		3	1	2	1	18	8	26
Total	42	24	10	1	9	4	1		5	5	3	1	16	7	7	3	93	45	138

PC.NO.4: LECTURER IN ELECTRONICS & COMMUNICATION ENGINEERING

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I	5	2	1		1		1			1		1	2	1	1		11	5	16
II	2	1			1										1		4	1	5
III	1	1								1		1	1				2	3	5
IV	23	11	3	1	4	3	1		3	1	2		8	3	2	2	46	21	67
V	4	1		1					2		1		1	1			8	3	11
VI	9	4	2		2				1	1	1		3	1	1	1	19	7	26
Total	44	20	6	2	8	3	2		6	4	4	2	15	6	5	3	90	40	130

PC.NO.5: LECTURER IN COMPUTER ENGINEERING

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I	3	1	1										1		1		6	1	7
II																			
III	3	1			1				1								5	1	6
IV	9	4	1	1	1	1			2		1		2	1	1		17	7	24
V																			
VI	4	3	1		1	1							1			1	7	5	12
Total	19	9	3	1	3	2			3		1		4	1	2	1	35	14	49

PC.NO.6: LECTURER IN TEXTILE TECHNOLOGY

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I																			
II																			
III		1		1														2	2
IV	2	1		1										1			2	3	5
V				1														1	1
VI																			
Total	2	2		3										1			2	6	8

PC.NO.7: LECTURER IN INFORMATION TECHNOLOGY

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I																			
II																			
III																			
IV	2			1										1			2	2	4
V																			
VI																			
Total	2			1										1			2	2	4

PC.NO.8: LECTURER IN AUTOMOBILE ENGINEERING

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I																			
II																			
III																			
IV	2	1				1										1	2	3	5
V																			
VI																			
Total	2	1				1										1	2	3	5

PC.NO.09: LECTURER IN FOOTWEAR TECHNOLOGY

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I																			
II																			
III																			
IV																			
V																			
VI	1			1										1			1	2	3
Total	1			1										1			1	2	3

PC.NO.10: LECTURER IN PACKING TECHNOLOGY

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I																			
II																			
III																			
IV																			
V																			
VI		1		1														2	2
Total		1		1														2	2

PC.NO.11: LECTURER IN ARICHITECHTURAL ENGINEERING

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I																			
II				1														1	1
III																			
IV																			
V																			
VI																			
Total				1														1	1

PC.NO.12: LECTURER IN GARMENT TECHNOLOGY

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I																			
II																			
III				1														1	1
IV																			
V																			
VI																			
Total				1														1	1

PC.NO.13: LECTURER IN CERAMIC TECHNOLOGY

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I																			
II																			
III														1				1	1
IV																			
V																			
VI																			
Total														1				1	1

PC.NO.14: LECTURER IN LITHOGRAPHY ENGINEERING

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I																			
II																			
III																			
IV																			
V																			
VI														1				1	1
Total														1				1	1

PC.NO.15: LECTURER IN TANNERY

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I																			
II																			
III																			
IV																			
V																			
VI	1													1			1	1	2
Total	1													1			1	1	2

PC.NO.16: LECTURER IN ENGLISH

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I	1	1					1										2	1	3
II	3	1				1							1			1	4	3	7
III	3	1				1	1										4	2	6
IV	8	4	2		1	1	1			1		1	2	1	1		15	8	23
V	2	1	1		1									1	1		5	2	7
VI	4	2	1		1		1			1		1	1	1	1		9	5	14
Total	21	10	4		3	3	4			2		2	4	3	3	1	39	21	60

PC.NO.17: LECTURER IN MATHEMATICS

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I	2	1				1											2	2	4
II	2	1				1							1			1	3	3	6
III	2	2					1						1				4	2	6
IV	7	4	2		1	1	1			1		1	2	1	1		14	8	22
V	3	1				1	1						1				5	2	7
VI	4	1				1	1						2			1	7	3	10
Total	20	10	2		1	5	4			1		1	7	1	1	2	35	20	55

PC.NO.18: LECTURER IN PHYSICS

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I	1					1							1			1	2	2	4
II	3	1				1							1			1	4	3	7
III	3	1				1										1	3	3	6
IV	7	5	2		2					1		1	2	1	2		15	8	23
V	3	2				1	1						1				5	3	8
VI	4	3				1	1						2			1	7	5	12
Total	21	12	2		2	5	2			1		1	7	1	2	4	36	24	60

PC.NO.19: LECTURER IN CHEMISTRY

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I	1	1											1			1	2	2	4
II	2	1		1									1			1	3	3	6
III	2	1				1							1			1	3	3	6
IV	7	4	2		2					1		1	2	1	2		15	7	22
V	3	1		1		1							1			1	4	4	8
VI	4	3	1			1	1			1		1	1	1			7	7	14
Total	19	11	3	2	2	3	1			2		2	7	2	2	4	34	26	60

PC.NO.20: LECTURER IN COMMERCIAL & COMPUTER PRACTICE

Zone	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total		Grand Total
	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
I		1																1	1
II	1																1		1
III	2	1		1										1			2	3	5
IV	1			1										1			1	2	3
V	1	2		1										1			1	4	5
VI				1									1			1	1	2	3
Total	5	4		4									1	3		1	6	12	18

ANNEXURE – II

Notification No. 19/2012

SCHEME AND SYLLABUS FOR THE POST OF LECTURERS IN GOVERNMENT POLYTECHNICS (ENGINEERING & NON ENGINEERING) IN A.P. TECHNICAL EDUCATION SERVICE

SCHEME

PART-A:	**Written (Objective Type) Examination**:			
Paper-1	General Studies & Mental ability	150 Marks.	150 Qns.	150 Minutes
Paper-2	Concerned Subject	300 Marks.	150 Qns.	150 Minutes
PART-B:	**ORAL TEST** (Interview)	50 Marks		
	Total	**500 Marks**		

N.B: 1. The paper in concerned subject for Engineering streams is of Engineering **Bachelor's degree** standard.
2. The paper in the concerned subject for Non-Engineering streams is of **P.G. Degree standard**
3. The Question papers will be in English only.

Name of the Subject	
1) Civil Engineering	11) Architectural Engineering
2) Mechanical Engineering	12) Garment Technology
3) Electrical & Electronics Engineering	13) Ceramic Technology
4) Electronics & Communication Engineering	14) Lithography
5) Computer Engineering	15) Tannery
6) Textile Technology	16) English
7) Information Technology	17) Mathematics
8) Automobile Engineering	18) Physics
9) Footwear Technology	19) Chemistry
10) Packaging Technology	20) Commercial & Computer Practice

SYLLABUS

GENERAL STUDIES AND MENTAL ABILITY

I. General Science – Contemporary developments in Science and Technology and their implications including matters of every day observation and experience, as may be expected of a well-educated person who has not made a special study of any scientific discipline.

II. Current events of national and international importance.

III. History of India – emphasis will be on broad general understanding of the subject in its social, economic, cultural and political aspects with a focus on AP Indian National Movement.

IV. World Geography and Geography of India with a focus on AP.

V. Indian polity and Economy – including the country's political system- rural development – Planning and economic reforms in India.

VI. Mental ability – reasoning and inferences.

VII. DISASTER MANAGEMENT (Source : CBSE Publications)

1. Concepts in disaster management and vulnerability profile of India / State of A.P.
2. Earth quakes / Cyclones / Tsunami / Floods / Drought – causes and effects.
3. Man made disasters - Prevention strategies.
4. Mitigation strategies / Mitigation measures.

1. CIVIL ENGINEERING

01. ANALYSIS OF STRUCTURES:
Sending stresses and shear stresses in beams;
Deflection and slope of beams;
Combined bending and direct stresses; axially and eccentrically loaded columns;
Close-Coiled and open-coiled; helical springs under axial load and axial twist; carriage springs;
Analysis thin and thick cylinders; compound cylinders;
Analysis of statically determinate plane trusses; method of joints and method of sections.
Analysis of statically indeterminate beams; proposed canti-levers, fixed beams and continuous beams.
Strain energy method, slope-deflection method, moment distribution method and Kaini's method of analysis of indeterminate structures.
Influence lines and moving loads on beams and simple bridge trusses.

02. STRUCTURAL DESIGN:
Reinforced concrete, concrete technology, R.C.C. Design, working stress method and limit state method, Design of beams, Design of one-way and two-way slabs, design of axially loaded columns, design of continuous beams and slabs; Design of wall footings and isolated footings, combined footings, raft foundations, and retaining walls by limit state method, water tanks, Deck-slab and T-beam bridges by working stress method. Structural Steel – design of revetted and welded joints, design of tension members;
Compression members, simple and compound beams. Design of plate girders, crane girders and roof-trusses. Elements of pre-stressed concrete.

03. FLUID MECHANICS AND HYDRAULIC MACHINES:
Fluid properties; fluid static's; fluid-flow concepts; Laminar and turbulent flow; steady and unsteady-flow, uniform and non-uniform flow; Fundamental EQUATIONS; CONTINUITY EQUATION; Euler's equation of motion; Bernoulli's equation, Analysis of liquid jets; flow through orifies and mouth pieces; radial flow, flow along a curved path; Momentum equation and applications; Moment of Momentum equation. Dimensional analysis and similitude; Viscous flow-laminar flow through circular pipes; velocity distribution in laminar flow. Turbulent flow in pipes, velocity distribution in turbulent flow; Flow measurement – pressure moment, velocity measurement and discharge measurement, venturimeter, Orifice, meter, notches and weins. Hydraulic machines; Turbines and pumps; basic equations; Orifice, performance, selection, specific speed.

04. WATER RESOURCES ENGINEERING:
Steady flow through open channels. Uniform flow in channels; Chezy and Manning's formulae. Specific energy and critical depth. Hydraulic jump – Momentum equation for a hydraulic jump. Surface Water hydrology; Hydrologic cycle, hydrologic data- measurement of precipation, evaporation, transpiration, and infiltration. Runoff, determination of run-off. Steam gauging; floor-Studies, Hydrograph and unit hydrograph, flood routing. Ground water resources, Darcy's law, Dupuits equation, yield of wells, recuperation test.

05. SURVEYING:
Chain surveying; compass surveying, plane table surveying; leveling and contouring, Minor instruments; Areas and Volumes; Theodolite surveying and traversing; Tachometry; Curve ranging; setting out works.
Principles and uses of triangulation, hydrographic surveying, Arial photogrammetry and photo interpretation, remote sensing and electromagnetic distance measurement.

06. GEO-TECHNICAL ENGINEERING:
Physical properties of soils; identification and classification of soils; permeability and seepage; consolidation; shearing strength of soil; stability of earth slopes; site investigation and sub soil exploration.
Stress distribution in soil; soil; compaction; lateral earth pressure and retaining walls; bearing capacity and shallow foundations; pile foundations; well foundations; Machine foundations.

07. TRANSPORTATION ENGINEERING:
Highway Engineering; classification of roads; highway alignment and surveys; geometric design of highways; elements of traffic engineering; highway materials and testing; elements of pavement design; construction and maintenance of earth gravel, W.B.M., bitumenous and concrete roads; highway drainage.
Railway Engineering; engineering surveys for a new railway route, gauge and gauge problem; track components; ballast; sleepers; rails anrail fastenings; Station and station yards;

requirements and requirement for station yards; signaling and inter locking. Elements of cross drainage works; causeways; culverts; bridges.

08 ENVIRONMENTAL ENGINEERING:

Water supply engineering; sources of water supply, conveyance of water, distribution systems; quality of water; treatment of water; filtration; dis-infection; methods of water treatment.

Sanitary engineering; sewerage and sewage disposal; house fittings; design of sewers; characteristics of sewage, primary and secondary treatment of sewage' methods of disposal of sewage.

2. MECHANICAL ENGINEERING

01. FLUID MECHANICS:
Fluid Properties, fluid static's, Kinematics and Dynamics, Euler's equation, sernoulli's energy equation, flow of ideal fluids, Viscous in compressible flows – laminar flow, boundary layer, basic features of turbulent flow, flow through pipes, fluid machinery, Specific speed and classification of fluid machines. Performance and operation of pumps, impulse and reaction turbines, velocity triangles and degree of reaction.

02. THERMO DYNAMICS:
Thermo dynamic systems, measurements of temperature work, heat and internal energy. First law of thermodynamics, ideal gas equation Air standard cycles, Carnot, Otto, Diesel, dual and joule cycle. Energy and Enthaipy. Second law of Thermo dynamics. Available and Unavailable energies. Reversible and irriversible processes. Psychrometry, Properties of pure substances.

03. MATERIAL SCIENCE:
Structure of metal and alloys, Binding in solids. Imperfections of metals and in crystals, fracture, creep, fatigue and corrossion. Phase Rule, phase transformation diagrams and lever rule.

04. ENGINEERING MECHANICS AND STRENGTH OF MATERIALS:
Equivalent force systems, free body concepts and equations of equilibrium, frictional forces. Kinematics and dynamics of rigid bodies. Stress and strain, elastic limit, yield point and ultimate stress, shear force and bending moment diagrams for beams. Calculation of stress slope and deflection in beams, theories of failure, torsion of circular shaft, thin cylinders, equivalent bending moment for solid and hollow shafts.

05. MANUFACTURING PROCESSES:
Classification of manufacturing processes. Fundamentals of casting. Classification of casting process. Sandcasting – patterns, molding, melting and pouring solidification, cleaning and finishing casting defects. Metal forming – hot and cold working, forging, rolling extrusion, wire and tube drawing, deep drawing, blanking and stamping processes.
Fundamentals of welding arc and gas welding, brazing and soldering, heat treatment – appealing – normalizing, hardening and tempering.

