

B.Sc. Sem.-6 Examination

SE-311

Biochemistry (A)

April-2025

[Max. Marks : 70]

Time : 2-30 Hours]

- Q1(a) What is enzyme engineering? Briefly write the steps in doing it. (08)
- Q1(b) Write a note on Biosensor. (06)
- OR
- Q1(a) Describe Batch mode Enzyme reactors with their advantages & disadvantages (10)
- Q1(b) List the different feature that a successful bioreactor should have (04)
- Q2 Write a detailed note on GM crops (14)
- OR
- Q2(a) Write a brief note on Single Cell Protein (07)
- Q2(b) List any seven enzymes and their uses in food Industry (07)
- Q3(a) Define gene therapy. Discuss the two approaches used for gene therapy with one example each. Give any two advantages of gene therapy. (07)
- Q3(b) What are Recombinant vaccines? Give one example. List the advantages of recombinant vaccines. (05)
- Q3(c) A. Define:1. Vaccine 2. Toxoid (02)
- OR
- Q3(a) Define 1. Stem cells. 2. Tissue engineering (02)
- Q3(b) List the different steps in the process of tissue engineering. List two important applications of Tissue engineering. (05)
- Q3(c) Write a short note on: DNA finger printing technique and its applications (07)
- Q4(a) What are Xenobiotics? Discuss their degradation (07)
- Q4(b) Explain: Phytoremediation (07)
- OR
- Q4 Write a note on degradation of various hydrocarbons (14)
- Q5 **ATTEMPT ANY SEVEN** (14)
- 1 What are scaffolds? Name any one material used in making of scaffolds
 - 2 Define Pluripotent and Totipotent cells
 - 3 Name any two viral vectors used for gene therapy.
 - 4 Which are the two most widely used Probiotic strains.
 - 5 List TWO disadvantages of GM Crops.
 - 6 State any two uses of Single Cell Protein
 - 7 Draw & label different types of immobilized enzymes.
 - 8 List two Objectives of Enzyme Engineering.
 - 9 Give two examples of commonly used carrier material in immobilized enzymes.
 - 10 Define: Biocontrol
 - 11 State two advantages of Biofertilizers
 - 12 Give two examples of Phosphate solubilising bacteria

(P.T.O)

1604E226 - 2

Candidate's Seat No : _____

B.Sc. Sem.-6 Examination

SE-311

Biochemistry (B)

April-2025

Time : 2-30 Hours]

[Max. Marks : 70

Q.1 Describe the role of any three major hormones in regulating different bodily functions. 14

OR

Q.1 a. Describe different models of hormonal action in the human body 7

b. Explain characteristics of hormones 7

Q.2 Describe in detail the chemistry and biosynthesis of thyroid hormones (T3 and T4). Explain the role of iodine in their synthesis, their storage, release, and transport in the body. 14

OR

Q.2. a. Explain calcium homeostasis in detail. 7

b. Difference between hypothyroidism and hyperthyroidism 7

Q.3 Describe the chemistry and biosynthesis of insulin. Explain how insulin is produced in the beta cells of the pancreas and discuss its role in glucose metabolism. 14

OR

Q.3 Explain the causes, symptoms, and treatment of diabetes mellitus. How does insulin deficiency or resistance lead to this disease? 14

Q.4 .Describe the chemistry and biosynthesis of hormones secreted by the adrenal cortex (glucocorticoids, mineralocorticoids, and androgens 14

OR

Q.4. a. Describe the functions of testosterone and the disorders associated with its deficiency or excess in males. 7

b. Explain the role of estrogen and progesterone in the female reproductive cycle. 7

Q.5 Attempt Any Seven 14

1. Why do steroid hormones take longer to show effects compared to peptide hormones?
 2. What are second messengers? Give two examples.
 3. What is the function of thyroid hormones?
 4. Which hormone regulates calcium release from bones? Name one disease caused by calcium deficiency in children.
 5. Where is parathyroid hormone (PTH) secreted from? What is the primary function of PTH?
 6. Name two symptoms of hyperthyroidism.
 7. What is hyperinsulinism?
 8. Which hormone inhibits the secretion of both insulin and glucagon?
 9. Name two major hormones secreted by the pancreas.
 10. Name the main hormones secreted by the ovaries.
 11. What is the function of adrenaline during stress?
 12. Name the three types of hormones secreted by the adrenal cortex.
-