

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.

**Q. P. Code: 31303**

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. 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.