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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAHGAT

TEST-2 EXAMINATION-October 2019

PH.D. PHYSICS

Course Code: 13P1WPH112

MAX. MARKS:25

Course Name: Materials Characterization

Max. TIME:1.5 HRS

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

Q.1. What do you understand by selection rules in UV spectroscopy? What are the practical applications of UV-Vis spectroscopy? [5]

Q.2. Write short notes on [1.5 x 6 =8]

- (i) Jablonski diagram
- (ii) Stokes shift
- (iii) Mirror image rule
- (iv) Quantum yield of fluorescence
- (v) Fluorescence intensity
- (vi) Photo luminescence excitation

Q.3. Discuss electron beam sample interaction in SEM with the help of diagram. Also discuss the SEM instrumentation in detail. [4]

Q.4. How does AFM works and how the forces get measured in AFM? [3]

Q.5. Discuss about different modes of imaging in AFM with their advantages and disadvantages. [5]