

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2022

(CBCSS)

Biochemistry

BCH 2C 03—CELL AND MOLECULAR BIOLOGY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Part A (Short Answer)

Answer any four questions.

Each question carries 2 weightage.

1. How does Rb protein influence cell cycle ?
2. Comment on the significance of stem loop structure in attenuation.
3. List out the genes in Antennapedia complex in Drosophila.
4. Comment on START checkpoint in cell cycle.
5. Differentiate between apoptosis and necrosis.
6. State the significance of topoisomerase.
7. What is the problem posed in replication of lagging strand in linear DNA ?

(4 × 2 = 8 weightage)

Turn over

Part B (Short Essay)

Answer any four questions.

Each question carries 3 weightage.

8. What is the role of phosphorylation in mechanism of action of Na^+/K^+ ATPase ?
9. Discuss the site-specific recombination in λ -phage.
10. Brief on the different types of membrane proteins.
11. How is initiation of eukaryotic translation regulated ?
12. Explain the Holliday model for homologous recombination.
13. Comment on the regulatory role of zinc fingers in eukaryotic gene expression.
14. Compare the arrangement of integral membrane proteins in tight junction versus gap junction.

(4 × 3 = 12 weightage)

Part C (Long Essay)

Answer any two questions.

Each question carries 5 weightage

15. Describe the synthesis of RNA in eukaryotes. How are mRNA processed ?
16. How does the flow of ions across neuronal membrane contribute to neurotransmission ?
17. Elaborate the activation of Ras by receptor tyrosine kinases.
18. Detail the steps involved in prokaryotic translation. Comment on the post translational modification.

(2 × 5 = 10 weightage)

**SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2022**

(CBCSS)

Biochemistry

BCH 2C 02—PLANT BIOCHEMISTRY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Part A (Short Answers)

Answer any four questions.

Each question carries 2 weightage.

1. Write the reaction catalysed by Rubisco enzyme.
2. Comment on the structure and organisation of chloroplast membrane.
3. List any six plant hormones.
4. Write about terpenoids.
5. Brief on the role of secondary plant metabolites as drugs.
6. What do you mean by photophosphorylation ?
7. Write about the non-protein amino acids.

(4 × 2 = 8 weightage)

Turn over

Part B (Short Essays)

Answer any four questions.

Each question carries 3 weightage.

8. Discuss about sulphur cycle.
9. Give an account of the photorespiration and compensation point.
10. Explain the biochemistry of leaf senescence and abscission.
11. Differentiate between cyclic and non-cyclic photophosphorylation.
12. Discuss about the C-3 pathway in plants.
13. Write about the structure and functions of photosystems.
14. Write a short essay on Phase-I reactions in Xenobiotic metabolism.

(4 × 3 = 12 weightage)

Part C (Long Essays)

Answer any two questions.

Each question carries 5 weightage.

15. Discuss in detail the process of nitrogen fixation in plants.
16. Give a detailed account of the biochemical basis and mechanism of toxicity.
17. Discuss about the biochemistry of fruit ripening and seed germination.
18. Give a detailed of xenobiotic metabolism and the phases involved.

(2 × 5 = 10 weightage)

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2022

(CBCSS)

Biochemistry

BCH 2C 01—ENZYMOLGY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Part A (Short Answers)

Answer any four.

Weightage 2 each.

1. Write about catalytic antibodies.
2. Comment on the structure and action of lysozyme.
3. Define Q10 and mention the effect of temperature on enzyme catalysed reaction.
4. Write about strain and distortion theory.
5. Write the significance of therapeutic enzymes with suitable examples.
6. What are multienzyme complexes and write its significance.
7. Write about mixed type of enzyme inhibition.

(4 × 2 = 8 weightage)

Part B (Short Essay)

Answer any four.

Weightage 3 each.

8. Discuss about the chemical structure and functions of coenzymes derived from the B-vitamins.
9. Give an account of pyruvate dehydrogenase complex.
10. Explain sequential and concerted models of allosteric regulation.
11. Write a short essay on the determination of inhibition constant KI.
12. List out the structural features of an active site in an enzyme.
13. Derive Line weaver Burk equation, illustrate the plot and mention its significance.
14. Write a short essay on enzyme specificity.

(4 × 3 = 12 weightage)

Part C (Long Essay)

Answer any two.

Weightage 5 each.

15. Write an essay on the different plots used for the determination of Km and Vmax.
16. Give a detailed account of the different factors affecting velocity of an enzyme catalysed reaction.
17. Discuss about the experimental approaches to determine enzyme mechanisms.
18. Give a detailed account of industrial enzymes and their applications.

(2 × 5 = 10 weightage)