

**Subject : Introduction to Microbiology**

Day : Thursday

Date : 06/04/2017



34717

Time : 02.00 PM TO 05.00 PM

Max Marks : 60 Total Pages : 1

**N.B.**

- 1) Q. No.1 and Q. No.5 are **COMPULSORY**.
- 2) Attempt **ANY TWO** questions from Q. No.2, 3 & 4.
- 3) Attempt **ANY TWO** questions from Q. No.6, 7 & 8.
- 4) Answer to the sections should be written in the **SEPERATE** answer book.

**SECTION-I**

- Q.1** Answer **ANY FIVE** of the following (10)
- a) What are the different flageller arrangements in bacteria
  - b) What is capsule? Mention its composition.
  - c) Mention the role of immersion oil in microscope.
  - d) Koch's postulates
  - e) What is biovar and serovar?
  - f) Name different methods of sterilization by filtration
- Q.2** Attempt the following questions (10)
- a) Classify the microorganisms on the basis of source of nutrition.
  - b) Explain control of microorganisms by radiations.
- Q.3** Explain the following (10)
- a) Explain the Growth curve of bacteria.
  - b) Give salient features of Bergey's manual of systematic bacteriology.
- Q.4** Write short notes on (10)
- a) TEM
  - b) Cell inclusions

**SECTION-II**

- Q.5** Attempt the following questions (10)
- a) What are the different types of bacteria on the basis of pH?
  - b) Define Log phase.
  - c) What are chemotrophs? Give its examples
  - d) What is differential media? Give its example.
  - e) What is chemotaxis?
- Q.6** Attempt the following: (10)
- a) Describe synchronous culture in brief.
  - b) Explain the structure of flagella.
- Q.7** Write short notes: (10)
- a) Cell wall of Gram negative bacteria.
  - b) Mode of action of heavy metals
- Q.8** Answer of the following: (10)
- a) Give an account on commonly used media ingredients.
  - b) Give detail account on Streak plate technique.

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Subject : Biochemistry - I

Day : Saturday

Date : 08/04/2017



34718

Time : 02.00 PM TO 05.00 PM

Max Marks : 60 Total Pages : 1

N.B.

- 1) Q.1 and Q.5 are **COMPULSORY**.
- 2) Answer any **TWO** questions from Q.2, Q.3 and Q.4 and from Q.6, Q.7 and Q.8.
- 3) Answers to both the sections should be written in **SEPARATE** answer books.
- 4) Draw neat structures and diagrams **WHEREVER** necessary.

SECTION – I

- Q.1 Attempt any **FIVE** of the following: (10)
- a) What are essential and non-essential amino acids? Give two examples of each.
  - b) Name four different enzymes with their function.
  - c) Name the various forces stabilizing protein molecular structure.
  - d) What is central dogma of gene expression?
  - e) Plot the graph of Ramchandran plot.
  - f) Explain the partial double bond character of peptide bond present in protein.
- Q.2 Answer the following: (10)
- a) Describe the four different levels of protein structure.
  - b) Explain Watson-Crick model of DNA structure.
- Q.3 Answer in brief: (10)
- a) Draw the structure of peptide Ala-Try-Gly – Val and label 'N' and 'C' terminals of a peptide.
  - b) Draw the structure of Alanine, Guanine, Cytosine, Uracil.
- Q.4 Write short notes on (10)
- a)  $\beta$ -Sheets and  $\beta$ -turns
  - b) Enzymes as biocatalyst

SECTION – II

- Q.5 Answer the following: (10)
- a) What are Vitamins? Explain their classification. Describe functions and deficiency of any four vitamins.
  - b) Enumerate various types of chromatography. Explain principle and applications of gel chromatography.
- Q.6 Attempt the following: (10)
- a) Describe the Kjeldahls method of nitrogen estimation.
  - b) Describe the analysis of soil for phosphate fertilizer by colourimetry.
- Q.7 Answer the following: (10)
- a) What are macronutrients and micronutrients? Explain the role of any four minerals in biological system.
  - b) Explain the principle of electrophoresis. Describe various factors affecting separation of protein sample.
- Q.8 Explain briefly: (10)
- a) Name various types of filtration technique. Describe dialysis in detail.
  - b) Explain the advantages and disadvantages of gravimetric analysis.

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**Subject : Cell Biology**

Day : Monday

Date : 10/04/2017



**34719**

Time : 02.00 PM TO 05.00 PM

Max Marks : 60 Total Pages : 1

**N.B.:**

- 1) Q. No. 1 and Q. No. 5 are **COMPULSORY**. Answer any **TWO** from Q. No. 2, 3, & 4 and **TWO** from Q. No. 6, 7, & 8.
- 2) Figures to the **RIGHT** indicate full marks.
- 3) Both the sections should be written in **SEPARATE** answer books.
- 4) Draw neat labeled diagrams **WHEREVER** necessary.

**SECTION-I**

- Q.1** Attempt any **FIVE** of the following: **(10)**
- a) Give functions of erythrocytes.
  - b) Write in brief about cell theory.
  - c) Sketch and label typical animal cell.
  - d) Write role of plasmodesmata in plants.
  - e) What is Phagocytosis?
  - f) What is cytokinesis?
- Q.2** Attempt the following questions: **(10)**
- a) Describe the structure and functions of endoplasmic reticulum.
  - b) Differentiate between plant cell and animal cell.
- Q.3** Attempt the following questions: **(10)**
- a) Describe the structure and functions of nerve cell.
  - b) Describe the structure and functions of nucleus.
- Q.4** Write short notes on any **TWO** of the following: **(10)**
- a) Explain, how lungs functions as membranous bags?
  - b) What is cytoskeleton? Describe the structure of intermediate filaments with their six groups of proteins.
  - c) Describe in brief structure of prokaryotic cell with suitable example.

**SECTION-II**

- Q.5** Attempt any **FIVE** of the following: **(10)**
- a) Explain component of plasma membrane and mention the role of different membrane proteins.
  - b) What is passive transport? Explain how it differs from active transport.
  - c) Explain cell-cell interaction in reference to gap junction, tight junction and desmosomes.
- Q.6** Attempt the following questions: **(10)**
- a) What is mitosis? Explain its stages in brief.
  - b) What is cell cycle? Describe interphase in brief.
- Q.7** Attempt the following questions: **(10)**
- a) Describe mechanism of signal transduction.
  - b) Explain mechanism of apoptosis and its failure leads to cancer development.
- Q.8** What is gametogenesis? Explain stages of spermatogenesis and Oogenesis with their significance. **(10)**