

# Student has to work hard on this topic

## UNIT-V (First Year)

The Unit V shows three chapters viz Cell: The unit of life, Biomolecules, Cell cycle and Cell division. This unit is a different approach to the study of organisms compared to the earlier one in previous chapters. In the earlier chapters morphological features were described. Study of internal character started in the later 16<sup>th</sup> century after the constitution of the microscopes by Anton von Leeuwenhoek. The first chapter is about the fundamental aspects of the cytology and cell organelles. All the aspects of the cell organelles were described very briefly. In the beginning of the chapter external and internal structural details of the prokaryotes are described. Student should club this topic with the Kingdom Monera of the chapter 2. Both of these should be clubbed with the second year Unit -II (Microbiology) by the second year and long term students. In the study of prokaryotes external and internal characters should not be separated. In different chapters different and new information is given. Unless students complete the second year Microbiology he/she will not get total information. Long term students also face this problem. Each time, as they are completing the syllabus, new information is emerging regarding the same prokaryotes. As the syllabus is new to them it is advisable for the long term students to study all these chapters at a stretch. In the 2<sup>nd</sup> chapter a mention is made about mesosome of bacteria and its functions are written in the chapter 9 and mention is

### Important questions for IPE

- Describe the cell organelle with green pigment.
- Explain the structure and function of the 'power houses of the cells'
- Describe briefly the cell theory.
- Explain the structure of the nucleus.
- Classify the chromosomes on the basis of the position of centromere.
- Though redundantly described as a resting phase, interphase does not really involve rest. Comment.
- Explain the Prophase-I of meiosis.
- Mention the different phases of meiosis.

not made in the Microbiology where actually it should have made. Same thing is regarding plasmid, flagella, pili, fimbriae, capsule, slime layer and staining of bacteria. Scope of objective type of questions from this information is very high.

### Description of the cell organelles is very brief

Cytology is an inter disciplinary topic. In EAMCET Botany and Zoology will be treated as two separate subjects. In the 9<sup>th</sup> chapter much information is there about animal cells. Cell wall is described briefly and no mention is made about protoplasm. Functions of the plasma membrane are elaborated here describing about the active transport and passive transport. It is just the summary of the first chapter of the second year Botany. Structure of the cilia and flagella, centrosome and centrioles is out of the scope of the botany text book. It is a repetition of the information given in the zoology text book. With its brief nature difficult questions for EAMCET are not possible from this chapter. For the long term students there is no much additional information to learn. Names of the scientists are also very few in the new syllabus. It is a disadvantage for the students who opt for life sciences in the graduation as cytology and cell organelles are not going to be studied again separately after intermediate.

### Biomolecules chapter is an addition to the life sciences

In the 10<sup>th</sup> chapter plant biochemistry is introduced in the name of Biomolecules. Plant body is made up of different chemical substances like carbohydrates, proteins, lipids and nucleic acids. All of these are polymers and large molecules. Separation technique is briefly mentioned and is very useful to the student. This information is essential to the student at this stage but it is a redundancy as the student is learning much more about biomolecules in their chemistry syllabus. Student should read this chapter at the end of the first year syllabus after learning the basics of organic chemistry. Nucleic acids description and DNA structure is very important for the biology student. It is the basis for the study of Molecular genetics. Structure of the DNA is explained again in the second year syllabus Unit IV. Same information is given in the first year but without a diagram. If first year students understand well the structure of the DNA it will be very easy for them to understand the Unit-IV of second year. This particular topic DNA is very important for



the EAMCET point of view. Every year one problem will be asked on DNA. Many models of problems are possible from the DNA structure and expression. A regular student has to work hard on this topic. It will be a cake walk for the long term student and got an advantage over the regular student. Long term student can do better the questions from this chapter. Concepts of dynamic state of the body constituents and metabolites are described briefly but very clearly.

### Meiosis increases genetic variability in the population

In the 3<sup>rd</sup> chapter Cell cycle and Cell division is described. This chapter is little bit difficult to understand clearly. In cell biology, cell division, particularly meiosis is difficult for

the intermediate student. During the cell division the behavior of the chromosomes must be understood very clearly to answer many objective type questions. The diagrams drawn here are of animal cells. Student should learn to draw plant cells in the exams. Plant cells are rectangular and do not show centrioles. Meiosis understanding is essential to understand Mendel's dihybrid cross experiments. The prophase-I of the meiosis is important for both IPE and EAMCET point of view. This information is not explained clearly. Students have to read many times besides drawing diagrams based on the description given there in. Chromosome numbers of many organisms were given in a table at the end of the chapter. Half of them are animals. In a botany text book there is no place of animals. Student should concentrate on the plant chromosome numbers. Questions can be asked on these numbers also. For example questions like "How many chromosomes can be seen in the root cell and antipodal cells respectively in a rice plant". "Haploid number of plant A is 6 times less than the diploid number of plant B. Identify the two plants A & B". To answer such type of questions student

need to remember chromosome number of all the plants given thereof. Little difficult questions like, "At an anaphase stage of root cells of Potato, how many chromosomes can be seen at each pole of the cell".

