VCD / 06/022 SYBT SEM III BIOTECHNOLOGY - BIOPHYSICS 75 MARKS 2 HRS 30 MIN

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 calculators** 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. What is wavelength ?
2. Define the term 'Interference'
3. What is spectroscopy?
4. Explain the term Stoke's shift.
5. State Beer's Law
6. What is the role of pumping agent in a laser?
7. List any two chemical compounds used in specimen preparation of electron microscopy.
8. Enlist any two modes of heat transfer.
9. The unit for measuring frequency of sound is the _____.
10. The dip of the earth's magnetic field is measured with a _____.
11. The SI unit of viscosity is _____
12. Explain the term: Terminal velocity.
13. What is the diameter of the wire in the platinum resistance thermometer?
14. _____ waves of the electromagnetic spectrum have the longest wavelength.
15. The speed of migration of ions in the electric field depends upon?
16. The polymerization of the gel used in PAGE occurs between polyacrylamide and _____.
17. Sodium dodecyl sulphate (SDS) is used in PAGE for _____.
18. The pH of stacking gel in SDS Page is _____.
19. What is the function of glycerol?
20. In electrophoresis, DNA will migrate towards _____.

Q 2 A	Explain working principle and construction of SEM	08
Q 2 B	Explain Single beam spectrophotometer with diagram..	07
	OR	
Q 2 C	Explain the principle of fluorescent microscope with an application.	08
Q 2 D	Explain dual beam spectrophotometer.	07
Q 3 A	Explain the various uses of the Doppler effect.	08
Q 3 B	Explain the principle, construction, working and use of an Ostwald viscometer.	07
	OR	
Q 3 C	Explain the principle behind the construction and working of a platinum resistance electrode.	08
Q 3 D	Explain the different types of magnetism observed in nature.	07
Q 4 A	Explain the steps involved in Agarose Gel Electrophoresis	08
Q 4 B	Give Applications, advantages and disadvantages of AGE	07
	OR	
Q 4 C	Explain the steps involved in PAGE	08
Q 4 D	Give Applications, advantages and disadvantages of PAGE	07
Q 5	**Write short note on any three of the following**	15
a	Components of a laser.	
b	Monochromators	
c	Ostwald's viscometer.	
d	Wettability	
e	Principle of Electrophoresis	