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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

MSc Semester-3 (PMS)

COURSE CODE (CREDITS): 24MSWPH331 (3)

MAX. MARKS: 25

COURSE NAME: Thin Films

COURSE INSTRUCTORS HAZ:

MAX. TIME: 1 Hour 30 Minutes

Note: (a) All questions are compulsory.

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

Q.No	Question	Marks
Q1	Write short notes on (a) Substitutional diffusion and (b) Interstitial diffusion	3
Q2	Discuss the thermodynamics of diffusion by highlighting the driving force.	3
Q3	Using Fick's Law of diffusion, derive the concentration around a spherical particle.	3
Q4	What is ellipsometry? How is it useful for thin film characterization?	5
Q5	What are different XRD modes applicable for ultra-thin films and any other thickness films? Discuss in detail.	3
Q6	Write the distinguishing differences with respect to scanning electron microscopy and atomic force microscopy for surface characterization.	5
Q7	Design a vacuum chamber that can achieve UHV for thin film deposition.	3