B Pharm Even Semester Examination, September, 2023

PHARMACEUTICAL SCIENCES

(6th Semester)

Course No: BP-605T
(Pharmaceutical Biotechnology- Theory)

FM: 75
Time: 3 Hours

The figures in the right margin indicate full marks for the question

I. A. Multiple Choice questions 1x10=10

1. The product industrially obtained from Aspergillus niger is?

   (i) Citric acid (ii) Gluconic acid

   (iii) Catalases (iv) All of the above

2. The MHC I molecules consists of .....

   (i) α_1, α_2, α_3, and β_1 chains

   (ii) α_1, α_2, α_3, and β_2 chains

   (iii) α_1, α_2, β_1, and β_2 chains

   (iv) α_1, β_1, β_2, and β_3 chains

3. Which enzyme is used in ELISA for detection of Antigen-Antibody (Ag-Ab) reaction?

   (i) Amylase (ii) Catalase

   (iii) Peroxidase (iv) Lipase

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

1. What is enzyme immobilization? Classify and discuss any one class of immobilization methods. 1+4=5

2. Enlist the cloning vectors and write about any four types of cloning vectors. 1+4=5

3. What are biosensors? Write the working and application of Biosensor. 1+4=5

4. Define PCR technique. Explain all the steps involved in PCR. Mention its application in biotechnology. 1+3+1=5

5. What are hypersensitivity reactions? Explain any two types of hypersensitivity reactions with examples. 1+4=5

6. What is mutation? Classify and discuss about any major class of mutation. 1+4=5

7. Explain different types of ELISA immune blotting techniques and write its application. 4+1=5

8. Discuss general requirements for fermentation. 5

9. Explain the production of Citric acid using fermentation technique. 5

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4. Rheumatoid arthritis belongs to ——

(i) Type I hypersensitivity

(ii) Type II hypersensitivity

(iii) Type III hypersensitivity

(iv) Type IV hypersensitivity

5. HGPRT enzyme is absent in ....

(i) Fused myeloma (ii) Unfused plasma

(iii) Hybridoma (iv) Fused plasma

6. Which substance medium is required in the fusion of spleen cell and myeloma cell, in case of Hybridoma technique?

(i) Ethanol (ii) Polypropylene glycol

(iii) Polyethylene glycol (iv) Agar

7. The blotting technique used to detect protein in the sample is——

(i) ELISA (ii) Southern blotting

(iii) Northern blotting (iv) Western blotting

8. The mutation where one nucleotide is substituted and a different codon is formed called as —

(i) Silent mutation (ii) Missense mutation

(iii) Nonsense mutation (iv) Frameshift mutation

9. What is the structure formed, when DNA wrapped around an octamer of histone proteins?

(i) Scaffolding (ii) Solenoids

(iii) Nucleosomes (iv) Chromatin

10. What is the meaning of "aspect ratio" that is related to fermentation?

(i) Height/Diameter

(ii) Diameter/Height

(iii) Product formed/Substrate supplied

(iv) Oxygen required/Oxygen supplied

I. B. Objective type 2x5=10

1. Give the functions of restriction endonuclease and DNA ligase.

2. Write the difference between humoral immunity and cell-mediated immunity.

3. Enlist the steps in the rDNA 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. Discuss the general steps in the production of enzymes. Add a note on the production and application of Amylase enzyme. 6+4=10

2. Classify and discuss vaccines. Write the formulation and steps in the preparation of vaccines. 4+6=10

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