

FACULTY OF SCIENCE**M. Sc. III – Semester Examination, December 2019****Subject : Biochemistry****Paper – I : Gene Regulations and Genetic Engineering****Time : 3 Hours****Max. Marks: 80**

Note : Answer all questions from Part–A and Part–B. Each question carries 4 marks in Part–A and 12 marks in Part – B.

PART – A (8 x 4 = 32 Marks)
(Short Answer Type)

- 1 What is an Operon?
- 2 Explain riboswitch.
- 3 What are siRNAs?
- 4 RNA stability and transport.
- 5 Enzymes used for recombinant DNA.
- 6 Expression vectors.
- 7 Explain yeast two hybrid system.
- 8 What are reporter genes?

PART – B (4 x 12 = 48 Marks)
(Essay Answer Type)

- 9 (a) Explain in detail the function of dual promoters in gal operon and dual repressor in ara operon with well labeled suitable diagrams.
OR
(b) Explain the lytic / lysogeny switch in the control of transcription in lambda phage with a diagram. What is anti-termination in lambda phage?
- 10 (a) Write in detail about the control of transcription in Eukaryotes.
OR
(b) Write short notes on each of the following:
 - (i) Active and inactive forms of chromatin
 - (ii) Histone acetylation
- 11 (a) Explain in detail with suitable diagrams sequencing of DNA by the Maxam-Gilbert and Sanger's method.
OR
(b) Write note on each of the following for DNA sequencing by pyro sequencing:
 - (i) Solexa
 - (ii) SoLiD
- 12 (a) Write short note on the following techniques. Use diagrams.
 - (i) Phage display technique
 - (ii) Random amplification of polymorphic DNA
 OR
(b) What is heterologous gene expression? Explain with examples and diagrams for gene expression using bacteria and yeast cells.

FACULTY OF SCIENCE
M. Sc. III – Semester Examination, December 2019

Subject : Biochemistry

Paper – II : Immunology and Immuno Technology

Time : 3 Hours

Max. Marks: 80

Note : Answer all questions from Part–A and Part–B. Each question carries 4 marks in Part–A and 12 marks in Part – B.

PART – A (8 x 4 = 32 Marks)
(Short Answer Type)

- 1 Super antigens
- 2 Organs of immune system
- 3 Humoral immune response
- 4 Graft Vs host disease
- 5 ADA deficiency
- 6 Immunosuppressive drugs
- 7 Western blotting
- 8 Ouchterlony technique

PART – B (4 x 12 = 48 Marks)
(Essay Answer Type)

- 9 (a) Write an essay on structure and biological properties of immunoglobulins.
OR
(b) Give theories of antibody formation. Add note on antibody diversity.
- 10 (a) Describe structure and functions of MHC proteins.
OR
(b) Give an account of cytokines in immune response.
- 11 (a) Write an essay on types of hypersensitivity.
OR
(b) Describe in detail different types and applications of Vaccines.
- 12 (a) Describe in detail different types and applications of Vaccines.
OR
(b) Write short notes on :
 - (i) RIA
 - (ii) FACS technique

FACULTY OF SCIENCE
M. Sc. III – Semester Examination, December 2019

Subject : Biochemistry

Paper – III : Nutrition and Clinical Biochemistry

Time : 3 Hours

Max. Marks: 80

Note : Answer all questions from Part–A and Part–B. Each question carries 4 marks in Part–A and 12 marks in Part – B.

PART – A (8 x 4 = 32 Marks)
(Short Answer Type)

- 1 BMI and BMR
- 2 Eating disorders
- 3 Food additives
- 4 Nutrient content of milk and milk products
- 5 Oral rehydration therapy
- 6 Complete urine examination
- 7 Thyroid functions
- 8 Glucocorticoids

PART – B (4 x 12 = 48 Marks)
(Essay Answer Type)

- 9 (a) Discuss about food absorption, its intake and control mechanisms.
OR
(b) Describe the clinical aspects of Hepatitis. What are the types of hepatitis caused?
- 10 (a) Describe the various types of Probiotics and Prebiotics.
OR
(b) What are the methods of food preservation? Add a note on food spoilage.
- 11 (a) What are the biological buffers in human body that maintain pH? Add a note on acidosis and alkalosis.
OR
(b) What are the types of haemoglobin and hemoglobinopathies?
- 12 (a) How is heart disease diagnosed using biochemical tests? Give examples.
OR
(b) What are the biochemical tests to analyse liver function?

FACULTY OF SCIENCE
M. Sc. III – Semester Examination, December 2019

Subject : Biochemistry

Paper – IV : Physiology and Xenobiotics

Time : 3 Hours

Max. Marks: 80

Note : Answer all questions from Part–A and Part–B. Each question carries 4 marks in Part–A and 12 marks in Part – B.

PART – A (8 x 4 = 32 Marks)
(Short Answer Type)

- 1 Rhodopsin
- 2 Gustation
- 3 Smooth muscle
- 4 Cytokinesis
- 5 Puberty
- 6 Placenta
- 7 Phase-I reactions
- 8 Nutrient-drug interactions

PART – B (4 x 12 = 48 Marks)
(Essay Answer Type)

- 9 (a) Explain in detail the mechanism of synaptic transmission of nerve impulse.
OR
(b) Write about the physiology of VISION.
- 10 (a) Give an account on the types of muscles and their functions.
OR
(b) What did you understand by the gene expression and regulation of muscle function? Explain.
- 11 (a) Write about the physiology in the reproductive aging.
OR
(b) Explain the mechanism of the Gemetogenesis and fertilization.
- 12 (a) What is drug metabolism? And write about the different types of reactions involved.
OR
(b) What are the environmental factors influencing the drug metabolism?