06. APPLIED THERMO DYNAMICS:
Internal combustion engines classification, working and performance of C.I. and S.I. engines combustion process in I.C. Engines Rating of fuels, pre ignition and knocking in I.C. Engines, Carburation and injetion, Reciprocating air compressors – Single and ;multi stage compressors, inter cooling, volumetric efficiency.
Rotary Compressors – fans blowers and compressors Axial and Centrifugal compressors – merits and demerits.
Boilers and condensors – types of boilers and condensors, calculation of boiler efficiency and equivalent evaporation, feed water heaters.
Steam and Gas turbines Impulse and reaction turbines degree of reaction velocity triangles, ranking cycle for steam turbine power plant reheating and regeneration Gas turbine cycles methods of improving gas turbine cycle efficiency.

07. HEAT TRANSFER AND REFRIGERATION:
Modes of heat transfer, one dimensional steady and unsteady heat conduction convective heat transfer forced convection over flat plates and tubes, free convection over cylinders and flat plates radiative heat transfer-black and grey surfaces. Types of heat exchangers – heat exchanger performance LMTD and NTU methods vapor compression cycle analysis. COP; and its estimation vapor absorption refrigeration cycle properties of refrigerators.

08. MACHINE DESIGN:
Design for static and dynamic loading fatigue strength stress concentration, factor of safety designing of bolted, riveted and welded joints, hydro dynamic lubrication, journal and roller bearings design of spur and helical gears, clutches and breaks. Belt and rope drives Design of shafts, keys and couplings.

09. THEORY OF MACHINES:
Constrained motion, plane mechanisms, velocity acceleration analysis, Flywheel and their applications, Balancing of reciprocating and rotating masses cams and followers, Tooth profiles Types of gears Principles of gyroscope, vibration of free and forced one degree of freedom systems with and without damping, critical speed of shaft.

10. PRODUCTION ENGINEERING:

Metal cutting and machining types of chips, chip formation tool wear and tool life, machine ability single point and multi point cutting operations machining processes shaping, planning, turning, milling, grinding, hobbling and drilling operating unconventional machining processes – USM, EDM, ECM and LBM. Basic features of NC Machines tools linear and angular measurements, Comparators, limit gauges, screw and gear measurements.

11. INDUSTRIAL ENGINEERING AND MANAGEMENT:

Industrial organisations and plant layout production planning and control cost of manufacturing. Break even analysis. Time and motion study, basic linear programming and queing theory. PERT / CPM in production systems.

3. ELECTRICAL AND ELECTRONICS ENGINEERING

01. ELECTRIC CIRCUITS, FIELDS & MEASUREMENTS:

Network elements – Ohm's law and Kirchoff's laws – formation of mesh and nodal equations – topological description of networks – response of R, L and C elements to arbitrary excitations – Laplace transform method of analysing networks.
Network theorems – superposition, Thevenin's Norton's theorems – Maximum power transfer thereciprocity theorem – applications – two port parameters – Z, Y, ABCD, H para meters – their relationships.
A.C. Circuits – single phase circuits – J-notation – calculations – resonance – Polyphase – circuits – measurements of polyphase power.
Electromagnetic theory – general relations in static fields – potential gradient and field intensity – flux density – Gauss's law – Poisson and Laplace equations – relations in electromagnetic fields – ampere's law – flux and flux density – divergence and curl – vector magnetic potential.
Electrical measurements – Types of measuring instruments – Principles of operation – extension of ranges – instrument transformers.

02. CONTROL SYSTEMS, COMPUTATION AND ELECTRONICS

Control systems – Types of servo mechanisms – equations and models of linear systems – block diagrams – time response of second order systems – stability criteria – root locus technique – frequency response – Nyquist criterion – Bode plots.
Elements of computation: Digital systems – flow charts and algorithms – FORTRAN – types of statements – logical expressions – Assignment statements – program structure – Scientific and Engineering applications.
Electronics: Solid-state devices and circuits – small signal amplifier design – feedback amplifiers – Oscillators – FETS – Thyristors.

03. ELECTRICAL MACHINES:

Principles of Electromechanical Energy Conversion: Basic ideas of production of torque – concepts of generation of voltages – formulae for voltage and torque production.
Three phase induction motors: The revolving field theory – Principles of operation of induction motor – torque equation – Computation of performance – torque speed characteristics – motor starters – conventional and thyristor controllers for speed control of induction motors.
Single phase motors: Revolving field theory – types of single-phase motors – equivalent circuits – speed control – applications.
Synchronous machines: Generation of 3-phase voltages – types of synchronous machines – equivalent circuit – experimental determination of reactances – voltage regulation and efficiency – parallel operation – transient and subtransient reactances – synchronous motors – theory of operation - -phase of diagram – equivalent circuit – performance and power factor control – applications.
Special machines: Two phase servomotors – stepper motors – methods of operation – metadyne and amplidyne – operating characteristics and applications.
D.C. Machines and Transformers.

04. POWER SYSTEMS:

Generation: Methods of power generation – steam, hydro, nuclear, diesel – selection of site for each – general layout of each type – function of each component – economics of different types – base and peak load stations – pumped stations – simple calculations in hydro station design.
Transmission: A.C. Vs. D.C. transmission – criteria for selection of voltages – transmission line parameters – G.M.D. and G.M.R – concepts for short, medium and long lines – line calculations – A.B.C and D constance – load flow analysis – surge impedance loading.
Corona and insulators: production of corona – disruptive and visual corona – corona loss – methods to avoid corona – types of insulators – string efficiency.
Fault analysis: Per unit representation: fault analysis – Symmetrical and unsymmetrical faults – application of symmetrical components – reactors.
Protection: Switch gear – methods of arc extinction – classification of circuit breakers – definitions – calculations in switch gear – testing of circuit breakers – Relaying principles – primary and back up relaying – definitions – operation of different types of relays – applications to line, transformer and generator protection – protection of lines and equipment against voltage surges – travelling wave theory.
Utilisation: Industrial drives – motors for various applications – braking – methods of heating and welding – welding transformer – Economics and other aspects of track electrification.

4. ELECTRONICS & COMMUNICATION ENGINEERING

01. Network analysis, Topology, Tree Tieset out set, first and Second order Circuits.
Steady State and Transient response, Sinusoidal steady State Analysis.
Series and parallel Resonance, Network Theorems, Laplace Transforms, Fourier series, Fourier Transforms – Applications, Two port.
Network Parameters, Interconnection of two ports, Image Impedance, Image Parameters.
Filters – constant K and M derived sections. Electronics Devices – Diodes, Transistors, FET biasing, and characteristics, Frequency, Response, Amplifier circuits.
Electro Magnetic Theory – Maxell's Equations. Coulomb's law, Amper's law , Faraday's law, Poynting Energy Theorem, Stoke's theorem, uniform plane waves.
Transmission Line Theory – Standing waves & Travelling waves, Reflection, VSWR.

02. Feedback Amplifiers and oscillator Circuits Wave Shaping circuits, Logic Gates, Boolean Theorems, Adders & Subtractors. Antennas & Propagation – Radiation Principle, Antenna parameters.
Definitions.
Directional Antennas, Linear Antenna Arrays, Broadside & End fire Arrays, Gain, Directivity, Radiation pattern.
Ground Wave, Sky Wave, Ionosphere Propagation, Guided Waves, Rectangular Wave-Guide Analysis, Microwave Circuits and Components.
Microwave Tubes, Klystron, Magnetron, and TWT.
Modulation Techniques – AM, FM, PM. Channel capacity, Noise, AM, FM, Transmitters, Radio Receivers.
TV and Satellite Communication – Principles Radar Equation and Applications of Radar Computer Programming, FORTRAN, BASIC, PASCAL, Are Programming languages.

5. COMPUTER ENGINEERING

01. Logic families, gates, flip-flops, Multiplexers, decoders, registers, counters, adder circuits, Boolean algebra, Combinational circuit design, minimisation, sequential circuit design, number systems, inter conversion, number representation, computer organisation, instruction formats, addressing modes, micro-programming, ALU organisation, multiplication and division algorithms, memory hierarchy, cache and associate memories, virtual memory, memory IC's, I/Oo organisation schemes, interrupts, arbitration, DMA, IOP, micro processors, interfacing, pipeline, SIMD and MIMD organisations, proposition and predicate logic's, methods of deduction, set theory, relations, functions, algebraic structures, lattices, recursion, combinatorics, graph theory, representation, path matrix, warshall's algorithm, cyclic and bipartite graphs, planner graphs, Hamiltonian graph, chromatic number, trees, binary tree traversals, representation of expressions, spanning trees, breadth-first and depth-first algorithms, finite automation, pushdown automation, Turing machine, grammars, type 0, 1, 2, and 3, LL and LR grammars.

02. Algorithms, flow-charts, programming methodology, data structures, PASCAL, FORTRAN, COBAL and 'C' languages, theory of programming languages, file organisation, searching and sorting; methods, DBMS, database models, query languages, operating system, directory concept, processor scheduling, memory allocation, paging and segmentation, device management, deadlocks and prevention, concurrent processing. DOS and UNIX features, language processors, syntax and semantic analysis, code generation, optimisation, assemblers, loaders and linkers, algorithm design techniques, Computer networks, digital modulation techniques, modems, error detection and error correction, BISYNC and HDLC protocols, OSI model, network routing algorithms, LAN operation methods, Computer graphics, DDA algorithms, graphic primities, 2-D transformations, graphic input devices, software engineering development life-cycle, system analysis, modular design, testing and validation, CASE tools, AI techniques, natural language understanding, learning, knowledge representation, expert systems, LISP, PROLOG.

6. TEXTILE TECHNOLOGY

I.

1. Introduction of Textile Fibres, their general properties physical and chemical and classification of Textile Fibres. Microscopic view of fibres.
2. Application of cotton fibre and Raw material, cultivation of cotton, common diseases and plant protection methods. Important varieties.
3. Manmade fibres and their raw materials. Outline of production of synthetic fibres. Physical and chemical properties and microscopic view.
4. SPINNING:
   - i) Methods of picking: manual and mechanical
   - ii) Ginning: Objectives and methods
   - iii) Mixing: Blending of different varieties, types of mixing, auto mixer, aeromixers.
   - iv) Blow room line and various machines used in it. Convept of beating point and its use in spinning of different fibres.
   - v) Lap defects and remedies
   - vi) Calculations regarding beter speeds, lap weight, hank of lap, drafts and production.

CARDING: Objectives and principles of carding, functioning of carding machine. Types of carding machine. Calculations regarding carding machine, lap sliver study, waste control in carding, Tandem cards, Auto leveler, card sliver, lap feed and chute feed systems.

DRAW FRAME: Objects, Principles and various machines used in drawing process. Functions of draw frame machines. Different types of Drafting systems, weighing systems, Roller settings and draft distribution. Calculations regarding draw frame. Study of lapping and lapping machines.

COMBER: Objects, principles and different types of combing machines and calculations there of.

SPEED FRAME: Principles, objects and functions of speed frame. Working of speed frame and calculation regarding speed frames.

RING FRAME: Principles, objects and functioning of Ring Frame machines working of Ring Frame and calculations regard ring frame. Traveller, rings and other important parts of ring spinning frame. Drafting systems. Yarn defects – causes and remedies. Calculations regarding spinning.

DOUBLING: Objects and types of doubling. Features and two for one twisters. Manufacturing of sewing thread. Calculations regarding production with reference to various parameters of spinning. Open and spinning: Types and methods of open end spinning.

TEXTILE CHMISTRY: Coal tar distillation. Chemistry of sizing, Bleaching and dyeing. Various dyes and chemicals, types of printing and finishing machines and methods. Process of mercirising. Various dyes used in dyeing of different fibres.

Calculations regarding all processes mentioned above.

II. WEAVING:

1) Object of the preparatory process and types of warp preparation. Classification types of preparatory machines. Principle of warp winding process. Warp winding machines, Automatic warp winding machines. Pirn winding machines.

2) Sizing: Importance and objects of sizing. Requirements and application of size and preparation of size. Slasher sizing machines. Principles of modern size controls used in sizing machines. Study of the development in sizing.

3) Principles of weaving process. Basic requirements of weaving loom and types of looms. Study of handlooms and plain powerlooms. Working of the mechanisms faults and remedies with references to the powerloom weaving and cloth production.

4) Principles of Automatic and shuttleless weaving. Study of Modern Automatic looms viz., Dornier, Airjet, Waterjet, rapier, Grib pebloom.

5) Fabric Structure: Principles of fabric structures. Different types of weaves and their construction. Drafting and peg plans according to weaves, Double Cloth, Dobby nd Jaquard designs.

6) Understanding Mill maintenance. Functions and utilizes. Maintenance and lubrication schedules in various departments.

7) Textile Testing: Sampling of various material viz., cotton, yarn, fabric etc., Physical and chemical testing of fabrics and other material. Defects of materials and their identification. ISO & TOM. Concepts and Application.

8) Textile industry and management – introduction, concepts mill management – production, material, financial, marketing management. Feasibility study and Industrial safety.

9) Calculations regarding all processing mentioned above.

7. INFORMATION TECHNOLOGY

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.

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

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. Asymptotic analysis (best, worst, average cases) of time and space, upper and lower bounds.

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 model (relational algebra, tuple calculus), Database design (integrity constraints, normal forms), Query languages (SQL), File structures (sequential files, indexing, B and B+ trees), Transactions and concurrency control.

Information Systems and Software Engineering: information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the project, design, coding, testing, implementation, maintenance.

Data communications: ISO/OSI model, TCP/IP protocol architecture, data transmission, transmission media, encoding techniques, synchronous and synchronous transmissions, multiplexing, switching techniques, spread spectrum.

Computer Networks: ISO/OSI stack, LAN technologies (Ethernet, Token ring), Flow and error control techniques, Routing algorithms, Congestion control, TCP/UDP and sockets, IP(v4), Application layer protocols (icmp, dns, smtp, pop, ftp, http); Basic concepts of hubs, switches, gateways, and routers. Network security - basic concepts of public key and private key cryptography, digital signature, firewalls.

Web technologies: HTML, XML, basic concepts of client-server computing.

8. AUTOMOBILE ENGINEERING

01. Thermodynamics: systems – Zeroth Law of thermodynamics – First law of thermodynamics – Second Law of thermodynamics – Entropy – Statistical thermodynamics – Air Compressors I.C. Engines cycles and Process – Combustion in I.C. Engines – Engine performance – Scavenging and supercharging of Engines – Modern development in I.C. Engines – I.C. Engine plant layout.

