

2714**Code : 20ME11T***Register
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I Semester Diploma Examination, March/April-2022**MATERIAL FOR ENGINEERING****Time : 3 Hours]****[Max. Marks : 100**

- Instructions :** (1) Answer **one** full question from each section.
(2) **One** full question carries **20** marks.

SECTION – I

1. (a) List Engineering Materials on basis of natural and man made existence. **5**
(b) Name the crystal structures. Which structure is generally found in Zirconium & Beryllium ? **5**
(c) Explain Malleability and Ductility with suitable examples. **5**
(d) Explain briefly etching process of specimen preparation. **5**
2. (a) Explain any five mechanical properties of metal. **5**
(b) Define Crystal Lattice and unit cell. **5**
(c) Explain briefly scanning electron microscope. **5**
(d) Compare crystalline material with non-crystalline material. **5**

SECTION – II

3. (a) Explain composition of Nodular CI characteristics and list uses of it. **10**
(b) Which metal is used for manufacturing of helical spring and why ? **5**
(c) Which steel is used in manufacturing of agricultural equipments ? Justify. **5**
4. (a) What are tool steels. Classify tool steels. **10**
(b) Why drill bits are made up of high carbon steel ? Justify. **5**
(c) Answer the following in Yes or No : **5**
 - (i) Copper is an alloy.
 - (ii) Steel wire is more elastic than rubber.
 - (iii) Glass is brittle.
 - (iv) Aluminum is heavier than iron.
 - (v) Gun metal is a ferrous metal.



SECTION – III

5. (a) Transmission Gears, Railway track are made of which metal ? Justify the selection. **10**
 (b) Develop short notes on Austentic Stainless Steel. **5**
 (c) Analyse and infer the following designation of Steel/CI : **5**
 (i) FG 200
 (ii) 30C 8
6. (a) Which tool steel is used for piercing dies and coining dies ? Justify the selection. **10**
 (b) Distinguish between Brass and Bronze. **5**
 (c) Write the Nickel alloy used in the manufacturing of
 (i) Costume Jewellery
 (ii) Furnace geysers
 (iii) Pump fitting, Steam turbine blades
 (iv) Aircraft engine
 (v) Turbine engine **5**

SECTION – IV

7. (a) List different Bearing materials Explain Cadmium based bearing material. **10**
 (b) Compare Thermo-plastics and Thermoset plastics. **5**
 (c) What type of smart materials used in Automotive industries & justify the application smart material ? **5**
8. (a) Explain Polymers & its characteristics and applications. **10**
 (b) List different properties of ceramic materials and explain any one. **5**
 (c) Wings of Aircraft is made of which composite material and why ? **5**

SECTION – V

9. (a) Cutting Edges of drill & saws are slowly accurately reheated & Quenched. Suggest suitable heat treatment process and list different types of Heat treatment process. **10**
 (b) Write 5 differences between dry chemical corrosion and wet chemical corrosion. **5**
 (c) What are the factors influencing corrosion ? **5**
10. (a) A product is manufactured by using GI-Iron sheet for good appearance and to avoid corrosion. Which process is adopted ? Explain **10**
 (b) What are electrolytes ? Name different types. **5**
 (c) Explain the construction and working of Electro chemical cell. **5**

