Q. P. Code: 31303

2 ½ Hours

Total Marks: 75

1. Attempt **all** questions.
2. **All questions** carry **equal** marks.
3. Draw **neat labeled diagrams** wherever necessary.
4. Use of **log tables** and **non-programmable calculator** is **allowed**.
5. For **Q.2, Q.3 and Q.4** attempt A and B **OR** C and D.

Q. 1 Do as directed (Any fifteen) **15**

1. Define apoenzyme.
2. _____are structural analogues of substrate which inhibit enzyme activity.
   a. co-factor b. anti-metabolites c. co-substrate
3. A plot of reciprocal of velocity versus the reciprocal of substrate concentration yields a straight line which is called as _____.
   a. Haldane plot b. Eadie–Hofstee plot c. Lineweaver-Burk plot
4. Enzymes reduce the _____energy to increase the rate of reaction.
   a. binding b. potential c. activation
5. A high _____ indicates low affinity between substrate and enzyme.
   a. Vmax b. Km c. [S]
6. Allosteric Enzymes have special sites other than active sites for _____ to bind.
   a. Co-factors b. Co-enzymes c. Modulators
7. James Sumner first achieved the isolation and crystallization of the _____ enzyme.
   a. protease b. urease c. amylase
8. The antibody that crosses the placental barrier.
   a. IgG b. IgM
9. A type of traditional vaccine
   a. Live attenuated vaccine b. Peptide vaccine
10. Lysozyme is present in
    a. Tears b. Sweat
11. A primary lymphoid organ
    a. Thymus b. Liver
12. When a soluble antigen reacts with its antibody it is known as
    a. Precipitation b. Agglutination
13. Purification of monoclonal antibodies can be done by
    a. Paper chromatography b. A/G protein chromatography
14. Calculate Arithmetic Mean: 5, 10, 15, 20, 25, 30, 35, 40, 45, and 50.
15. Calculate Standard deviation if variance is 81.
16. Define Pie Chart.
17. State true or False: A bar graph is a graph that presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent.

18. State true or false: Frequency polygon and histogram serve the same purpose in data representation.

19. Define Range.

20. Give formula to calculate standard error.

Q. 2 A Describe the mathematical relationship between substrate concentration and enzyme activity and derive its equation. **08**

Q. 2 B Give an account of different classes of enzymes. **07**

OR

Q. 2 C Give an account of different theories/models of enzyme-substrate complex formation. **08**

Q. 2 D Enlist the Salient features of active site of an enzyme. **07**

Q. 3 A Explain any two mechanisms of Innate immunity. **08**

Q. 3 B Explain the structure of an antibody molecule with a neat labelled diagram. **07**

OR

Q. 3 C Explain the features that make a molecule antigenic. **08**

Q. 3 D Explain the technique used to produce monoclonal antibodies. **07**

Q. 4 A Define Standard deviation. Find the standard deviation for the Hb% of 10 patients of R ward recorded in the morning as
7, 8, 9,10,11,12,13,15, 15 and 20. **08**

Q. 4 B Explain representation of data using Bar graph and its three types. **07**

OR

Q. 4 C A Professor collects the marks obtained by 19 students in a program which were as 15,17,18,18,18,20,20,16,18,17,12,17,14,19,20,15,17,17,17. Calculate the mean, median and mode for the marks obtained by the students. **08**

Q. 4 D Define Biostatistics. Discuss its applications in biological sciences. **07**

Q. 5 Write Short notes on **any three** of the following **15**

a. Reversible enzyme inhibition.
b. Enzyme specificity.
c. Any one modern vaccine.
d. Any one precipitation technique.
e. Types of Data.