02. Heat Transfer: Conduction Convection – Thermal Radiation – Heat Exchangers.

03. Fluid Mechanics and Machinery: Fluid properties – Dimensional analysis – Fluid static's – Flow past immersed bodies – Centrifugal pumps – Axial flow pumps – Rotary pumps – Reciprocating pumps – Oil Hydraulic systems.

04. Instrumentation: Transducers – Flow measuring transducers – Temperature measurement – Strain gauges – Mechanical measuring devices – Slip gauges – Plug gauge – Micrometers in bars optical flat etc.

05. Automobile chasis & Systems: Chasis layout – Shock absorbers in dependent suspension – torsion bars – gear suspension – wheel balancing – tyres and tubes – constructional details of the engine – Ignition system – Fuel system – Lubrication system – Cooling system – Transmission system – Brakes steering mechanism – Electrical circuits and equipment's – Engine troubles – Air conditioning system – Modern trends in automobiles & Engines.

06. Material Science: Crystallography of metals – Binary alloys – Constitution and equilibrium diagram – methods of studying metal structure – Heat treatment – of steels – Casehardening and surface treatment of steels – Non Ferrous metals and alloys – Creep – Fatigue.

07. Kinematics of Machines: Kinematics – Velocity and Acceleration – Properties of instaneous centre – Gears – Gears trains – Oams – Governors – Brakes and dynamometers – Clutches – Power transmission – Chain drives.

08. Dynamics of Machines: Static force Analysis – Dynamic Force Analysis – Dynamics of Reciprocating Engines – Balancing – Vibration Analysis of Single degree freedom systems – Torsional Vibrations – Vibration isolation.

09. Design of Automobile Machine Parts: Design of welded joints Design of bolts & nuts – Shafts and Axles – Curved beams – Springs – Bearings – clutches – Brakes – Design of connecting rod – Crank shaft fly wheel.

10. Production Technology: Machine tools – Lathes – Shaper, planner and slotting machines – Drilling and boring machine – Milling – Lapping – Tool room – Electro machining – Welding – Brazing – Foundry.

11. Industrial Engineering: Industrial management – personnel function – Production facilities – Production Planning and control – Wages and incentives – Cost Control – Marketing and Sales Promotion.

9. FOOT WEAR TECHNOLOGY

- Classification of foot wear, leather goods, Garments based on construction, utilization, style, function of foot wear comparison of leather articles and footwear with that are made of non leather.

- Bones, Joints, Arches of foot – Development of foot types of feet – Abnormalities of foot – Reasons for foot problems – Deformed feet – Remedy.

- Foot care – Foot comfort – Parameters for foot comfort – perspiration's – vapour permeability – pressure points in foot wear – shock absorption's – Physical and mechanical properties like stress and strain. Thermal and electrical conductivity – Friction and pressibility.

- Measurements – Foot drafting – draft length and girth – foot wear scales of different system – conversion from one system to other system.

- Foot wear functions – Foot and footwear relations shoes boot- parts of shoe and foot wear – Last – Parts of lasts Function of last-Relation between last, shoe and foot leathers garments, sizes leather goods sizes – component – uses.

- Tools used in manufactures of foot wear, leather goods – leather garments – their sizes – Maintenance – uses of tools last sizes – makes – types of lasts, masterials – used for making lasts.

- Designing – Purpose of designing – Basic rules of designing – Designing of foot wear – leather goods – garment, mean form cutting – types of mean form preparation – development of standard and working patterns for foot wear components.
Grading – different grading systems – equipment used for grading.
Designing of leather goods – Garments for different uses – sizes – components.
Computer – utility in designing CAD – Auto CAD package for designing component of foot wear, leather goods and garment.

- Knowledge of leather making – various operations involved in making leather. Classification of leather based on Raw material – types of tanning – type of finish – knowledge of defects in leather. Selection of leather for different use.

- Properties of leather – Physical properties like tensile strength - % elongation at break stitch tear, tongue tear strength – water absorption – vapour permeability – grain crack and grain bursting resistance, flexibility – abrasion resistance – their testing methods – importance.
Adhesives – stability – bond capacity, abrasion resistance of sole materials.

- Materials: Details of various materials used in leather goods, footwear and garments manufacture like leather – adhesive threads, lining materials – fabrics polemeries. Metrallic fittings – Zips – toe caps, stiffness heel plate, toe plates leather boards, paper boards, soles, plastics – thermo plastic – their preparation – proper ties – use in manufacture of leather articles, foot wear.

- Finish materials – uses of various finish materials like heel balls – polish – ware creams – resin – rosin shellac – plastisize – binder – their uses.

- Seams – different types of seam utility – tools, machines used – working principal of various stitching machines – fixing of various fittings. Machines used, their working principle, specifications – tools used.

- Clicking – Machines used – their working system – hand clicking tools used – A skiving – machines used – hand skiving –various types of lasting – machines used, their working system comparison of various systems – preparation of testing – sole – insole.

- Bottom preparation, filling, selection of various materials.
Attachment of sole to upper – different methods of moulding –machines used, specification – working system.

- Finish – various operations involved as finishing of foot wear. Material used – Machines used – cares.

- Costing and quality control: - Costing footwear, leather goods, and garments by different system, quality – importance.

Manufacture of various types of leather goods various operations involved – manufacture of Garment Selection of Raw materials – Method of making – costing.

10. PACKING TECHNOLOGY

01. Definition – Packaging criteria, appearance, protection, cost etc., - Organisation of packaging functions.

02. Role of colors and typography – Role of package shape – Product package relationship – Cost effectiveness – Cushioning design.

03. Properties and applications of paper, board and corrugated board – Metal and foils, glass and wood – Plastics and films – Adhesives and cushioning materials.

04. Introduction to moulding, thermoforming etc., - Varnishing, metallising, laser marking, electroless and electrolytic plating.
Sealing: Dielectric heat-sealing, thermal sealing and different sealing equipment's – Cushion manufacturing.

05. Aseptic packaging and biological aspects – Aerosol packaging: properties of propellants, valve, filling methods etc., - Different forms of plastics and laminate package.

06. Computer aided designing – Die designing, punching, laser die cutting – Cartooning and labeling systems.

07. Raw materials testing: Surface, physical and chemical tests, printibility test.

08. Performance testing: Drop test, impact test – Shelf life calculation – half value period methods – Vibration test, Stacking and compression test.

11. ARCHITECTURAL ENGINEERING

Basic Design: Design definition and description, Importance of Design, Fundamental elements of Design, Principles of design, Colour Theory, elements of composition, Anthropometrics Study, Ergonomics, Study of Different spaces, Optimum areas for various functions, Space standards, Lighting and Ventilation standards for various activities, Design Process and thinking and Introduction to the study of aesthetics.

Building Materials: Clay Bricks, Stones, Sand, Mortars, Cement, Concrete, Reinforced cement concrete, Timber, Veneers, Paints and Varnishes, Glass, Rubber, Adhesives, Asphalt & Bitumen, Plastics, Roofing & Flooring Materials, Metals, Ally Steels, Non-ferrous metals.

Building Construction: Foundations. Footings, Walls, Lintels, Carpentry & Joinery, Openings (doors & windows), Composite Masonry, Partition Walls, Staircases, Cladding, Sloping and flat roofs, Floorings, Structural steel work and Types of steel trusses

Architectural Drawing & Graphics: Importance of Scale, Different forms, Architectural representation of different objects, Solid geometry, Building Geometry – isometric, axonometric, etc., Types of Arches, Sciography, Perspectives, Rendering, visualization skills and importance of free hand drawing.

Engineering Mechanics: Simple stress and strain, Types of stresses, elastic limit, modulus of elasticity, Bending moment and shear forces, Moment of inertia, Deflection, Buckling & Crushing failures, Slenderness ratio, Torsion, Design of RCC & Steel Structures.

Introduction of art and architecture: Importance of art, Development and exploration of art, Relationship between art and architecture, Role of an architect in society, relationship with other consultants, Technical knowledge and expertise, Evolution of Shelter forms.

History of Architecture: Architectural development in Egypt, Greek, Roman, Early Christian, Romanesque, Gothic & Byzantine. Hindu & Islamic architecture. Influence of Industrial revolution on building materials, construction technology, characteristic styles of modern architecture, Arts and Crafts movement, Art Nouvean, Monumentalism, Expressionism and pioneers of Modern architecture and their contributions.

Surveying and Site Studies: Principles of Surveying, Traversing & Plain table surveying, Computation of Areas & leveling, Automated Surveying.

Water supply and Sanitary Engineering: Sources of water supply, Quality of water, Treatment of water, Distribution system of water, Collection and Treatment of refuse, Sewage, Principles of drainage, plumbing and Sanitary fittings and fixtures, Roads & Pavements.

Climatology: Building Climatology, Tropical Climates, Thermal Comfort, Heat flow, Natural ventilation, Passive cooling, Sun & Design Process.

Landscape design and site planning: Importance and role of landscape designing, Historical Perspective, Elements in Landscape design, Plants and design, Landscape construction.

Building Services: Electrical Services, Lighting, Air Conditioning, Elevators and Escalators, Telephones and EPABX, Security systems, Fire fighting systems, Swimming pools, Energy sources of building: wind energy, photo voltaic, Bio-mass, Waste Disposal: Industries & Hospitals, Hotel services and Elevated flooring.

Sociology of Human settlements: Sociological aspects, Elements of society, Urbanization, Historic Evolution, Transportation and communication, Principles of ekistics.

Economics, Estimating and Costing: Introduction on economics, Micro and Macroeconomics, economic issues, Financing of a project, Quantity surveying and estimating (approximate and detailed) and rate analysis.

Town Planning: Town forms in urban planning and development processes, various levels of planning: national, regional, urban, rural, local etc., objectives of town planning, O-D surveys, F.S.I. planning of industrial and recreational areas, urban renewals, TCPO and Town planning organization in India.

Building Acoustics: Need to study acoustics, history of acoustics, generation, propagation, transmission of sound, characteristics of sound, sensibility of human ear, resonance,

reverberation time, sabine's formula, echoes, principles of acoustical design process and sound isolation.

Advances Construction: Decay and Damage, Building Failures, Maintenance and Renovation, Guniting, Strutting, Underpinning, Grouting, Propping, Effect of ageing, Weathering.
Professional Practice: Types of offices for practice, COA registration and rules, IIA Code professional conduct, architects duties, principles of Indian contract act, Tenders, Contracts, Easements, Arbitration, Valuation, Role of Consultants, Building Bye-laws, National Building Code, Consumer protection act, transfer of property.

Computer Applications: Hardware and Software requirements, Operating systems, Features of presentation package, drafting packages and benefits of Internet technology.

12. GARMENT TECHNOLOGY

Indian Embroidery, Indian Jewellery, Traditional Indian textiles

Embroidery of Kashmir, Sindh, Gujarat, Punjab, Haryana, Himachal pradesh, Bengal, Bihar, Uttar pradesh, Karnataka, Rajasthan, Orissa, Tamilnadu, Gold and Silver embroidery etc

Indian Jewellery – techniques in jewellery work, traditional ornaments-nose ornaments, foot ornaments, head ornaments, girdles, belts, armlets, neck ornaments, bangles etc

Traditional Indian textiles-Kalamkari,Pochampally, Paithani, Patola, Baluchari, Banaras brocades, Pabuji Par etc

DYEING AND PRINTING

Bleaching of Cotton, Wool, Silk, man-made fibers

Scouring, Singing, desizing

Chemical constitution and colour

Classification and types of dyes

Machinery used in dyeing

Methods and styles of printing

Dyeing and printing of cotton, wool, silk, polyester, acrylic, and other synthetic fibers

Chemistry of dyestuff intermediates

Pollution control- air pollution, water pollution, treatment of effluent water, disposal of solid waste

TEXTILE SCIENCE

Manufacture and properties of – cotton silk, wool polyester, nylon, acrylic, modacrylic, viscose rayon, cuprammonium rayon, cellouse acetate rayon, polypropylene, glass

Yarns – types, count, systems, measurement

Ecology and textiles – eco standards , textile process chemicals, toxicological considerations

Textile testing- identification of fibers stain tests solubility tests, fiber analysis, testing of fibers-fiber length, fiber fineness, twist, yarn strength, lea strength, etc., fabric testing – strength, abrasion resistance, air and water permeability, skew ness, etc

Weaving – Yarn calculations, weaving calculations Preparations for weaving, types of looms different types of weaves etc.,

Knitting, Braiding, Lace, felt, etc., methods of making fabric

Wet spinning, melt spinning, and dry spinning

Texturizing

Finishes – ammoniating mercerizing shrinking, stiffening, weighting, calendaring, glazing, schreinerizing, embossing, moireing, cireing, beetling, raising, napping, wrinkle, resistant finishes, soil repellent finishes, flame retardant finishes, mildew proof finishes etc.,

Detergents – fats and oils, surfactants and surface activity, soap manufacture, synthetic detergents, analysis of detergents
Textile terminology

