

Day : Monday

Date : 04/04/2016



Time : 10.00 AM TO 01.00 PM

Max Marks : 60 Total Pages : 1

N. B. :

- 1) **ALL QUESTIONS ARE COMPULSORY.**
- 2) Figures to the right indicate **FULL** marks.
- 3) Both the sections should be written in **SEPARATE** answer books.

SECTION - I

- Q. 1** Answer **ANY TWO** of the following: (10)
- a) Which hormones play a role in regulation of carbohydrate metabolism? Describe in brief.
 - b) What are globular proteins? Correlate their function with biological system with examples?
 - c) What are cofactors and coenzymes? Comment on their role in metabolism.
- Q. 2** Answer the following questions: (06)
- a) Discuss breakdown of unsaturated fatty acids with a suitable example.
- OR**
- a) Discuss Glycolysis with respect to
i) regulatory steps ii) regulatory enzymes iii) ATP produced
 - b) Write a short note on Polyunsaturated fatty acids. (04)
- Q. 3** Answer the following: (10)
- a) What is the difference between reducing and non-reducing sugars? Explain with suitable examples.
 - b) Draw structure of one basic amino acid and one acidic amino acid.
 - c) Identify the enzyme catalyzing the following reactions:
i) Glucose to Glucose-6-phosphate ii) α - keto glutrate to malate
 - d) What are the consequences of Vit. A deficiency?
 - e) Comment on the factors stabilizing secondary structure of protein.

SECTION - II

- Q. 4** Answer the following questions: (06)
- a) Write a note on transamination and deamination reactions.
- OR**
- a) What are purines and pyrimidines? Describe their role in nucleic acids.
 - b) Highlight the differences between different types of amino acids. (04)
- Q. 5** Answer **ANY TWO** of the following: (10)
- a) Compare and contrast between C_3 and C_4 plants.
 - b) Write a note on Mitchell's hypothesis.
 - c) Describe in detail any one of the Photosystems.
- Q. 6** Answer the following questions: (10)
- a) Name the molecule that tags a protein for its destruction.
 - b) What is hypo- and hyper-thyroidism?
 - c) Identify the enzyme that regulates urea cycle.
 - d) Identify the various co-enzymes of pyruvate dehydrogenase complex.
 - e) What is the fate of pyruvate in aerobic and anaerobic respiration?

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Subject : Cell Biology

Day : Tuesday

Date : 05/04/2016



Time : 10.00 AM TO 01.00 PM

Max Marks : 60 Total Pages : 1

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- 4) Draw neat diagrams **WHEREVER** necessary.

SECTION-I

Q.1 Attempt any **FIVE** of the following: (10)

- a) Write functions of smooth endoplasmic reticulum.
- b) Draw a neat and labeled diagram of neuron.
- c) Mention various parts of compound microscope.
- d) What is difference between chiasmata and centromere?
- e) What is the role of 'F' actin and G-actin protein?
- f) Enlist different types of plastids with their roles in plant.

Q.2 Answer any **TWO** of the following: (10)

- a) Describe structure and functions of nucleus.
- b) Give a comparative account of light microscopy.
- c) Differentiate between Prokaryotic and Eukaryotic cell.

Q.3 Answer any **TWO** of the following: (10)

- a) What is active transport? Describe the role of Na^+ and K^+ channel in membrane transport.
- b) Explain in detail structure of fluid Mosaic Model and how it differs from previous membrane model.
- c) Describe Ultrastructure of chloroplast and add a note on its functions.

SECTION-II

Q.4 Attempt any **FIVE** of the following: (10)

- a) Define cell cycle and mention its stages.
- b) Sketch and label pachytene stage of Meiosis-I.
- c) What is ligand gated channel?
- d) Define Meiosis and Mitosis.
- e) What is role of P53 in cell cycle?
- f) What is plasmodesmata?

Q.5 Answer any **TWO** of the following: (10)

- a) Explain in brief phases of cell cycle.
- b) Describe in brief stages of prophase-I in Meiosis.
- c) What is gametogenesis? Explain the process of oogenesis.

Q.6 Answer any **TWO** of the following: (10)

- a) What is Apoptosis? Explain pathways of Apoptosis.
- b) Describe various types of signaling molecules.
- c) Explain the role of protein tyrosin kinases in cell signaling by cytokinesis.

Subject : Microbiology Basic and Applied

Day : Wednesday

Date : 06/04/2016



Time : 10.00 AM TO 01.00 PM

Max Marks : 60 Total Pages : 1

N.B.:

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- 3) Figures to the **RIGHT** indicate full marks.
- 4) Draw neat diagrams **WHEREVER** necessary.

SECTION-I

Q.1 Attempt any **FIVE** of the following: **(10)**

- a) Describe the structure of Gram negative cell wall.
- b) Explain different types of cell membranes in Archaea.
- c) What are photoautotrophic lithotrophs. Give their evolutionary significance.
- d) Explain the importance of Fts Z ring.
- e) What are transposable elements? Explain its significance.
- f) What is resolving power of a microscope and how to calculate it?

Q.2 Answer any **TWO** of the following: **(10)**

- a) Explain in detail classification of bacteria based on oxygen requirement.
- b) What is active transport of nutrients? Explain different types of active transport.
- c) Explain in detail bacterial growth curve and different steps of growth curve.

Q.3 Answer any **TWO** of the following: **(10)**

- a) Explain in detail different modes of Gene transfer in bacteria.
- b) Explain rolling circle mechanism of plasmid replication with the help of a diagram.
- c) Explain the principle and working of electron microscope.

SECTION-II

Q.4 Attempt any **FIVE** of the following: **(10)**

- a) What is prophage?
- b) Explain genetic material of influenza virus.
- c) Explain how TMV transfer from cell to cell?
- d) What is solid state fermentation?
- e) What are biopesticides? Name different types.
- f) Write industrial application of alcohol.

Q.5 Answer any **TWO** of the following: **(10)**

- a) Describe in detail polio virus and its pathogenicity.
- b) Explain in detail ICTV classification of virus.
- c) Explain different methods of cultivation of viruses.

Q.6 Answer any **TWO** of the following: **(10)**

- a) Explain the structure and types of submerged fermenters.
- b) What are biofertilizers? Explain the steps involved in production of biofertilizers.
- c) Write in detail industrial application of extremophiles.