

**Code No: 138FR****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech IV Year II Semester Examinations, September - 2020****CHARACTERIZATION OF NANOMATERIALS****(Common to ME,CEE)****Time: 2 hours****Max. Marks: 75****Answer any Five Questions  
All Questions Carry Equal Marks**

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- 1.a) Develop a note on Electron sources.  
b) Build a note on Theory and principle of Electron microscope. [7+8]
- 2.a) Discuss in detail about the fundamentals of microscopy.  
b) Compare in detail about the advantages of Electron microscope over Optical microscope. [7+8]
3. Construct a note on the theory and instrumentation of Scanning Electron Microscope. [15]
4. Explain in detail about the Specimen- Beam interactions in Scanning Electron Microscope. [15]
- 5.a) Distinguish in detail between Bright field Imaging and Dark field Imaging.  
b) List out the applications of High Resolution TEM. [7+8]
- 6.a) Design a note on working principle and Instrumentation of Transmission Electron Microscope.  
b) Discuss in detail about the Theory of operation of High Resolution TEM. [7+8]
- 7.a) Write about the Importance of Force curves and Force Instruments.  
b) List out the different types of probes for AFM. [7+8]
- 8.a) Construct a note on Crystallite size analysis using Scherer formula and Williamson formula.  
b) Build a note on applications of IR Spectroscopy. [7+8]

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