CLOTHING

Basic stitches – rentering stitch, hemming, back stitch, quick overcastting, overcasting, deeper over casting, over handling, stoating stich etc.,
Seams and seam finishes – plain, welt, flat fell, strap, slot, French, upholsterer's, corded, lapped, imitation French , laced seams, top stitch seam, etc.,
Working of embroidery stitches
Methods of handling finishes – Casing, gathers, shirring, smocking, tucks, pleats, godets, darts, etc.,
Neck line finishes – combination facings ,applying shaped facings to neckline with zipper ,applying shaped facing to neckline and garment opening , applying bias facing , applying cording to faced neck line ,application of single and double layer binding ,decorative facings etc
Drafting and stitching of sleeves – cap sleeve , basic Bishop sleeve ,exaggerated Bishop sleeve , Bell sleeve , puff sleeve , petal sleeve , lantern sleeve ,cowl sleeve , wedding sleeve , Kimono sleeve ,Dolmon sleeve ,Raglon sleeve etc
Drafting and stitching of collars – shirt collar , shawl collar , mandarin collar ,turtle neck collar ,sailor collar ,puritan collar ,etc
Drafting and stitching of pockets – patch , bound , in seam pockets etc
Drafting and stitching of yokes
Drafting and stitching of skirts
Underlying fabrics – linings , inter linings , interfacings , underlying
(selection ,types , applications etc)
preparation of material for cutting – preparation of woven and knitted fabrics for cutting
Handling of fabrics – velvet ,velveteen ,bonded , stretch ,knit ,lace , wash and wear , silk , laminated , napped ,leather , jersey sheer fabrics etc
(selection of pattern , shrinking , cutting , marking , selection of inter facing , basting , selection of thread and needle , stitch length , seam finishes , button holes , hems , linings , pressing etc)
Pattern alterations – alterations to trousers , skirts , blouse , alterations based on figure irregularities etc
Care of fabrics – darning and patching , washing of different fabrics , dry cleaning – types of equipment used in dry cleaning , methods of dry cleaning , pressing of garments ,pressing equipments etc
Dart manipulation

APPAREL MANUFACTURING , MARKETING AND MERCHANDISING

Cutting , production analysis – types of spreads , spreading equipment and tools , spreading methods analysis , cutting equipment , cutting methods analysis , types of marker and spreading materials , cost and quality principles governing markers , training cutting production personnel etc
Fabric grading – grey state fabric grading , conventional system of grading , point system of grading , finished fabric grading
Defects –spinning defects , sizing defects , warp defects , filling defects , other weaving defects , bleaching and finishing defects , dyeing defects , printing defects , stains etc
Machinery used in apparel industry
Time and motion study
Quality control
Production systems
Pricing strategies
Marketing ethics
Product services
Marketing environment

FASHION DESIGNING

Principles of designing
Elements of design
Colour theory
Selection of apparel
Selection of accessories
Classification of fashion
Fashion terminology
Selection of fabric design
Illusion in designing
Works of Indian and international designers
Western fashions
Fashion trends in different periods
Display of garments

13. CERAMIC TECHNOLOGY

FUELS, FURNACES & PYROMETRY:

A. FUELS:

1. Solid Fuels: COAL: Coal formation theories, Mineral matter, Classification, handling and storage, washing, general properties, Calorific value, grind ability etc.

2. Gaseous Fuels: Various gaseous fuels like Producer gas, Water gas, Coke Oven gas, other gaseous fuels like blast furnace gas, LPG, CNG, Natural gas – Properties like composition, calorific value.

3. Liquid Fuels: Petroleum products – Origin, composition, refining process, distillation of petroleum products – brief outlines. Synthetic fuels, storage and handling – general industrial practices.

4. Properties: Analysis of coal, gaseous fuels, liquid fuels.

B. FURNACES:

1. Combustion: Combustion calculations, liberated heat, available heat, waste gas – Solid, Liquid and Gaseous fuels – Pulverisation of fuel, atomization of fuel, propagation of gaseous mixture, diffusion of flame, control of combustion.

2. Heat Transfer: Heat transfer to charge by conduction, convection and radiation, flow of heat through furnace walls, heat losses, heat balancing, heat recovery – recuperators and regenerators.

3. Types of furnaces: Various types of furnaces and kilns used in ceramic industries

C. PYROMETRY:

Measurement of temperature – temperature scales – thermometers – pyrometric cones – thermoelectric current – thermo couples – resistance pyrometers – radiation pyrometers – optical pyrometer.

CERAMIC SCIENCE

1. CRYSTAL CHEMISTRY: Ionic bond with examples – Potential energy curve-bond strength – Lattice energy – Covalent Bond – Atomic and molecular orbitals, hybridization – Metallic bond – Vanderwall's bond – Hydrogen bond, Mixed bond. Relation to bond vis-à-vis melting point, hardness, electrical and thermal properties – Crystalline defects; Point defects, line defects.

2. PHASE EQUALIBRIA AND PHASE DIAGRAMS: Gibb's rule and its interpretation; condensed system – One component system – Binary diagrams – Lever rule – Familiarity with SiO_2 – Na_2O, CaO – Al_2O_3, SiO_2 – Al_2O_3 – Ternary phase diagrams - Na_2O, CaO - SiO_2, CaO - Al_2O_3 - SiO_2, MgO – CaO – SiO_2.

3. MECHANICAL PROPERTIES: Elastic properties – Stress & Strain – tensile, compressive and shear stress strain, elastic moduli – Poisson's ratio – PLASTIC DEFORMATION – Simple oxides – dislocation and slip, creep, effect of temperature, Polyphase materials – influence of microstructure – BOTTLE FRACTURE – Fracture energy – Flaws and their origin and role. Hardness & Abrasion – Relationship with other properties, elastic modulus, creep – Abrasives

4. THERMAL PROPERTIES: Specific heat – Latent heat of fusion – Fusion point – Melting point. Thermal expansion – Simple ionic crystals – Class – Polycrystalline materials. Thermal conductivity – Theory – Simple oxides – Polycrystalline materials – Thermal stress – Permanent and temporary stress – Spalling of ceramics – Stress at interfaces.

5. OPTICAL PROPERTIES: Reflection and refraction – Scattering and opacity, absorption and radiation – Ionic colour in vitreous systems – Colloidal colours – Carbon – Sulphur

6. CHEMICAL PROPERTIES: Surface chemistry of vitreous materials – attack of water, alkalies and acids, electrode glasses, durability of glazes and enamels.

7. ELECTRICAL AND MAGNETIC PROPERTIES: Ionic conduction – Electronic conduction – Dielectric constant – Dielectric loss, dielectric strength, ferroelectric phenomena. Para-magnetism and ferromagnetism in ceramics.

GLASS TECHNOLOGY

INTRODUCTION: Glass industry in India – common uses – import and export of glass, present and future status.

PREPARATION OF GLASS BATCH: Glass composition – melting and fabrication, characteristics, properties and cost; composition range.

MAJOR INGREDIENTS: Sand, Limestone, Dolomite, Soda ash, Feldspar, Nephelene syenate etc.

MINOR INGREDIENTS: Melting accelerators, Refining agents, docolourisers.

CULLET: Cullet and its use- BATCH calculations

GLASS MELTING PROCESS: Particle size, melting, volatilization, refining – sources of gas bubbles – fused batch interface and re-boil, identification of gases, refining agents, chemistry of refining actions – Homogenisation – rate of homogenization – viscosity glass at various stages, standard viscosity points, working characteristics, viscosity – temperature relationships of common glasses.

FABRICATION PROCESSES: Conditions of glass; feeding; blowing and pressing – effect of variations in composition on the working characteristics

ANNEALING & TEMPERING: Release of stress, annealing constant, determination of annealing schedules for slabs, continuous plate containers, tempering.

TESTING & QUALITY CONTROL: Raw materials; Sieve analysis; purity, batch analysis, density, composition and homogeneity, SQS chart, softening point and thermal expansion. Defects in Glass; seeds and blisters, cords, striae, strain and stones, methods of testing, sources of trouble and their elimination. Fabrication defects; various defects of fabrication. Testing of container; weight and capacity, flat glass.

LAY OUT OF A MODERN GLASS PLANT: Flow diagram – Site selection – storage of raw materials – batch house – melting furnace – infrastructure facilities.

BATCH PREPARATION: Handling, mixing and charging of raw materials.

GLASS MELTING TANK FURNACES: Types of tank furnaces – general features – combustion – temperature distribution – heat transfer and covection currents – heat recovery and insulation, heat balance, thermal performance. DESIGN, CONSTRUCTION & OPERATION of glass tank furnace – Electric melting.

POT MELTING PRACTICE: Types of glasses suitable for pot melting, ports and pot furnaces.

FORMING PROCESSES: Hand operations, fore hearth and feeder, machine for blown ware, press machines, moulds, parison and blow moulds. Paste moulds. Rolling of glass – drawing of sheet glass – annealing Lehr – special processes surface coating – other operations – table working.

SPECIAL GLASSES: Heat resistant glasses – Fiber glass – Glass ceramic – Optical glasses – Glasses for electrical and electronic industries.

ENAMELS

Introduction: Enamels & ceramic coatings – metal bases – pre-treatment of metal and non-metal surfaces – de-enamelling – aluminum alloys – Enamel glass composition – batch calculations – typical examples of compositions for various steels – frit making – smelting – quenching – drying – smelting furnaces – milling and mill additions. Application and Firing; Control of slips – drying & brushing, firing – enamelling furnaces – special firing methods, properties and tests. Defects and remedies of enamelling.

WHITEWARE AND HEAVY CLAYWARE

RAW MATERIAL PREPARATION: Particle size reduction – methods – comparison – analysis – Mixing methods – blunger – pug mill – u mixer, Muller mixer etc – Forming methods – Slip casting - rheology of slip – plastic forming – power pressing – special forming methods.

DRYING: External parameters – critical moisture content – drying rates – driers – types – shrinkage - defects

CHANGES DURING FIRING: Thermal decomposition – changes in ceramic body – sintering – microstructure

EQUIPMENT & MACHINERY: Crushers – grinders – mixers, separators, shaper, presses (mechanical, hydraulic, isostatic) – die materials and design – driers - glazing machines – ancillary equipment.

FURNACES/KILNS: Down draft kiln – updraft kiln – coal or oil fired – flues – chimney & stack calculations, complete operations.
Tunnel kilns – oil, gas or electric fired – construction – operation – heat balancing
Roller Kilns – design – function – cycles – maintenance
Others: burners – blowers etc.

FIRING PRACTICE: Furnace loading – lighting – firing schedule – temperature control – seger cones – firing defects – warpage – Microstructure – changes in microstructure in relation to sintering, typical ceramic microstructures and their control

PLANT DESIGN: Location – assessment – economics – factory layout – flow sheet – project report.

REFRACTORIES

CLASSIFICATION: Classification of Refractories – Acid - Basic – Neutral – Special Refractories

APPLICATIONS: Industries of Iron & Steel – Gas plants – Powerhouses – Non-Ferrous metals – Ceramic – Cement & Fertilisers.

REFRACTORY INDUSTRY: Status and scope of Indian Refractory industry – Lay out of modern Refractory plant.

ALUMINO-SILICATES: Raw materials – Manufacturing process – Microstructure & properties – Uses.

SILICA REFRACTORIES: Manufaturing process – raw materials & composition – microstructure – properties and uses.

BASIC REFRACTORIES: Magnesite – Dolomite – Chrome – combination Refractories – manufacturing process – Microstructure – Properties and uses.

SPECIAL REFRACTORIES: Alumina – Raw materials – Manufacture – Properties & uses. Fusion cast Refractories – others like zircon, carbon, silicon carbide – Spinel and refractory cements – castables – ramming masses.

CEMENT TECHNOLOGY

CEMENT INDUSTRY: Indian and A.P. scenario – Large – medium – small scale units.

TYPES: Varieties of cements – occurrence – uses – manufacturing procedures.

PORTLAND CEMENT: Manufacturing methods – Wet process – advantages and disadvantages; Dry process – advantages and disadvantages. Rotary Kiln – construction – operation – Refractories used – various chemical phases present in cement. Properties of cement – testing methods.

SPECIAL CEMENTS: Rapid setting cement, Pozzolona, Slag cement etc.

SPECIAL CERAMIC MATERIALS

HIGH TEMPERATURE CERAMIC-OXIDES: Beryllia – Magnesia – Alumina – Zirconia – NON-OXIDES – Silicon Nitride – Boron nitride – Silicon carbide – Boron Carbide – Methods of production – Properties – Thermal – Electrical – Thermo mechanical behaviour.

ELECTRICAL & ELECTRONIC CERAMICS: Dielectric Ceramics – High Voltage – low frequency applications – porcelain insulators manufacture – Low voltage High frequency applications – insulators – steatite, Magnesium titanate, Cordierite, Fosterite. FERRO ELECTRIC CERAMICS – Barium Titanate – Lead Zirconium Titanates etc., - MAGNETIC CERAMICS – Soft Ferrites – hard ferrites – Magnetite – Nickel Zinc ferrites, Yttrim Iron garnet, Hexaferrites of Barium, Lead and Strontium - CERAMIC

SEMI CONDUCTORS: Germanium – Silicon – Gallium – Antimonide – Silicon carbide etc.

CERAMIC COMPOSITES: Types – Fibres and Whiskers – Fibre reinforced composites – cermets – Metal castings – Transformation toughened ceramics – Cutting Tools – Wear resistant ceramics – Grinding media, Ceramic engine parts.

NUCLEAR CERAMICS: Methods of production and properties – Uranium Oxide; Uranium carbide, Thorium Oxide; Beryllium Oxide etc.

14. LITHOGRAPHY

UNIT-1

Principles of different printing systems – Suitability of each process for various printing jobs – Plate making of Offset, Gravure, Flexography and screen printing – Ink transfer methods and impression in all printing process and proofing methods – Lithography plate surface chemistry – Quality control devices in plate making process – Trouble shooting – Care and storage of offset plates before and after printing.

UNIT-2

Materials used for graphic reproduction – Print from materials – Print on materials – Paper manufacturing and chemistry of pulp – Classification of paper and board – Paper testing and paper problems on the press – Substrates other than paper - Print with materials – Printing ink ingredients – manufacturing and its properties – Testing and drying of inks – Problems with ink on press – Print finish materials – Binding and warehouse operations – Classification of binding work – Book forwarding, book covering and finishing operations – Packaging materials for various purposes.

UNIT-3

Colour measurement – Colour reproduction and colour separation – Electronic colour scanner - Developments in electronic scanning – colour proofing – Artwork and film preparation – Image setter – Computer to plate system – Digital offset printing and proofing – Digital non impact printing processes – sheet fed offset machine, web fed offset machine and their printing, inking and dampening units – Sheet handling, controlling and transferring – Make-ready and the machine run.

