PA-48

[5931]-76

S.E. (Automobile &Robotics/Automoble &Mechanical/ Mechanical//Mechanical Sandwich)
ENGINEERING MATERIALS AND METALLURGY
(2019 Pattern) (Semester - I) (202044)

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

Instructions to the candidates:

1) *Solve Q.1 or Q.2, Q.3 or Q.4.*
2) *Figures to the right indicate full marks.*
3) *Use of electronic pocket calculator is allowed.*
4) *Assume suitable data if necessary.*

Q1) a) What is atomic packing factor of unit cell? Calculate atomic packing factor for BCC crystal structure with neat sketch. **[5]**

b) Differentiate between slip and twinning. **[5]**

c) Write a short note on Baushinger effect. **[5]**

OR

Q2) a) Define the term "Miller Indices". Sketch within a cubic unit cell the following planes : **[5]**

    i)   (111)

    ii)   (011)

b) State the various point defects in a crystal? Explain any two point defects with the help of diagram. **[5]**

c) Differentiate between ductile fracture and brittle fracture. **[5]**

Q3) a) Write short note on Poldi hardness test. **[5]**

b) With a neat diagram explain the principle of Scanning Electron Microscope (SEM). Also state the application of it. **[5]**

c) Differentiate between microscopic and macroscopic examination. **[5]**

OR

Q4) a) Differentiate between Charpy and Izod impact test. **[5]**

b) Explain the principle of Eddy current test with a neat sketch and state the application of it. **[5]**

c) Write short note on Spark test. **[5]**

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