

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 the term 'reflection of light'.
2. What do you mean by the term 'blackbody'?
3. What is 'population inversion' with respect to lasers?
4. _____ is an emission phenomenon where an energy transition from a higher to a lower state is accompanied by radiation.
5. What do you mean by resolution of a microscope?
6. List any one of the basic components of compound microscope.
7. State any one advantage of immuno-electron microscopy.
8. The number of vibrations made by a particle per second is called its _____.
9. What do you mean by 'amplitude of a wave'?
10. The SI unit of magnetic field is _____.
11. Define the term 'surface tension'.
12. The term used to describe resistance of a liquid to flow is _____.
13. Name an instrument used for measuring viscosity of liquids.
14. Explain the term: Temperature.
15. Define iso-electric point.
16. What is zonal electrophoresis?
17. Name any one dye used to detect DNA in agarose gels.
18. SDS in SDS-PAGE gives _____ to the proteins in the sample.
19. Give any one example of tracking dye used in AGE.

20. During electrophoresis the buffer used for electrophoresis has a pH value of 8 because DNA at pH 8 has a _____ charge.

Q 2 A Explain construction and working of single-beam spectrophotometer

Q 2 B Explain the concept of stimulated emission.

OR

Q 2 C Give a detailed account of an electron microscope

Q 2 D What is absorption spectroscopy? State and explain the law governing absorption spectroscopy.

Q 3 A Explain the construction and working of a platinum resistance electrode.

Q 3 B Describe the different types / classification of sound waves.

OR

Q 3 C Explain the concept of 'angle of contact' in surface tension.

Q 3 D Give a brief account of biomagnetism.

Q 4 A What is electrophoretic mobility? What are the factors affecting the same?

Q 4 B Explain the principle of agarose gel electrophoresis.

OR

Q 4 C What is paper electrophoresis? How is it performed?

Q 4 D Briefly explain the applications of gel electrophoresis.

Q 5 Write Short notes on any three of the following

a Scanning Electron Microscope.

b Electromagnetic spectrum.

c Modes of heat transfer.

d Moving boundary electrophoresis.

e Discontinuous gel electrophoresis.

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