UNIT-4

Printing machine maintenance and its importance – machine erection and testing – Machine reconditioning – Lubrication and lubricants – Preventive maintenance and spare parts maintenance – Estimating and Estimating form – Meaning and methods of costing – New developments in printing.

15. TANNERY ENGINEERING (LEATHER TECHNOLOGY)

A. Skin Proteins and Pre-tannages

1. Chemical constituents of hides and skins – Fibrous and Non – fibrous proteins structure and Chemical Features. Reactive groups of Collagen and cross linking. Histological Characteristics of hides and skins.

2. Preservation techniques – Principles involved – short term preservation – Defect in hides and skins.

3. Chemistry and Principle of different pretanning processes like soaking, liming, deliming, bating and pickling. Different methods of pretanning processes as applied to light, heavy and industrial leathers.

B. Theory of tannages

1. Types of vegetable tanning materials – Classification, and chemistry of vegetable tanning. Mechanism of vegetable tanning. Synthetic tannins classification General methods of manufacture and application in leather processing. Chemistry and mechanism of oil and aldehyde tannages.

2. The Chemistry of Chromium salts. Preparation of Chrome tanning salts. Mechanism of Chrome tanning.

3. Chemistry and mechanism of Aluminium, Zircoium, titanium, silicate and Phosphate tannages.

4. Chemistry and mechanism of combination tannages involving vegetables tanning materials, aldehydes and other mineral tanning agents.

C. Leather auziliaries and post tanning Operations

1) Chemistry of neutralization and bleaching processes.

2) Classification of dyes and blending of dyes. Chemistry of dyeing auziliaries. Theory and mechanism of dyeing.

3) Principles and methods of sulfation, sulfonation and sulfitation of oils. Preparation of synthetic flat liquors. Chemistry and mechanism of fatliquoring at waterproofing.

4) Classification of retanning agents and their application.

5) Chemistry and methods of preparation of aqueous pigment pastes, lacquers lacquer emulsion, synthetic and protein binders and impregnating agents. Pattern leather finishes.

D. Practice of Leather Manufacture – i

1) Principles and practices involved in the manufacture of following types of leathers:- E.I. tanning of kips, buffcalf, cowcalf and Goat and Sheep skins. – Vegetable tanned sole leather, Chrome sole leather. Sole leather with improved properties. – Picking band leathers and pickers. – Digressing of E.I. Leathers into different finished leathers such as semichrome glazed kid, lining leathers, ------ leathers and diaphragm leathers. – Kattai and Bunwar leathers. – Specialty leathers for mountaineering shoes, high altitude shoes and pilot gloves.

2) Role of Machinery in Leather Processing.

A. Practice of Leather Manufacture – II

1) Processes and principles involved in manufacture of following types of leather processing of Wetblue leathers – Full Chrome Upper leathers – Upholstry leather Lining leathers – Harness, belting and Saddlery leathers. – Football, Hockey ball, Cricket ball and other sports goods leathers – Chamois leather Fashion garment Leathers – Utility glove leathers.

2) Principle methods and mechanism of drying of leathers.

B. material Testing & Quality Control

1) Principles of analytical methods employed of water, chemical agents used in soaking, liming, deliming, bating, pickling. Analysis of liquors of beamhouse process, vegetable tanning extracts, spent tan liquers, chrome extracts – zirconi and aluminium tanning salts.

Formaldehyde oils and fats – Fatiliquor and other auxiliaries. Estimation of Epsom salt and glucose.

2) Instrumental methods of analysis using potentiometry, spectrophotometry chromatography, ion exchange resins, colorimetry.

3) Analysis of vegetable and mineral tanned leathers- Determination of PCP at azo dyes, (Aryl amine based) in leather.

4) 4.Principles and methods employed in physical testing of leathers.

5) 5.Standards and quality control.

C. Leather Product Technology

1) Footwear:- (a) Anatomy of human feet, foot comfort, foot care and their relationship to footwear. Foot and last measurements Shoe sizing and fitting.

(b) Materials used of footwear – Leather and non-leather materials for upper, -- and components.

(c) Shoe design and pattern making

(d) Grading clicking and closing – skiving – stitching – lasting, sole attachment – bending and edge treatments.

(e) Construction of cemented and welted shoes machines used.

2) Leather goods and garments:- Classification – selection of materials – modern methods of construction and machinery – Hand tools and grinderies, zips, linings and fittings – standardization quality control and inventory control.

D. Organisation and Management of Leather manufacture

1 Livestock population – availability of hides and skins – marketing of hides/skirt

2. Location, lay-out and selection of machinery for tanneries manufacturing different types of leathers – estimates of investment, costing and feasibility.

3. Employment generation – training and training institutes- labour laws for tanne occupational health and safety.

4.Export performance – marketing strategies and development – Features of overseas sales contract – Role of financial institution.

5. Type of tannery effluents- characteristic – Different methods of effluent disposal primary and secondary systems – standards and specifications of various type of disposal – soil waste disposal.

6. Total quality management (TQM) – Basic concepts – Principles of TQM – Barriers to TQM implementation TQM – Principles – Customer Classifications – Perception of Quality – TQM Tools – Quality Systems. Need for ISO 9000, Quality Auditing, ISO 14000 concept – Requirements and benefits.

16. ENGLISH

- **Writers and Texts**

• William Shakespeare	Hamlet, Tempest
• John Milton	Paradise Lost-Book 1 and 9
• William Wordsworth	"Immortality Ode", Tintern Abbey
• John Keats	"Ode to a Nightingale", "To Autumn"
• Robert Browning	"My Last Duchess", "The Last Ride Together"
• Charles Dickens	David Copperfield
• TS Eliot	"The Waste Land", Murder in the Cathedral
• GB Shaw	Saint Joan
• Virginia Woolf	"A Room of One's Own"
• Samuel Beckett	Waiting for Godot
• William Golding	Lord of the Flies
• Robert Frost	"Home Burial", "The Road Not Taken"
• Eugene O'Neill	The Hairy Ape
• Toni Morrison	Beloved
• Mulk Raj Anand	Untouchable
• AK Ramanujan	"Love Poem for a Wife", "Small-Scale Reflections on a Great House"
• Girish Karnad	Hayavadana
• Salman Rushdie	Midnight's Children
• Chinua Achebe	Things Fall Apart
• Margaret Atwood	Edible Woman
• AD Hope	"Australia", "Crossing the Frontier"
• Bessie Head	A Question of Power

- **English Language Teaching**

1) ELT in India : (History and status of English in India; English as Second Language, English as Foreign Language, and English as Global Language).
2) Methods and Approaches : (Grammar Translation method, Direct method, Audio-Lingual method; Structural approach, Communicative language teaching)
3) Teaching of Language Skills : (Teaching of Listening, Speaking, Reading, and Writing Skills; Teaching of Grammar and Functional English; Teaching of Vocabulary; Classroom techniques; Use of authentic materials)
4) Testing and Evaluation : (Principles, Types, Objectives of testing and evaluation)
5) Phonetics and Phonology; Syntax and Structure.

17. MATHEMATICS

I. Real Analysis

Finite, countable and uncountable sets – Real Number system R – infimum and supremum of a subset of R – Bolzano – Weierstrass theorem.

Sequences, convergence, limit superior and limit inferior of sequences, sub sequences, Heine Borel Theorem.

Infinite series – Tests of convergence.

Continuity and uniform continuity of real valued functions of real variable. Monotonic functions and functions of bounded variation.

Differentiability and mean value theorems.

Riemann integrability.

Sequences and Series of functions.

II. Metric Spaces

Metric spaces – completeness, compactness and connectedness – continuity and uniform continuity of functions from one metric space into another.

Topological spaces – base and subbase – continuous function.

III. Elementary Number

Primes and composite numbers – Fundamental Theorem of arithmetic – divisibility – congruences – Fermat's theorem – Wilson's Theorem – Euler's **Ø** - function.

IV. Group Theory

Groups, subgroups, normal subgroups – quotient groups – homomorphisms and isomorphism theorems – permutation groups, cyclic groups, Cayley's theorem. Sylow's theorems and their applications.

V. Ring Theory

Rings, integral domains, fields – subrings and ideals – Quotient rings – homomorphisms – Prime ideals and maximal ideals – polynomial rings – Irreducibility of polynomials – Euclidean domains and principal ideal domains.

VI. Vector Spaces

Vector Spaces, Subspaces – Linear dependence and independence of vectors – basis and dimension – Quotient spaces – Inner product spaces – Orthonormal basis – Gram – Schmidt process.

VII. Matrix Theory

Linear transformations – Rank and nullity – change of bases.

Matrix of a linear transformation – singular and non-singular matrices – Inverse of matrix – Eigenvalues and eigenvectors of matrix and of linear transformation – Cayley – Hamilton's theorem.

VIII. Complex Analysis

Algebra of complex numbers – the complex plane – Complex functions and their Analyticity – Cauchy-Riemann equations – Mobius transformations.

Power Series.

Complex Integration – Cauchy's theorem – Morera's Theorem – Cauchy's integral formula – Liouville's theorem – Maximum modules principle – Schwarz's lemma – Taylor's series – Laurents series.

Calculus of residues and evaluation of integrals.

IX. Ordinary Differential Equation

Ordinary Differential Equation (ODE) of first order and first degree – Different methods of solving them – Exact Differential equations and integrating factors.

ODE of first order and higher degree – equations solvable for p, x and y – Clairaut's equations – Singular Solutions.

Linear differential equations with constant coefficients and variable coefficients – variation of parameters.

X. Partial Differential Equations

Formation of differential equations (PDE) – Lagrange and Charpit methods for solving first order – PDE's – Cauchy problem for first order PDE's Classification of second order PDE's – General solution of higher order PDE's with constant coefficients.

18. PHYSICS

I. Mathematical Methods of Physics

Dimensional analysis. Vector algebra and vector calculus. Linear algebra, matrices, Cayley-Hamilton Theorem. Eigenvalues and eigenvectors. Linear ordinary differential equations of first & second order, Special functions (Hermite, Bessel, Laguerre and Legendre functions). Fourier series, Fourier and Laplace transforms. Elements of complex analysis, analytic functions; Taylor & Laurent series; poles, residues and evaluation of integrals. Elementary probability theory, random variables, binomial, Poisson and normal distributions. Central limit theorem.

Data interpretation and analysis. Precision and accuracy. Error analysis, propagation of errors. Least squares fitting, Linear and non-linear curve fitting and Chi-Square Test.

II. Classical Mechanics

Newton's laws. Dynamical systems, Phase space dynamics, stability analysis. Central force motions. 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. Generalized coordinates. Lagrangian and Hamiltonian formalism and equations of motion. Conservation laws and cyclic coordinates. Periodic motion: small oscillations, normal modes. Special theory of relativity-Lorentz transformations, relativistic kinematics and mass-energy equivalence.

III. Electromagnetic Theory

Electrostatics : Gauss's 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 the fields at interfaces. Scalar and vector potentials, gauge invariance. Electromagnetic waves in free space. Dielectrics and conductors. Reflection and refraction, polarization, Fresnel's law, interference, coherence, and diffraction. Dynamics of charged particles in static and uniform electromagnetic fields. Charged particles in inhomogeneous fields.

IV. Quantum Mechanics

Wave-particle duality. Schrödinger equation (time-dependent and time-independent). Eigenvalue problems (particle in a box, harmonic oscillator, etc.). Tunneling through a barrier. Wave-function in coordinate and momentum representations. Commutators and Heisenberg uncertainty principle. Dirac notation for state vectors. Motion in a central potential : orbital angular momentum, angular momentum algebra, spin, addition of angular momenta; Hydrogen aom. Stern-Gerlach experiment. Time-independent perturbation theory and applications. Variational method. Time dependent perturbation theory and Fermi's golden rule, selection rules. Identical particles, Pauli exclusion principle, spin-statistics connection.

V. Thermodynamics and Statistical Physics

Laws of thermodynamics and their significance. Thermodynamic potentials, Maxwell relations, chemical potential, phase equilibria. Phase space, micro-and macro-states. Micro-canonical, canonical and grand-canonical ensembles and partition functions. Free energy and its connection with thermodynamic quantities. Classical and quantum statistics. Bose and Fermi gases. Principle of detailed balance. Blackbody radiation and Planck's distribution law.

VI. Electronics

Semiconductors devices (diodes, junctions, transistors, field effect devices, homo- and hetero-junction devices), device structure, device characteristics, frequency dependence and applications. Opto-electronic devices (solar cells, photo-detectors, LEDs). Operational amplifiers and their applications. Digital techniques and applications (Logic circuits, registers, counters and comparators). A/D and D/A converters. Microprocessor microcontroller basics. Fundamentals of communication electronics, modulation techniques.

VII. Atomic & Molecular Physics

Quantum states of an electron in an atom. Electron spin. Spectrum of helium and alkali atom. Relativistic corrections for energy levels of hydrogen atom, hyperfine structure and isotopic shift, width of spectrum lines, LS & JJ couplings. Zeeman, Paschen-Bach & Stark effects. Electron spin resonance. Nuclear magnetic resonance, chemical shift. Frank-Condon principle. Electronic, rotational, vibrational and Raman spectra of diatomic molecules, selection rules. Lasers : spontaneous and stimulated emission, Einstein A & B coefficients. Optical pumping, population inversion, rate equation. Modes of resonators and coherence length.

VIII. 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. Electron motion in a periodic potential, band theory of solids : metals, insulators and semiconductors. Superconductivity : type-I and type-II superconductors. Josephson junctions. Superfluidity. Defects and dislocations. Ordered phases of matter : translational and orientational order, kinds of liquid crystalline order. Quasi crystals.

IX. Nuclear and Particle Physics

Basic nuclear properties ; size, shape and charge distribution, spin and parity. Binding energy, semi-empirical mass formula, liquid drop model. Nature of the nuclear force, form of nucleon-nucleon potential, charge-independence and charge-symmetry of nuclear forces. Deuteron problem. Evidence of shell structure, single-particle shell model, its validity and limitations. Elementary ideas of alpha, beta and gamma decays and their selection rules. Fission and fusion. Nuclear reactions, reaction mechanism, compound nuclei and direct reactions.

