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4th Sem / Automobile, Mechanical, Mech (Tool & Die)
Subject : Materials and Metallurgy

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 In H.C.P. structure, the number of atoms in a unit cell are

- a) 1
- b) 2
- c) 4
- d) 6

Q.2 The property which resist penetration of other metals is called.

- a) Ductility
- b) hardness
- c) toughness
- d) malleability

Q.3 Which of the following is an alloy.

- a) cast iron
- b) steel
- c) brass
- d) all of above

Q.4 Plastic deformation may take place due to.
a) slip only b) twinning only
c) slip or twinning d) none of them

Q.5 Pearlite or eutectoid steel has carbon content.
a) 0.8% b) 1.8%
c) 2% d) 6.67%

Q.6 Which plastic is used in electrical conduit pipes.
a) P.V.C b) Polystyrene
c) Polyethylene d) Acrylic Resin

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Define non-ferrous metals.

Q.8 Define fatigue.

Q.9 Define atomic radius.

Q.10 Name types of solid solution alloy.

Q.11 Name any four iron ores.

Q.12 Name any two types of annealing.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Explain different types of composite material.
- Q.14 Derive an expression for the atomic radius of body centered cubic structure.
- Q.15 Explain the difference between slip and twinning.
- Q.16 Explain the manufacturing of steel by open hearth processes.
- Q.17 Explain the different allotropic forms of iron?
Explain.
- Q.18 Differentiate between ferrous and non ferrous metals.
- Q.19 Write the purpose of heat treatment.
- Q.20 Explain nuclear energy material.
- Q.21 Explain nitriding with advantage and disadvantage.
- Q.22 Explain the properties of copper.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 What is pyrometer? What are its different types?
Explain.

Q.24 Explain the effects of following elements on steel.

- a) Nickel
- b) Silicon
- c) vanadium

Q.25 Explain briefly the effect of crystal defect on material.

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220342