

Roll No.

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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-2, EXAMINATION – 2016

B. TECH. BIOTECHNOLOGY (IV SEM)

Course Code: 10B11PH212

Max Marks: 25

Course Name: Biophysical Techniques

Course Credits: 04

Max Time: 1Hr 30 Min

Note: All questions are compulsory. Carrying of mobile phone during examination will be treated as case of unfair means.

Q.1. Discuss the contributing factors that affect XRD line profile with the help of diagram? (2)

Q.2. (a) How to separate crystalline size broadening and strain broadening, show with the help of related graph? (2)

(b) Plot the graph and calculate the grain size and strain from the graph for the given data (1)

S.No.	2 Theta(°)	(hkl)	FWHM(°)
1	26.51	111	0.187
2	34.77	200	0.206
3	55.15	220	0.271

Q.3. Explain electron beam-sample interactions in SEM. How many types of signals are there from the sample we can record in the SEM? (2)

Q.4. What is ESEM? What is the new technology in ESEM, explain with the help of diagrams? (3)

Q.5. Describe the sample preparation procedure in SEM? (2)

Q.6.(a) Explain the image formation in TEM with the help of the diagram along with the different imaging modes. (2)

(b) What are the main advantages and disadvantages of dark field imaging? (1)

Q.7. Discuss the selection rules in UV-VIS spectroscopy. Why there are chances to see forbidden transitions? (3)

Q.8. What are the various fields of applications of UV-VIS spectroscopy? Discuss the UV quantitation of DNA and RNA; and protein contamination testing with UV-VIS spectroscopy? (4)

Q.9. Write short notes on (0.5 X 6=3)

(a) Basic difference in SEM and TEM (b) HRTEM (c) Chromophores

(d) Possible electronic transitions in UV-VIS spectroscopy

(e) Electronic transitions in Alkanes and Carbonyls (f) Substituent effects