### Unit-I and Unit IV carries equal weightage in IPE

For IPE this Unit got a weightage of 14 marks. There is no scope of Long Answer Questions. From chapter 9 & 11 Short Answer Questions are possible. From the chapter 10 ie. Biomolecules, Very short Answer type of questions will be asked. Student has to go through all the questions given at the end of each chapter. This year many questions are revamped and changed in the revised edition. Board of Intermediate Education did not give information regarding the change. Student must go through the new revised questions. Questions in the chapter 10 are also revamped. Students must prepare for the new revised questions. Diagrams are must for the answers as answers will be very brief. It is advisable to the student to attempt Short Answer Questions from this chapter to get more marks. In Unit -I for the SAQs much more information has to be written.

### NEET-2016 Phase-I Questions

- Mitochondria and Chloroplast are:  
(a) Semi-autonomous organelles  
(b) Formed by division of pre-existing organelles and they contain DNA but lack protein synthesizing machinery  
1) Both (a) and (b) are correct  
2) (b) is true but (a) is false  
3) (a) is true but (b) is false  
4) Both (a) and (b) are false
- Spindle fibres attach on to:  
1) Telomere of the chromosome  
2) Kinetochore of the chromosome  
3) Centromere of the chromosome  
4) Kinetosome of the chromosome
- Microtubules are the constituents of:  
1) Cilia, flagella, Peroxisomes  
2) Spindle fibres, Centrioles and Cilia  
3) Centrioles, Spindle fibres and Chromatin  
4) Centrosome, Nucleosome and Centrioles
- A complex of ribosomes attached to a single strand of RNA is called as:  
1) Polysome 2) Polymer  
3) Polypeptide  
4) Okazaki fragment

- One of the major components of cell wall of most fungi is:  
1) Chitin 2) Peptidoglycon  
3) Cellulose 4) Hemicellulose
- In meiosis crossing over is initiated at:  
1) Pachytene 2) Leptotene  
3) Zygotene 4) Diplotene
- Which of the following cell organelles is enclosed by a single membrane  
1) Mitochondria 2) Chloroplasts  
3) Lysosomes 4) Nucleii
- Water soluble pigments found in plant cell vacuoles are:  
1) Xanthophylls  
2) Chlorophylls 3) Carotenoids  
4) Anthocyanins

### NEET-2016 Phase-II Questions

- Select the mismatch.  
1) Large central vacuoles - Animal cells  
2) Protists - Eukaryotes  
3) Methanogens - Prokaryotes  
4) Gas vacuoles - Green bacteria
- Select the wrong statement  
1) Pili and fimbriae are mainly involved in motility of bacterial cells  
2) Cyanobacteria lack flagellated cells  
3) *Mycoplasma* is a wall-less microorganism  
4) Bacterial cell wall is made up of peptidoglycan

- A cell organelle containing hydrolytic enzymes is:  
1) Microsome 2) Ribosome  
3) Mesosome 4) Lysosome
- During cell growth, DNA synthesis takes place in:  
1) G<sub>1</sub> phase 2) G<sub>2</sub> phase  
3) M phase 4) S phase
- Match the states of meiosis in Column - I to their characteristic features in Column - II and select the correct option using the codes given below.

### Column - I

- Pachytene
- Metaphase-I
- Diakinesis
- Zygotene

### Column - II

- Pairing of homologous chromosomes
- Terminalization of chiasmata
- Crossing over takes place
- Chromosomes align at equatorial plate

### Codes:

- a-i, b-iv, c-ii, d-iii
  - a-ii, b-iv, c-iii, d-i
  - a-iv, b-iii, c-ii, d-i
  - a-iii, b-iv, c-ii, d-i
- 1) 3; 2) 2; 3) 2; 4) 1;  
5) 1; 6) 1; 7) 3; 8) 4;  
9) 1; 10) 1; 11) 4; 12) 4;  
13) 4.