Total No. of Questions – [04] Total No. of Printed Pages 01

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OCTOBER 2018/ IN-SEM (T1)

S. Y. B. TECH. (MECHANICAL ENGINEERING) (SEMESTER - I)

COURSE NAME: MATERIAL SCIENCE AND ENGINEERING METALLURGY

COURSE CODE: MEUA21176

(PATTERN 2017)

Time: [**1 Hour**] [Max. Marks: **30**]

(*) Instructions to candidates:

1) **Answer Q.1 OR Q.2 and Q.3 OR Q.4.**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1) a) Define the following [6 marks]
i. Lattice Dimension ii. Lattice angle iii. Lattice parameter

b) Determine what do you mean by the crystal imperfection? Explain the Edge dislocation with a neat diagram. [6 marks]

c) Show the following planes in a cubic cell: i. (111) ii. (110) [4 marks]

OR

Q.2) a) Define the following [6 marks]
i. Surface defect .ii.Dislocation density iii.Internal stresses

b) Show and explain properties before annealing on graphical [6 marks]

c) With a suitable sketch show the following on a cubic cell i. [100] ii. [110] [4 marks]

Q.3) a) Define plastic and elastic deformation with proper example. [6 marks]

b) Explain how many systems are existing in FCC metal. Why slip is more in FCC than in HCP. [4 marks]

c) Compare advantages of Dye penetrant test and Ultrasonic test [4 marks]

OR

Q.4) a) Define i. Endurance limit ii. creep strength iii. Fatigue strength. [6 marks]

b) Write the characteristics of fatigue fracture. [4 marks]

c) For detecting the cracks in bronze metal part magnetic particle Test can be used'. True or false? Justify your answer. [4 marks]
