

R16

Code No: 138FV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year II Semester Examinations, September - 2020

DESIGN AND SELECTION OF ENGINEERING MATERIALS

(Common to ME, MCT)

Time: 2 Hours

Max. Marks: 75

**Answer any Five Questions
All Questions Carry Equal Marks**

- 1.a) What is the role of “shape” in material selection?
b) Explain briefly about various steps involved in selection of materials. [7+8]
- 2.a) Explain the relationship between materials selection, processing and applications.
b) Name and describe the applications of any five metal alloys. [8+7]
- 3.a) Analyze ductile nature and brittle nature in designing of industrial components.
b) What is the effect of chemical composition in designing for industrial components?[7+8]
- 4.a) What is the necessity of endurance limit in design of industrial components?
b) What is the role of microstructure in selection of material? [7+8]
- 5.a) What is Thermo mechanical fatigue? Explain its importance in choosing materials for Aerospace applications.
b) Write short notes on (i) Intermetallics (ii) Aluminides. [8+7]
- 6.a) Explain the necessity of hot corrosion resistance for aerospace applications.
b) Explain the roll of DBTT for naval applications. [8+7]
- 7.a) Explain design of alloy for fission and fusion reactors.
b) What is the effect of radiation damage UTS in nuclear applications? [7+8]
- 8.a) Describe the applications of ceramic materials.
b) Mention the advantages of ceramics over metal matrices in selection of materials. [7+8]

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