19. CHEMISTRY

INORGANIC CHEMISTRY

1. Atomic structure and chemical bonding – structure and bonding in homo and hetero nuclear molecules. Applications of VSEPR, Valence Bond and Molecular orbital theories in explaining the structures of simple molecules.

2. Transition elements and coordination compounds – physical and chemical characteristics of transition elements – Bonding theories – crystal field theory – crystal field splitting patterns in various geometries. Calculation of CFSE – Jahn-Teller effect – Application of MO theory to octahedral and square planar complexes – Electronic spectra of complexes – Russell Saunders coupling – term symbols – spectra of octahedral and tetrahedral complexes – charge transfer spectra – magnetic properties of complex compounds.

3. Metal - ligand equilibria in solution – step wise and overall stability constants – factors affecting the stability of metal complexes – Pearson's theory of hard and soft acids and bases (HSAB) – Chelate effect.

4. Reaction mechanisms in complexes – Inert and level complexes – Ligand substitution reactions of octahedral complexes – Acid hydrolysis, base hydrolysis – conjugate base mechanism – Anation reactions – substitution reactions of square planar complexes – Trans effect – Electron transfer reactions – Inner and outer sphere mechanisms.

5. Metal complexes - EAN rule – structure and bonding of metal carbonyls of Mn, Fe, Co and Ni – Metal nitrosyls – structure and bonding.

6. Cages and ring compounds – preparation, structure and reactions of boranes and carboranes – Boron-nitrogen and Sulfur-nitrogen cyclic compounds.

7. Metal clusters – factors favoring M-M bonds – Structure and bonding in $Re_2Cl_8^{2-}$, $Mo_6Cl_8^{4+}$, $Nb_6X_{12}^{2+}$, Re_3Cl_9 and $Re_3Cl_{12}^{3-}$.

8. Bio-inorganic chemistry – metal complexes as oxygen carriers – hemoglobin and myoglobin – oxygen transport – non heme proteins – hemerythrin and hemocyanin.

9) Analytical chemistry – chromatography – general principles involved in separations by paper, thin layer and column chromatography – GC and HPLC.

Physical Chemistry

1. Thermodynamics

Brief review of concepts of I and II laws of thermodynamics. Concept of entropy. Entropy as a state function. Calculation of entropy changes in various processes. Entropy changes in an ideal gas. Entropy changes on mixing of ideal gases. Entropy as a function of V and T. Entropy as a function of P and T. Entropy change in isolated systems- Clausius inequality. Entropy change as criterion for spontaneity and equilibrium.
Third law of thermodynamics. Evaluation of absolute entropies from heat capacity data for solids, liquids and gases. Standard entropies and entropy changes of chemical reactions. Helmholtz and Gibbs free energies (A and G). A and G as a criteria for equilibrium and spontaneity. Physical significance of A and G. Driving force for chemical reactions- relative signs of ΔH and ΔS.
Thermodynamic relations. Gibbs equations. Maxwell relations. Temperature dependence of G. Gibbs- Helmholtz equation. Pressure dependence of G.
Chemical potential: Gibbs equations for non-equilibrium systems. Material equilibrium. Phase equilibium. Clapeyron equation and Clausius-Clapeyron equation .
Conditions for equilibrium in a closed system. Chemical potential of ideal gases. Ideal-gas reaction equlibrium-derivation of equilibrium constant. Temperature dependence of equilibrium constant-the van't Hoff equation.
Solutions: Specifiying the Solution composition. Partial molar poperties-significance. Relation between solution volume and partial molar volume. Measurement of partial molar volumes-slope and intercept methods. The chemical potential. Variation of chemical potential with T and P. Gibbs-Duhem equation-derivation and significance

Ideal solutions. Thermodynamic properties of ideal solutions. Mixing quantities. Vapour pressure-Raoult's law. Thermodynamic properties of ideally dilute solutions. Vapour pressure-Henry's law.
Nonideal systems. Concept of fugacity, fugacity coefficeient. Determination of fugacity. Non ideal solutions. Activities and activity coefficients. Standard-state conventions for non ideal solutions. Determination of activity coefficients from vapour pressure measurements. Activity coefficients of nonvolatile solutes using Gibbs-Duhem equation.
Multicomponent phase equilibrium: Vapour pressure lowering, freezing point depression and boiling point elevation

2. Statistical Thermodynamics

Concepts of distribution and probability. Estimation of probability and the most probable distribution. Systems composed of noninteracting particles. Derivation of Boltzmann distribution law.
The molecular partition function. Systems composed of interacting particles. The concept of ensemble and canonical ensemble. Canonical partition function and its relation to molecular partition function. The factorization of molecular partition function – translational, rotational, vibrational and electronic partition functions. Derivation of expressions for translational, rotational (diatomic) and vibrational partition functions. Relationship between partition functions and thermodynamic functions.
The relationship between partition functions and thermodynamic functions. Specific heats of solids – Einstein equation of heat capacity of solids – derivation. Explanation of heat capacity at very low and very high temperatures – Dulong and Petits Law. Debye theory.
The entropy of a monoatomic ideal gas. The Sackur-Tetrode equation- derivation. Mean translational and vibrational energies.

3. Electrochemistry

Electrochemical Cells : Derivation of Nernst equation – problems. Chemical and concentration cells (with and without transference). Liquid junction potential – derivation of the expression for LJP – its determination and elimination**.** Applications of EMF measurements : Solubility product, potentiometric titrations, determination of transport numbers, equilibrium constant measurements.
Decomposition potential and its significance. Electrode polarization – its causes and elimination. Concentration overpotential.
Concept of activity and activity coefficients in electrolytic solutions. The mean ionic activity coefficient. Debye-Huckel theory of electrolytic solutions. Debye-Huckel limiting law (derivation not required). Calculation of mean ionic activity coefficient. Limitations of Debye-Huckel theory. Extended Debye-Huckel law.
Theory of electrolytic conductance. Derivation of Debye-Huckel-Onsager equation – its validity and limitations.
Concept of ion association – Bjerrum theory of ion association (elementary treatment) - ion association constant – Debye-Huckel-Bjerrum equation.

4. Quantum Chemistry

Black body radiation-Planck's concept of quantization-Planck's equation, average energy of an oscillator (derivation not required). Wave particle duality and uncertain principle-significance of these for microscopic entities. Emergence of quantum mechanics. Wave mechanics and Schroedinger wave equation.
Operator**s**-operator algebra. Commutation of operators, linear operators.Complex functions. Hermitian operators. Operators and ^{2} . Eigenfunctions and eigenvalues. Degeneracy. Linear combination of eigenfunctions of an operator. Well behaved functions. Normalized and orthogonal functions.
Postulates of quantum mechanics. Physical interpretation of wave function. Observables and operators. Measurability of operators. Average values of observables. The time dependent Schrodinger equation. Separation of variables and the time-independent Schrodinger equation..
Theorems of quantum mechanics. Real nature of the eigen values of a Hermitian operator-significance. Orthogonal nature of the eigen values of a Hermitian operator-significance of orthogonality. Expansion of a function in terms of eigenvalues. Eigen functions of commuting operators-significance. Simultaneous measurement of properties and the uncertainty principle.
Particle in a box- one dimensional and three dimensional. Plots of and ^{2}-discussion. Degeneracy of energy levels. Comparison of classical and quantum mechanical particles. Calculations using wave functions of the particle in a box-orthoganality, measurability of energy, position and momentum, average values and probabilities. Application to the spectra of conjugated molecules.

Cartesian, Polar and spherical polar coordinates and their interrelations
Schrodinger equation for the hydrogen atom- separation into three equations. Hydrogen like wave functions. Radial and angular functions. Quantum numbers n, l and m and their importance. The radial distribution functions. Hydrogen like orbitals and their representation. Polar plots, contour plots and boundary diagrams.
Many electron systems. Approximate methods. The variation method-variation theorem and its proof. Trial variation function and variation integral. Examples of variational calculations. Paricle in a box. Construction of trial function by the method of linear combinations. Variation parameters. Secular equations and secular determinant..
Bonding in molecules. Molecular orbital theory-basic ideas. Construction of MOs by LCAO , H_2^+ ion. The variationan integral for H_2^+ ion. Detailed calculation of Wave functions and energies for the bonding and antibonding MOs. Physical picture of bonding and antibonding wave functions. Energy diagram. The MO and VB wave functions for H_2 molecule and their comparision

5. Chemical Kinetics

Theories of reaction rates : Collision theory, steric factor. Tranition state theory. Reaction coordinate, activated complex and the transition state. Thermodynamic formulation of transition state theory. Unimolecular reactions and Lindamann's theory.
Complex reactions- Opposing reactions, parallel reactions and consecutive reactions(all first order type). Chain reactions-general characteristics, steady state treatment. Example- H_2-Br_2 reaction. Derivation of rate law.
Effect of structure on reactivity- Linear free energy relationships. Hammett and Taft equations-substituent(and *) and reaction constant (and *)with examples.
Factors affecting reaction rates in solution. Diffusion controlledr eactions. Influence of dielectric constant and ionic strength on ion-ion, ion-dipole and dipole-dipole reactions. Primary and secondary salt effects. Kinetic isotope effects: Primary and secondary isotope effects. Solvent isotope effects.
Enzyme catalysis: Chemical catalysis and enzyme catalysis – distinction – energy considerations and rate accelerations – examples.
Michaelis-Menten mechanisms of enzyme catalyzed reactions involving one and two intermediates. Steady-sate approximation. Derivation of kinetic equations. Evaluation of kinetic parameters. Enzyme-substrate complex: Fischer's lock and key and Koshland's induced fit hypotheses. Specificity of enzyme-catalyzed reactions. Discussion of the various types of forces involved in the formation of E-S complex. pH dependence of enzyme-catalyzed reactions – the kinetics and the equations involved.

6. Photochemistry
Electronic transitions in molecules. The Franck Condon principle. Electronically excited molecules- singlet and triplet states. Radiative life times of excited states-theoretical treatment. Measured lifetimes. Quantum yield and its determination. Actinomety-ferrioxalate and uranyl oxalate actinometers-problems.
Derivation of fluorescence and phosphorescence quantum yields. E-type delayed fluorescence-evaluation of triplet energy splitting(ΔE_{ST}). Photophysical processes-photophysical kinetics of unimolecular reactions. Calculation of rate constants of various photophysical processes-problems, State diagrams
Photochemical primary processes. Types of photochemical reactions- electron transfer, photodissociation, addition, abstraction, oxidation and isomerization reactions with examples. Effect of light intensity on the rates of photochemical reactions. Photosensitization. Quenching-Stern Volmer equation. Experimental set up of a photochemical reaction. Introduction to fast reactions- Principle of flash photolysis

7. Solid state chemistry
Magnetic properties of solids- classification of magnetic materials, Magnetic susceptibility, Langevin diamagnetism, Weiss theory of para magnetism
Electronic properties of metals, insulators and semi conductors: Electronic structure of solids, Band theory, band structure of metals, insulators and semiconductors. Electrons, holes and Excitons. The temperature dependence of conductivity of extrinsic semi conductors. Photo conductivity and photovoltaic effect-p-n junctions.
Superconductivity. Occurrence of superconductivity. Destruction of superconductivity by magnetic fields-Meisner effect. Types of superconductors. Theories of super conductivity- BCS theory.

ORGANIC CHEMISTRY

1) IUPAC nomenclature of organic molecules including structural, positional, functional, regio- and stereoisomers.

2) Molecular representations: Wedge, Fischer, Newman and Saw-horse formulae, their description and interconversions. Stereoisomers-classification-configuration –R,S-nomenclature- Criteria for Chirality. Axially chiral allenes, spiranes, alkylidene cycloalkanes, chiral biaryls, atropisomerism. Planar chiral ansa compounds and trans- cyclooctene. Helically chiral compounds, Determination of absolute configuration by chemical correlation methods. Determination of configuration in E,Z-nomenclature: Spectral and Chemical methods of configuration determination of E,Z isomers. Determination of configuration in aldoximes and ketoximes.

3) Nature of Bonding in Organic Molecules and Aromaticity, Delocalized chemical bonding-conjugation, cross conjugation, resonance, hyperconjugation, tautomerism, Huckle's rule and the concept of aromaticity, aromaticity in benzenoid and non-benzenoid compounds, alternant and non-alternant hydrocarbons, metallocenes- Ferrocene, Azulenes, Fulvenes, Annulenes, anti-aromaticity, pseudo-aromaticity, homo-aromaticity.

4) Reactive intermediates and Molecular rearrangements. Reactive Intermediates: Generation, detection, structure, stability and reactions of carbocations, carbanions, carbenes, nitrenes and free radicals. Molecular rearrangements: Definition and classification. Molecular rearrangements involving 1) electron deficient carbon: Wagner- Meerwein, Pinacol-Pinacolone, Allylic and Wolf rearrangement. 2) electron deficient Nitrogen: Hofmann, Lossen, Curtius, Schmidt and Beckmann rearrangements 3) electron deficient Oxygen: Baeyer-Villiger oxidation. 4) Base catalyzed rearrangements: Benzilic acid, Favourski, Transannular, Sommlett-Hauser and Smiles rearrangement

5) Organic Reaction mechanism-I Electrophilic addition to carbon-carbon double bond: Stereoselective addition to carbon-carbon double bond; anti addition- Bromination and epoxidation followed by ring opening. Syn addition of OsO_4 and $KMnO_4$. Hydroboration. Michael reaction. Elimination reactions E2, E1, E1CB mechanisms. Orientation and stereoselectivity in E2 eliminations. Pyrolytic syn elimination and α-elimination, elimination Vs substitution. Determination of reaction mechanism: Energy profiles of addition and elimination reactions, transition states, product isolation and structure of intermediates, use of isotopes, chemical trapping, crossover experiments.

6) Importance of heterocyclic compounds as drugs. Nomenclature of heterocyclic systems based on ring size, number and nature of hetero atoms. Synthesis and reactivity of pyrrole, furan, thiophene, pyridine, indole, benzofuran, benzothiophene, quinoline, isoquinoline.

