3. Explain transduction mechanism. Add a note on transposons. 7+3=10

III. Short answers (Answer seven out of nine questions) 5x7=35

1. Explain all the steps involved in recombinant DNA technology. 5
2. Write short note on: (i) cloning vectors (ii) restriction endonucleases. 2.5+2.5=5
3. Explain the structure of Immunoglobulins with a neat and labeled diagram. Mention their functions. 4+1=5
4. Write the components and working of biosensor. 2+3=5
5. Discuss about different types of ELISA. Mention their applications. 4+1=5
6. Write short note on: (i) plasmids (ii) mutation 2.5+2.5=5
7. Elaborate on various controls in a large-scale production fermenter. 5
8. Describe the production of monoclonal antibody via Hybridoma technology. 5
9. Write down the collection, processing and storage of whole human blood. 5

★★★

UG (CBCS) EVEN SEMESTER EXAM, JULY 2024

PHARMACEUTICAL SCIENCES

(6th Semester)

Course No: BP - 605T

(Pharmaceutical Biotechnology - Theory)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

I.A. Choose the correct answer of the following: 1×10 =10

i. Cefamandole is an example----?
   a. Vaccine
   b. Monoclonal antibody
   c. Antibiotic
   d. Hybrid antibiotic

ii. The MHC I molecules consists of ......
   a. á$_1$, á$_2$, á$_3$, and â$_1$ chains
   b. á$_1$, á$_2$, á$_3$, and â$_2$ chains
   c. á$_1$, á$_2$, â$_1$, and â$_2$ chains
   d. á$_1$, â$_1$, â$_2$, and â$_3$ chains

iii. The first biosensor was invented by ---
   a. H.W. Boyer
   b. L.C. Clark
   c. Cesar Milstein
   d. Georges J.F. Kohler

(Turn Over)

iv. Rheumatoid arthritis belongs to ----
   a. Type I hypersensitivity
   b. Type II hypersensitivity
   c. Type III hypersensitivity
   d. Type IV hypersensitivity

v. HGPRT enzyme is absent in ....
   a. Fused myeloma
   b. Unfused plasma
   c. Hybridoma
   d. Fused plasma

vi. Which substance medium is required in the fusion of spleen cell and myeloma cell, in case of Hybridoma technique?
   a. Ethanol
   b. Polypropylene glycol
   c. Poly ethylene glycol
   d. Agar

vii. The blotting technique used to detect protein in the sample is----
   a. ELISA
   b. Southern blotting
   c. Northern blotting
   d. Western blotting

viii. The mutation where one nucleotide is substituted and a different codon is formed called as ---
   a. Silent mutation
   b. Missense mutation
   c. Nonsense mutation
   d. Frameshift mutation

ix. What the structure formed when DNA wrapped around an octamer of histone proteins?
   a. Scaffolding
   b. Solenoids
   c. Nucleosomes
   d. Chromatin

x. Which immunoglobulin involved in opsonization process?
   a. Ig A
   b. Ig D
   c. Ig E
   d. Ig G

I. B. Write the objective type questions of the following:

2×5=10

1. Mention the application of biotechnology in pharmacy.
2. Define innate immunity and mention the cells involved in it.
3. Enlist the steps in r-DNA technique.
4. Mention the steps in Southern blotting techniques.
5. Write about the storage of dried human plasma.

II. Long answers (Answer two out of three questions)

10x2=20

1. What is enzyme immobilization? Discuss various immobilization methods and their applications in pharmaceutical industry. 1+6+3=10
2. Classify and discuss vaccines. Write the preparation of Toxoid and Immune sera. 4+6=10

(Turn Over)