Code No. 17157/CORE

FACULTY OF SCIENCE

M. Sc. II Semester (CBCS) Examination, December 2021

Subject: BIO-CHEMISTRY

Paper –I: Enzymology

Time: 2 Hours **Max. Marks: 80**

PART – A

Note: Answer any five questions. **(5 x 7 = 35 Marks)**

1. Explain the role of PLP as a cofactor
2. Define and differentiate between SCOP and CATH classifications
3. Explain a bisubstrate reaction with an example.
4. Explain concept of cooperativity in binding
5. Write about Subtilisin.
6. Discuss the importance of phosphorylation in enzyme regulation.
7. Give a brief account of enzyme cascades in apoptosis.
8. Applications of proteases and cellulases in industry.

PART – B

Note: Answer any three questions. **(3 x 15 = 45 Marks)**

9. Give an account of the various external factors effecting the enzyme catalysis and their kinetics.
10. Write about the methods used to identify active site residues in an enzyme.
11. Explain an enzyme catalyzed reaction and the derivation of Michaelis Menten equation.
12. Give an account of the competitive, noncompetitive, suicide inhibitors and their effects of enzyme kinetics.
13. Discuss about the major types of enzyme catalytic mechanisms and explain the action of RNase.
14. How are receptor tyrosine kinases regulated? Explain the mechanism.
15. Discuss the importance of regulatory enzymes and their role in nucleotide metabolism.
16. Which enzymes are useful in Dairy industries and food processing technology? Give an account.

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FACULTY OF SCIENCE

M. Sc. II Semester (CBCS) Examination, December 2021

Subject: BIOCHEMISTRY

Paper – II : Molecular Biology

Time: 2 Hours **Max. Marks: 80**

PART – A

Note: Answer any five questions. **(5 x 7 = 35 Marks)**

1. Replisome
2. Okazaki fragments
3. Photoreactivation
4. ATM
5. Polyadenylation
6. Splicing
7. Role of HSP in protein folding
8. Action of hemorrhagic venoms

PART – B

Note: Answer any three questions. **(3 x 15 = 45 Marks)**

9. Describe and evaluate random, conservative and semi-conservative models of replication?
10. Describe the rolling circle model and strand displacement model of replication.
11. Describe the mechanism for base excision and nucleotide excision repair.
12. Give an account for the diseases occurring due to the defect of the DNA repair system.
13. Describe Rho-dependent and Rho-independent termination of DNA transcription.
14. Describe the roles of various inhibitors of protein synthesis.
15. Describe various types of post translational modification of protein.
16. Give an account of various diseases occurring due to protein mifsfolding.

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FACULTY OF SCIENCE

M. Sc. (CBCS) II Semester Examination, December 2021

Subject: BIOCHEMISTRY

Paper –III: Biochemical Genetics and Model Organisms

Time: 2 Hours **Max. Marks: 80**

PART – A

Note: Answer any five questions. **(5 x 7 = 35 Marks)**

1. What is mutagen?
2. Give an account on expressivity and penetrance.
3. What are the factors affecting Hardy-Weinberg equilibrium?
4. Write a note on application of knockout mice.
5. Give an account on discovery of bacterial conjugation.
6. Write a note on deletion mapping.
7. Why is *Xenopus* a good model organism?
8. Give an account on NOD and nude mice

PART – B

Note: Answer any three questions. **(3 x 15 = 45 Marks)**

9. With suitable examples discuss about Non-Mendelian inheritance.
10. Give an account on different types of gene mutations.
11. Discuss about tetrad analysis in fungi adding a note on coefficient of coincidence.
12. Explain what is Pedigree-based Gene Mapping?
13. Give an account on discovery of transformation adding a note on mapping of bacterial genes by transformation.
14. Discuss about discovery of transposition adding a note on structure of transposons and mechanism of transposition.
15. Give an account on advantages of using *Arabidopsis thaliana* as a model organism.
16. Why *Drosophila* is a good model organism to study embryonic development?

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M. Sc. (CBCS) II Semester Examination, December 2021

Subject: BIO-CHEMISTRY

Paper –IV: Endocrinology and Metabolic Disorders

Time: 2 Hours **Max. Marks: 80**

PART – A

Note: Answer any five questions. **(5 x 7 = 35 Marks)**

1. Write about parathyroid gland
2. Gonadal hormones
3. Positive feedback loops of FSH
4. Contraception
5. Type-II diabetes mellitus
6. Pentosuria
7. Lesch-Nyhan syndrome
8. Farbers diseases

PART – B

Note: Answer any three questions. **(3x15 = 45 Marks)**

9. Briefly explain about chemistry, physiology of hypothalamus and Pituitary axis.
10. Brief about Basic mechanism of action of steroid hormones receptors.
11. Briefly explain about endocrinology of fertility.
12. Briefly explain about endocrinology of Ca homeostasis
13. Briefly explain about disorders of lysine metabolism.
14. Briefly explain about disorders of fructose metabolism.
15. Briefly explain about disorders Downs and turners syndrome.
16. Briefly explain about hyper uricemia and sulphatide-lipdosis disease.

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