7) Alkaloids and terpenoids- Importance of natural products as drugs. Isolation of natural products by steam distillation, solvent extraction and chemical methods. Structure determination and synthesis of papaverine, nicotine and quinine-General methods in the structure determination of terpenes. Isoprene rule, structure determination and synthesis of α-terpeniol and camphor.

8) Organic Photochemistry, Photochemical energy, Frank-Condon principles, Jablonski diagram, singlet and triplet states, dissipation of photochemical energy, photosensitization, quenching, quantum efficiency and quantum yield. Photochemistry of carbonyl compounds - n* and * transitions. Norrish type-I and Norrish type-II cleavages. Paterno-Buchi reactions, Photoreduction, photochemistry of enones - hydrogen abstraction, rearrangements of ,-unsaturated ketones and cyclohexadienones, photochemistry of p-benzoquinones. Dienes - photochemistry of 1,3-butadienes, (2+2) additions leading to cage structures, photochemistry of cyclohexadienes, photochemistry of aromatic compounds, exicited state of benzene and its 1,2-, 1,4- additions

9) Pericyclic Reactions Molecular orbital symmetry, Frontier orbitals of ethylene, 1,3 butadiene, 1,3,5 hexatriene and allyl system. Classification of pericyclic reactions. Woodward - Hoffmann correlation diagrams. FMO and PMO (Mobius Huckel) approaches. Electrocyclic reactions-Conrotatory and disrotatory. 4n, 4n+2 and allyl systems. Cycloadditions-antarafacial and suprafacial additions, 4n and 4n+2 systems, 2+2 addition of ketene, 1,3 dipolar cycloadditions Sigmatropic rearrangements - Suprafacial and antarafacial shifts of H, Sigmatropic shifts involving carbon moieties, 3,3 and 5,5 sigmatropic rearrangements.

10) Structure determination of organic compounds by UV IR, NMR an Mass Various electronic transitions, Beer-Lambert's law, effect of solvent on electronic transitions, ultraviolet bands for carbonyl compounds, unsaturated carbonyl Compounds, dienes, conjugated polyenes, Effect of hydrogen bonding and solvent effects-NMR-Shielding mechanism, mechanism of measurement, chemical shift values, chemical exchange, complex spin-spin interaction, ^{13}C NMR spectroscopy, chemical shift-Mass spectral fragmentation of organic compounds, common functional groups, molecular-ion peak, metastable peak.

20. COMMERCIAL AND COMPUTER PRACTICE

(To teach Commerce and English Type writing & Shorthand)

01. FINANCIAL MANAGEMENT:

Corporation Finance – Economic and Managerial Aspects – Finance Education.
Financial Plan – Operating and Financial leverage – Capital Structure determinants.
Internal Financial Control – Ratio Analysis – Break-even Analysis – Sources and uses of funds statements.
Concepts of valuation and cost of capital – Cost of Debt - Cost of preference capital – Cost of Equity Capital – Cost of retained earnings – Weighted Cost of Capital.
Fundamentals of capital Budgeting – Evaluation of Investment opportunities – Pay back Accounting, Rate of Return – Discounted cash flow Techniques.
Concepts of over and under capitalisation – Working Capital management – Management of Inventories. Receivables and Cash.
Economics and Income retention – divided policy. Financial Aspects of expansion, reconstruction and recognition.

02. INDUSTRIAL ORGANISATION:

Concepts of Industry, Firm and Plant.
Size of Units – Optimum firm and representation firm – Size in Private and Public Sectors in India – Problems and Policy implications – Multi-Plant Units – Multi-Plant Units in Private and Public Sectors – Economic Problems and Policy Size and efficiency.
Location – Concepts of Location and Localisation – Location criteria – Factors influencing Localisation – Measures of Localisation – Localisation pattern in Indian Industry – Balanced Regional Development – Location development of managers – Performance Appraisal.
State and Industry – Operational Control over Private Industry.

03. LABOUR ECONOMICS AND INDUSTRIAL RELATIONS:

Labour in Industrial Society – Man Power Problems of under developed countries.
Economics of the Labour Market – Factors affecting supply and demand for labour – Concepts of full employment, unemployment – Different types of unemployment – Causes – effects and remedial measures, labour mobility – Absenteeism and turnover.
Social security and Labour Welfare – Problems of Social Security in a developing economy – Social Security in India. Settlement of Industrial Disputes – Machinery for the same.
Collective bargaining – Objectives and methods – Issues in Bargaining.
Tripartite bodies in Industrial Relations.

04. MANAGEMENT:

Organisation Concept – Different approaches to the study of Organisation. Constraints over organisational and managerial Performance. Principles of Organisation.
Planning – Business Objectives – Social responsibilities of business.
Authority, Power, Influence and the art of delegation. Span of Supervision.
Line and Staff relationships.
Bases and problems of departmentation.
Centralisation and Decentralisation.
Bureaucracy – Committee Management.
Top management functions and the role of the Board.
Control functions in organisations.
Group dynamics.
Communication – Leader ship – Motivation – Morale – Training and Development of Managers – Performance appraisal.

ANNEXURE-III

LIST OF SCHEDULED CASTES

(Definition 28 of General Rule - 2)
SCHEDULE - I

(Substituted with effect from 27-07-1977 through G.O.Ms.No. 838, G.A.(Services-D) Department, dated 15/12/1977)

1 Adi Andhra
2 Adi Dravida
3 Anamuk
4 Aray Mala
5 Arundhatiya
6 Arwa Mala
7 Bariki
8 Bavuri
9 Beda Jangam, Budga Jangam (In Districts of Hyderabad, Rangareddy, Mahaboobnagar, Adilabad, Nizamabad, Medak, Karimnagar, Warangal, Khammam and Nalgonda)*
10 Bindla
11 Byagara, Byagari*
12 Chachati
13 Chalavadi
14 Chamar, Mochi, Muchi, Chamar-Ravidas, Chamar-Rohidas*
15 Chambhar
16 Chandala
17 Dakkal, Dokkalwar
18 Dandasi
19 Dhor
20 Dom, Dombara, Paidi, Pano
21 Ellamalwar, Yellammalawandlu
22 Ghasi, Haddi, Relli, Chachandi
23 Godagali, Godagula(in the Districts of Srikakulam, Vizianagaram & Vishakapatnam) *
24 Godari
25 Gosangi
26 Holeya
27 Holeya Dasari
28 Jaggali
29 Jambuwulu
30 Kolupulvandlu, Pambada, Pambanda, Pambala *
31 Madasi Kuruva, Madari Kuruva
32 Madiga
33 Madiga Dasu, Mashteen
34 Mahar
35 Mala, Mala Ayawaru *
36 Mala Dasari
37 Mala Dasu
38 Mala Hannai
39 Mala Jangam
40 Mala Masti
41 Mala Sale, Netkani
42 Mala Sanyasi
43 Mang
44 Mang Garodi
45 Manne
46 Mashti
47 Matangi
48 Mahter
49 Mitha Ayyalvar
50 Mundala
51 Paky, Moti, Thoti
52 (Omitted)*
53 Pamidi
54 Panchama, Pariah
55 Relli
56 Samagara

57 Samban
58 Sapru
59 Sindhollu, Chindollu
60 Yatala (Srikakulam Dist. Only) Memo No. 8183/CV-1/2006-10 SW (CV-I) Dept., Dt. 31/03/2008
61 Valluvan * (Chittoor and Nellore Dist. Only) Memo No. 8183/CV-1/2006-10 SW (CV-I) Dept., Dt. 31/03/2008

* As for the Constitution (Scheduled Caste) orders (Second Amendment) Act 2002, Act No. 61 of 2002

LIST OF SCHEDULED TRIBES

1. Andh, Sadhu Andh *
2. Bagata
3. Bhil
4. Chanchu (Chenchwar omitted) *
5. Gadabas, Boda Gadaba, Gutob Gadaba, Kallayi Gadaba, Parangi Gadaba, Kathera Gadaba, Kapu Gadaba *
6. Gond, Naikpod, Rajgond, Koitur *
7. Goudu (in the Agency tracts)
8. Hill Reddis
9. Jatapus
10. Kammara
11. Kattunayakan
12. Kolam, Kolawar *
13. Konda Dhoras, Kubi *
14. Konda Kapus
15. Konda Reddis
16. Kondhs, Kodi, Kodhu, Desaya Kondhs, Dongria Kondhs, Kuttiya Konds, Tikiria Khondhs, Yenity Khondhs, Kuvinga *
17. Kotia, Bentho Oriya, Bartika, Dulia, Holva, Sanrona, Sidhopaiko (Dhulia, Paiko, Putiya-omitted *)
18. Koya, Doli Koya, Gutta Koya, Kammara Koya, Musara Koya, Oddi Koya, Pattidi Koya, Rajah, Rasha Koya, Lingadhari Koya (Ordinary), Kottu Koya, Bhine Koya, Raj Koya (Goud-omitted *)
19. Kulia
20. Malis (excluding Adilabad, Hyderabad, Karimnagar, Khammam, Mahabubnagar, Medak, Nalgonda, Nizamabad and Warangal District)
21. Manna Dhora
22. Nayaks (in the Agency tracts)
23. Mukha Dhora, Nooka Dhora
24. Pardhan
25. Porja, Parangi Perja
26. Reddi Dhoras
27. Rona, Rena
28. Savaras, Kapu Savaras, Maliya Savaras, Khutto Savaras
29. Sugalis, Lambadis, Banjara *
30. Thoti (in Adilabad, Hyderabad, Karimnagar, Khammam, Mahabubnagar, Medak, Nalgonda, Nizamabad and Warangal Districts)
31. Valmiki (in the Scheduled Areas of Vishakapatnam, Srikakulam, Vizianagaram, East Godavari and West Godavari Districts *)
32. Yenadis, Chella Yenadi, Kappala Yenadi, Manchi Yenadi, Reddi Yenadi *
33. Yerukulas, Koracha, Dabba Yerukula, Kunchapuri Yerukula, Uppu Yerukula *
34. Nakkala Kurivikaran (Nakkala – A.P. Gazette, Part – III (B) Central Acts ordinance and Regulations Issue No. 05 Dt. 02/10/2003)
35. Dhulia, Paiko, Putiya (in the districts of Vishakapatnam, Vizianagaram *)

* As for the Scheduled Castes and Scheduled Tribes Orders (Amendment) Act 2002, Act No. 10 of 2003

LIST OF SOCIALLY AND EDUCATIONALLY BACKWARD CLASSES
(Amended from time to time as on 31/08/2007)

GROUP- A
Aboriginal Tribes, Vimuktha Jathis, Nomadic and Semi Nomadic Tribes etc.,

1. Agnikulakshatriya, Palli, Vadabalija, Besta, jalari, Gangavar, Gangaputra, Goondla, Vanyakulakshatriya (Vannekapu, Vannereddi, Pallikapu, Pallireddy Neyyala and Pattapu) *Mudiraj / Mutrasi / Tenugollu, The G.O. Ms.No. 15 BCW(C2) Dept., dt. 19/02/2009 is suspended. Hence the inclusion of Mudiraj / Mutrasi / Tenugollu is suspended) vide Hon'ble A.P. High Court orders in WP No. 2122/2009 dated: 29-04-2009.
2. Balasanthu, Bahurupi
3. Bandara
4. Budabukkala
5. Rajaka (Chakali Vannar)
6. Dasari (formerly engaged in bikshatana)
   (amended vide G.O.Rt.No. 32, BCW(M1) Department, dated 23/02/1995)
7. Dommara
8. Gangiredlavaru
9. Jangam (whose traditional occupation is begging)
10. Jogi
11. Katipapala
12. Korcha
13. Lambada or Banjara in Telangana Area
    (deleted and included in S.T. list vide G.O.Ms.No. 149, SW, dated 3/5/1978)
14. Medari or Mahendra
15. Mondivaru, Mondibanda, Banda
16. Nayee Brahmin (Mangali), Mangala and Bajantri
    (amended vide G.O.Ms.No. 1, BCW(M1) Department, dated 6/1/1996)
17. Nakkala (Deleted vide G.O. Ms. No. 21, BCW(C2) Dept., Dt. 20/06/2011)
18. Vamsha Raj (amended vide G.O.Ms.No. 27, BCW(M1) Department, dated 23/06/1995 deleting the Original name Pitchiguntla)
19. Pamula
20. Pardhi (Mirshikari)
21. Pambala
22. Peddammavandlu, Devaravandlu, Yellammavandlu, Mutyalammavandlu (Dammali, Dammala, Dammula, Damala Castes confined to Srikakulam dist. Vide G.O.Ms. No.: 9 BCW(C2) Dept., Dt. 9/04/2008)
23. Veeramushti (Nettikotala), Veera bhadreeya (Amended vide G.O. Ms. No. 62, BCW (M1) Dept., Dt. 10/12/1996)
24. Valmiki boya (Boya, Bedar, Kirataka, Nishadi, Yellapi, Pedda Boya) Talayari and Chunduvallu
    (G.O.Ms. No. 124, SW, Dt. 24.06.85) Yellapi and Yellapu are one and the same amended vide G.O. Ms. No. 61, BCW(M1) Dept., Dt. 05.12.1996)
25. Yerukalas in Telangana area (deleted and included in the list of S.Ts)
26. Gudala
27. Kanjara - Bhatta
28. Kalinga (Kinthala deleted vide G.O.Ms. No. 53, SW, Dt. 07.03.1980)
29. Kepmare or Reddika
30. Mondipatta
31. Nokkar
32. Pariki Muggula
33. Yata
34. Chopemari
35. Kaikadi
36. Joshinandiwalas
37. Odde (Oddilu, Vaddi, Vaddelu)
38. Mandula (Govt. Memo No. 40-VI/70-1, Edn., Dt. 10.02.1972)
39. Mehator (Muslim) (Govt. Memo No. 234-VI/72-2, Edn., Dt. 05.07.1972).
40. Kunapuli (Govt. Memo No. 1279/P1/74-10, E&SW, Dt. 03.08.1975)
41. Patra (included in G.O. Ms. No. 8, BCW(C2) Dept., Dt. 28.08.2006)
42. kurakula of Srikakulam, Vizianagaram and Visakhapatnam Districts only. Included vide in G.O.MS.No. 26 BC W (C2) Dept., Dt. 4/07/08
43. Pondara of Srikakulam, Vizianagaram, and Visakhapatnam Districts only. Included vide G.O.MS.No. 28 BC W (C2) Dept., Dt. 4/07/08
44. Samanthula, Samantha, sountia, Sauntia of Srikakulam District only. Included vide G.O.MS.No. 29 BC W (C2) Dept., Dt. 4/07/08

