

Code No: 135CR**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, October - 2020****NANOTECHNOLOGY****(Common to CE, ME)****Time: 2 hours****Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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1. Classify the nanostructured materials. Explain the applications of nanomaterials. [15]
2. Discuss in detail the classification of nanostructured materials. [15]
3. Define Diffusivity? Explain briefly with suitable examples why elastic, diffusivity properties will differ for nanomaterials to bulk materials. [15]
4. Discuss in detail about the following:
a) Dislocations, Twins, stacking faults and voids
b) Grain Boundaries, triple and disclinations. [8+7]
5. What is Lithography? What are the applications of lithography? Discuss the phenomenon of Nano-lithography with few examples. [15]
- 6.a) Compare and contrast hot and cold iso-static pressing techniques.
b) Explain briefly spark plasma sintering with a neat diagram. [8+7]
7. Define Resolution? What are the least sizes that can be measurable from SEM and TEM? Distinguish Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM) tools in characterizing the nanomaterials in detail. [15]
8. Define membrane. Discuss various types of nano membranes that are used in water treatment/purification techniques. [15]

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