

Code No: 157EP**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech IV Year I Semester Examinations, January/February - 2023****ENGINEERING MATERIALS****(Common to CE, ME, ECE)****Time: 3 Hours****Max.Marks:75****Note:** i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A**(25 Marks)**

- 1.a) What is the composition of dual steels? [2]
- b) What is the composition of HSS steels? [3]
- c) What are the applications of Fe based super alloys. [2]
- d) Where are super alloys commonly used? [3]
- e) What are applications of pyro materials? [2]
- f) What are the properties of super conducting materials? [3]
- g) What are the properties of ferritic stainless steels? [2]
- h) What are the applications of martensitic stainless steels? [3]
- i) What are the three main types of biomaterials? [2]
- j) What are biomaterials used for? [3]

PART – B**(50 Marks)**

2. Explain the composition, properties and applications of TRIP steels. [10]
- OR**
3. Explain the composition, properties and applications of maraging steels. [10]
4. Give the classification of super alloys and explain the properties and applications of the same. [10]
- OR**
5. Explain the heat treatment of super alloys in detail. [10]
6. Explain the classification of Electrical Engineering Materials in detail. [10]
- OR**
7. Explain the applications and properties of Extrinsic and Intrinsic semiconductors super conducting materials. [10]
8. Explain the properties and applications of austenitic stainless steels. [10]
- OR**
9. What are the differences between ferritic and martensitic stainless steels? [10]
10. Explain the property requirements for biomaterials. [10]
- OR**
11. Explain the concept of biocompatibility with suitable examples. [10]