45. pala-Ekari, Ekila, Vyakula, Ekiri, Nayanivaru, Palegaru, Tolagari, Kavali of Chittor, Cuddapah, Kurnool, Anantapur, Nellore, Hyderabad and Rangareddy Districts only. Included Vide G.O. MS. No. 23 B.C. W (C2) Dept., Dt. 4/07/08
46. Rajannala, Rajannalu of Karimnagar, Warangal, Nizamabad and Adilabad Districts only. (included in vide G.O.Ms. No. 44 B.C.W(C2) Dept., Dt.07/08/2008).
47. Bukka Ayyavars, Included vide G.O.Ms.No. 6 Backward Classes Welfare (C2) Dept., dt. 19/02/2009.
48. Gotrala, Included vide G.O.Ms.No. 7 Backward Classes Welfare (C2) Dept., dt. 19/02/2009. The area of operation shall be confined to Telangana Region only.
49. Kasikapadi / Kasikapudi, Included vide G.O.Ms.No. 8 Backward Classes Welfare (C2) Dept., dt. 19/02/2009. The area of operation shall be confined to Hyderabad, Rangareddy, Nizamabad, Mahaboobnagar and Adilabad Districts of Telangana Region only.
50. Siddula, Included vide G.O.Ms.No. 9 Backward Classes Welfare (C2) Dept., dt. 19/02/2009. The area of operation shall be confined to Telangana Region only.
51. Sikligar / Saikalgar, Included vide G.O.Ms.No. 10 Backward Classes Welfare (C2) Dept., dt. 19/02/2009.
52. Poosala included vide G.O. Ms.No. 16 Backward Classes Welfare (C2) Dept., dt. 19/02/2009.
53. Aasadula / Asadula, included vide G.O. Ms. No. 13, Backward Classes Welfare (C2) Dept., Dt. 27/05/2011. The area of operation shall be confined to East Godavari and West Godavari Districts only.
54. Keuta/Kevuto/Keviti, included vide G.O. Ms. No. 15, Backward Classes Welfare (C2) Dept., Dt. 27/05/2011. The area of operation shall be confined to Srikakulam District only.

GROUP – B (Vocational)

1. Achukatlavandlu in the Districts of Visakhapatnam and Guntur confined to Hindus only as amended vide G.O. Ms. No. 8, BCW(C2) Dept., Dt. 29.03.2000
2. Aryakshatriya, Chittari , Giniyar, Chitrakara, Nakshas (Muchi Telugu Speaking deleted vide G.O. Ms. No. 31, BCW (M1) Dept., 11.06.1996)
3. Devanga
4. Goud (Ediga) Gouda (Gamella) Kalalee, Goundla, Settibalija of Vishaphapatnam, East Godavari, West Godavari and Krishna Districts and Srisayana (Segidi) – (amended vide G.O. Ms. No. 16, BCW (A1) Dept., dt. 19.06.1997
5. Dudekula, Laddaf, Pinjari or Noorbash
6. Gandla, Telikula, Devatilakula (Amended vide G.O. Ms. No. 13, BCW(A1) Dept., dt. 20.05.1997)
7. Jandra
8. Kummara or Kulala, Salivahana (Salivahana added vide G.O. Ms. No. 28, BCW(M1) Dept., 24.06.1995)
9. Karikalabhakthulu, Kaikolan or Kaikala (Sengundam or Sengunther)
10. Karnabhakthulu
11. Kuruba or Kuruma
12. Nagavaddilu
13. Neelakanthi
14. Patkar (Khatri)
15. Perika (Perikabalija, Puragirikshatriya)
16. Nessi or Kurni
17. Padmasali (Sali, Salivan, Pattusali, Senapathulu, Thogata Sali)
18. Srisayana ((sagidi)- deleted and added to Sl.No. 4 of Group-B)
19. Swakulasali
20. Thogata, Thogati or Thogataveerakshtriya
21. Viswabrahmin, Viswakarma (Ausula or Kamsali, Kammari, Kanchari Vadla or Vadra or Vadrangi and Silpis)
    (Viswakarma added vide G.O. Ms. No. 59 BCW(M1) Dept., Dt. 06.12.1995)
22. Kunchiti, Vakkaliga, Vakkaligara, Kunchitiga of Anantapur Dist. Only vide G.O. Ms.No. 10 BCW(C-2) Dept., Dt. 9-04-2008
23. Lodh, Lodhi, Lodha of Hyderabad, Rangareddy, Khammam and Adilabad Districts only. Included in Vide G.O.MS.No. 22 BC W (C2) Dept., Dt. 4/07/08
24. Bondili (included in vide G.O.Ms. No. 42, B.C.W(C2) Dept., Dt.07/08/2008)
25. Are Marathi, Maratha(Non-Brahmins), Arakalies and Surabhi Natakalavallu. (included in vide G.O.Ms. No. 40, B.C.W(C2) Dept., Dt.07/08/2008)
26. Neeli (included in vide G.O.Ms. No. 43, B.C.W(C2) Dept., Dt.07/08/2008).
27. Budubunjala/Bhunjwa/Bhadbhunja, included vide G.O.Ms. No. 11, Backward Classes Welfare (C2) Dept., Dt. 27/05/2011. The area of operation shall be confined to Hyderabad and Ranga Reddy District only.

28. Gudia/Gudiya, included vide G.O.Ms. No. 14, Backward Classes Welfare (C2) Dept., Dt. 27/05/2011. The area of operation shall be confined to Srikakulam, Vizianagaram and Vishakhapatnam, district only.

GROUP – C

Scheduled Castes converts to Christianity and their progeny
(Substituted in G.O.Ms.No.159, G.A.(Ser.D) Dept., dt. 02/04/1981)

GROUP – D (Other Classes)

1. Agaru
2. Are-Katika, Katika, Are-Suryavamsi(Are-Suryavamsi added vide G.O. Ms. No. 39, B.C. W(C2) Dept., Dt. 7/08/08)
3. Atagara
4. Bhatraju
5. Chippolu (Mera)
6. Gavara
7. Godaba
8. Hatkar
9. Jakkala
10. Jingar
11. Kandra
12. Kosthi
13. Kachi
14. Surya Balija, (Kalavanthulu) Ganika (amended vide G.O.Ms. No. 20, BCW(P2) Dept., Dt. 19.07.1994)
15. Krishanabalija (Dasari, Bukka)
16. Koppulavelama
17. Mathura
18. Mali (Bare, Barai, Marar and Tamboli of all Districts of Telangana Region added as synonyms vide G.O. Ms. No. 3, BCW(C2) Dept., Dt. 09.01.2004 and G.O. Ms. No. 45, B.C.W(C2) Dept., Dt.07/08/2008)
19. Mudiraj / Mutrasi / Tenugollu.
20. Munnurukapu (Telangana)
21. Nagavamsam (Nagavamsa) vide G.O.Ms.No. 53, BC Welfare Dept., dated:19/09/1996
22. Nelli(deleted vide G.O.Ms. No. 43, B.C.W(C2) Dept., Dt.07/08/2008)
23. Polinativelmas of Srikakulam and Visakhapatnam districts
24. . . . deleted vide G.O. Ms.No. 16 Backward Classes Welfare (C2) Dept., dt. 19/02/2009
25. Passi
26. Rangrez or Bhavasarakshtriya
27. Sadhuchetty
28. Satani (Chattadasrivaishnava)
29. Tammali (Non-Brahmins) (Shudra Caste) whose traditional occupation is playing musical instruments, vending of flowers and giving assistance in temple service but not Shivarchakars. Included vide G.O. Ms. No. 7, Backward Classes Welfare (C2) Dept., Dt. 19/02/2011).
30. Turupukapus or Gajula kapus {… the words “of Srikakulkam, Vizianagaram and Vishakapatnam Districts” were deleted vide G.O.Ms.No. 62, Backward Classes Welfare (C2) Dept., dt. 20/12/2008 and G.O. Ms.No. 19 Backward Classes Welfare (C2) Dept., dt. 19/02/2009} who are subject to Social customs or divorce and remarriage among their women (G.O. Ms. No. 65, E&SW, dt. 18.02.1994)
31. Uppara or Sagara
32. Vanjara (Vanjari)
33. Yadava (Golla)
34. Are, Arevallu and Arollu of Telangana District (Included vide G.O.Ms.No. 11, Backward Classes Welfare (C-2) Department, dt. 13/5/2003 and G.O.Ms. No. 41, B.C.W(C2) Dept., Dt.07/08/2008)
35. Sadara, Sadaru of Anantapur Dist. Only vide G.O.Ms.No. 11 BCW (C-2) Dept., Dt. 9-04-2008
36. Arava of Srikakulam District only. Included in vide G.O. MS. No. 24 BC W (C2) Dept., Dt. 4/07/08
37. Ayyaraka, of Srikakulam, Vizianagaram, Visakhapatnam, East Godavari, West Godavari, Krishna, Guntur, Khammam and Warangal Districts only. Included in vide G.O. MS. No. 25 BC W (C2) Dept., Dt. 4/07/08
38. Nagaralu of Srikakulam, Vizianagaram, Visakhapatnam, Krishna, Hyderabad and Rangareddy Districts only. Included in vide G.O. MS. No. 27 BC W (C2) Dept., Dt. 4/07/08

39. Aghamudian, Aghamudiar, Agamudivellalar and Agamudimudaliar including Thuluva Vellalas of Chittoor, Nellore, Kurnool, Anantapur, Hyderabad and Rangareddy Districts only. Included in vide G.O. MS. No. 20 BC W (C2) Dept., Dt. 4/07/08
40. Beri Vysya, Beri Chetty of Chittoor, Nellore and Krishna Districts only. Included in vide G.O. MS. No. 21 BC W (C2) Dept., Dt. 4/07/08
41. Atirasa included vide G.O. Ms.No. 5 Backward Classes Welfare (C2) Dept., dt. 19/02/2009. The area of operation shall be confined to East Godavari and West Godavari Districts only.
42. Sondi / Sundi included vide G.O. Ms.No. 11 Backward Classes Welfare (C2) Dept., dt. 19/02/2009.
43. Varala included vide G.O. Ms.No. 12 Backward Classes Welfare (C2) Dept., dt. 19/02/2009. The area of operation shall be confined to Telangana region only.
44. Sistakaranam included vide G.O. Ms.No. 13 Backward Classes Welfare (C2) Dept., dt. 19/02/2009.
45. Lakkamari Kapu included vide G.O. Ms.No. 14 Backward Classes Welfare (C2) Dept., dt. 19/02/2009. The area of operation shall be confined to Telangana region only.
46. Veerashaiva Lingayat/Lingabalija, included vide G.O. Ms.No. 22 Backward Classes Welfare (C2) Dept., dt. 28/02/2009.
47. Kurmi, included vide G.O.Ms. No. 12, Backward Classes Welfare (C2) Dept., Dt. 27/05/2011. The area of operation shall be confined to Telangana Region and also Krishna District only.

GROUP – E

(Socially and Educationally Backward Classes of Muslims)

1. Achchukattalavandlu, Singali, Singamvallu, Achchupanivallu, Achchukattuvaru, Achukatlavandlu.
2. Attar Saibuli, Attarollu
3. Dhobi Muslim/ Muslim Dhobi/ Dhobi Musalman, Turka Chakla or Turka Sakala, Turaka Chakali, Tulukka Vannan, Tskalas or Chakalas, Muslim Rajakas.
4. Faqir, Fhakir Budbudki, Ghanti, Fhakir, Ghanta Fhakirlu, Turaka Budbudki, Derves, Fakeer
5. Garadi Muslim, Garadi Saibulu, Pamulavallu, Kani-Kattuvallu, Garadollu, Garadiga.
6. Gosangi Muslim, Phakeer Sayebulu
7. Guddi Eluguvallu, Elugu Bantuvallu, Musalman Keelu Gurralavallu
8. Hajam, Nai, Nai Muslim, Navid
9. Labbi, Labbai, Labbon, Labba
10. Pakeerla, Borewale, Deraphakirlu, Bonthala
11. Kureshi/ Khureshi, Khasab, Marati Khasab, Muslim Katika, Khatik Muslim
12. Shaik/ Sheikh
13. Siddi, Yaba, Habshi, Jasi
14. Turaka Kasha, Kakkukotte Zinka Saibulu, chakkitakanevale, Terugadu Gontalavaru, Thirugatiganta, Rollaku Kakku Kottevaru, Pattar Phodulu, Chakketakare, Thuraka Kasha
15. Other Muslim groups excluding
    Syed, Saiyed, Sayyad, Mushaik;
    Mughal, Moghal;
    Pathans;
    Irani;
    Arab;
    Bohara, Bohra;
    Shia Imami Ismaili, Khoja;
    Cutchi-Memon;
    Jamayat;
    Navayat;
    and all the synonyms and sub-groups of the excluded groups; and except those who have been already included in the State List of Backward Classes.

N.B.: 1. The above list is for information and subject to confirmation with reference to G.O.Ms.No. 58, SW(J) Department, dated 12/05/1997 and time to time orders.

2. On account of any reason whatsoever in case of any doubt/ dispute arising in the matter of community status (SC/ST/BC/OC) of any candidate, subject to satisfaction with regard to relevant rules and regulations in force the decision of the Commission shall be final in all such cases.