

- Q.16 What are the main factors which should be consider before the selection of an insulating material for a particular application?
- Q.17 Comment on hardening. Why tempering is required after hardening?
- Q.18 Differentiate between annealing and normalizing.

#### SECTION-D

**Note:** Long answer type questions. Attempt any one question out of two questions. (1x10=10)

- Q.19 Name the various types of cast iron. Discuss their various properties and uses.
- Q.20 Explain various critical temperatures and reactions used in iron carbon diagram.

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**Level 4, 2nd Sem., / Auto Servicing , PT, AMT**  
**Subject : Material Science and Materials**

Time : 2 Hrs.

M.M. : 50

#### SECTION-A

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 Which of the following material has maximum ductility?  
a) Mild steel                      b) Copper  
c) Nickel                          d) Aluminium
- Q.2 The percentage of carbon in cast iron varies from  
a) 0.1 to 0.5                      b) 0.5 to 1  
c) 1 to 1.7                        d) 1.7 to 4.5
- Q.3 When the steel is normalized, its  
a) yield point increases  
b) ductility decreases  
c) ultimate tensile strength increases  
d) all of these

Q.4 In white cast irons, carbon present as \_\_\_\_\_

- a) Graphite flakes
- b) Graphite nodules
- c) Cementite
- d) Carbon does not exist

Q.5 The number of atoms in HCP structure is

- a) 2                                      b) 4
- c) 6                                      d) 8

Q.6 What is the general name of polyamides.

- a) Nylon                                      b) Epoxy
- c) PVC                                      d) None of the above

Q.7 The process to increase strength of natural rubber by adding sulphur is called:

- a) Polymerization                      b) Condensations
- c) Vulcanization                      d) None of the above

Q.8 The hardest phase in Iron Carbon system is

- a) Pearlite                                      b) Bainite
- c) Martensite                                      d) None of the above

Q.9 Case hardening is due to mechanism known as:

- a) Recovery                                      b) Recrystallisation
- c) Diffusion                                      d) Austempering

Q.10 In sound test brass give

- a) Dull ring                                      b) Slight ring
- c) Very high ring                                      d) Lower ring

### SECTION-C

**Note:** Short answer type questions. Attempt any six questions out of eight questions. (6x5=30)

Q.11 Write a short note on selection criterion for engineering materials.

Q.12 What do you understand by “creep” and “creep strength”

Q.13 Calculate the number of atoms per unit cell for FCC crystal structure.

Q.14 What do you understand by Heat resisting alloy steels. Write its various advantages.

Q.15 Write the characteristics of a good paint and enamel.