CBCS SCHEME

USN ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚

15NT53

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Characterization Techniques

Time: 3 hrs.

Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Explain the Electron diffraction and Interference in detail, with suitable diagram. (08 Marks)
   b. Explain in brief about Rayleigh and Abbe Criterion. (08 Marks)

OR

2 Write short notes on :
   a. Electron lenses.
   b. Scan coils.
   c. Types of sources and
   d. Lens aberrations. (16 Marks)

Module-2

3 a. Mention the advantages , disadvantages and explain basic principle of XPS. (08 Marks)
   b. Explain the working of powder XRD, with suitable diagram. (08 Marks)

OR

4 a. Explain the working of XPS, with neat diagram. (08 Marks)
   b. Write short notes on XANES and EXAFS. (08 Marks)

Module-3

5 a. Briefly explain the working of Atomic force microscope along, with neat diagram. (08 Marks)
   b. Explain the working of Scanning Tunneling Microscope along with neat diagram. (08 Marks)

OR

6 a. Mention the advantages , disadvantages and explain basic principle of SEM. (08 Marks)
   b. Write short notes on Electron beam interaction with mater and SAED. (08 Marks)

Module-4

7 a. Explain the principle, advantages and disadvantages of UV – Vis Spectrophotometer. (08 Marks)
   b. Explain dynamic light Scattering method along with neat schematic for nanoparticle size measurement. (08 Marks)

OR

8 a. Explain the working of Raman Spectroscopy along, with neat diagram. (08 Marks)
   b. Explain the working of FTIR Spectrometer, with a neat schematical diagram. (08 Marks)

Module-5

9 a. Explain Lock in amplifier method to measure AC signals for low power nanotech and other sensing devices. (08 Marks)
   b. Explain the detailed procedure along with schematic for obtaining IV curve of a sample with single point on the surface. (08 Marks)

OR

10 a. Explain the working process of Linear Sweep Voltammetry. (08 Marks)
    b. Explain the working of Cyclic Voltammetry process in detail. (08 Marks)

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