JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-II Semester (BT/BI)

COURSE CODE (CREDITS):18B11PH212 (04) MAX. MARKS: 15

COURSE NAME: Bioinstrumentation Techniques

COURSE INSTRUCTORS: Ragini Raj Singh MAX. TIME: 1 Hour

Note: *(a) All questions are compulsory.*

(b) The candidate allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Use of calculator allowed

Q.No	Question	CO	Marks
Q1	**(a)** Draw a schematic diagram for SEM instrumentation and explain all the parts of the instrument.	1	1.5
	(b) How many types of signals we can receive in SEM and from where do they come? Draw proper diagram to explain.		1.5
Q2	**(a)**What do you understand by BSE, what are the factors that affect the emission of BSE?	1	1.5
	(b) What can be analyzed in ESEM? Explain the GSE detector with the help of diagram.		1.5
Q3	**(a)** What is the difference between SEM and TEM? What are the key advantages of TEM?	1	1.5
	(b) Discuss: **i.** Resolution in TEM **ii.** Image formation in TEM **iii.** Cryo fixation		3
Q4	**(a)** In a sample with an absorbance of 1 at a specific wavelength. What is the relative amount of light that was absorbed by the sample?	2	2
	(b) There is a substance in a solution 6 g/l. The length of the cuvette is 3 cm and only 60% of the certain light is transmitted. What is the extinction coefficient?		1.5
	(c) Convert the following absorbance in terms of transmittance		1

a	0.040
b	0.898
c	0.317
d	0.211
e	0.585
f	0.050