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**4th Sem / Branch : Auto, Mech, Prod. T & D, GE, CAD/CAM, CNC, Metallurgy, Found & Forg. Adv. Manf. Tech, Mech Engg/ Fabrication Tech) Mech Engg (CAD/CAM Dsgn & Robotics)**  
**Sub.: Materials and Metallurgy/Mat. Science**

Time : 3Hrs. M.M. : 100

## SECTION-A

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

- Q.1 The mass per unit volume of a materials is called  
a) Density b) Specific volume  
c) Specific gravity d) None of the above
- Q.2 Corrosion of metals depends upon  
a) Natures of metals  
b) Environment around the metal  
c) Both (a) & (b)  
d) None of the above
- Q.3 In B.C.C. Structure, the number of atoms in a unit cell is  
a) 1 b) 2  
c) 4 d) 6
- Q.4 The Best quality of Steel is produced in  
a) Cupola b) Bessemer Converter  
c) Open hearth furnace d) Induction furnace
- Q.5 Y-Alloy is an alloy of  
a) Aluminum b) Copper  
c) Magnesium d) Lead

- Q.6 Sorbite is obtained when
- a) Steel is air quenched      b) Steel is air annealed
- c) Steel is hardened      d) None of the above
- Q.7 Which Plastic is used in electrical conduit Pipes?
- a) P.V.C.      b) Polystyrene
- c) Polyethylene      d) Acrylic resin
- Q.8 Alumina is used in ceramics as
- a) Fluxing agent
- b) Basic raw material
- c) Special refractory material
- d) None of the above
- Q.9 The object of annealing is
- a) To soften the metal      b) To refine grain structure
- c) To relieve internal stress      d) All of the above
- Q.10 Brasses are the alloy of
- a) Copper tin      b) Copper nickel
- c) Copper nickel zinc      d) Copper zinc

## SECTION-B

**Note:** Objective type questions. All questions are compulsory.  
(10x1=10)

- Q.11 Write one property of Aluminium.
- Q.12 Name any two Iron ores.
- Q.13 Write number of Atom in B.C.C.
- Q.14 The smallest component of space lattice is known as \_\_\_\_\_.
- Q.15 Purest form of iron is.
- Q.16 Define Creep.

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- Q.17 Name any two non metals.  
 Q.18 What is a Semi - Conductor?  
 Q.19 Define Asbestos.  
 Q.20 Name any two types of rubber.

### SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 List the industrial use of Plastic.  
 Q.22 Explain Thermoelectric Pyrometer with neat diagram.  
 Q.23 What is T.T.T. Diagram? Explain its construction with neat diagram.  
 Q.24 Write any five properties of Stainless Steel.  
 Q.25 What is the effect of Grain Size on mechanical properties?  
 Q.26 Differentiate between Slip and Twinning.  
 Q.27 Write the Application of Composites.  
 Q.28 Explain in brief Plain Carbon steel.  
 Q.29 Define any five physical properties of material.  
 Q.30 Define Copper. Write its some properties and Application.  
 Q.31 Write the purpose of heat treatment.  
 Q.32 What are the different methods of Plastic coating?  
 Q.33 Explain nuclear energy materials.  
 Q.34 Explain open hearth process with neat diagram.  
 Q.35 Explain the following:-  
 a) Thermal equilibrium diagram  
 b) Thermoplastic

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### SECTION-D

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 What is Ceramics? Classify Ceramics also write its properties?  
 Q.37 Construct in detail of thermal equilibrium diagram.  
 Q.38 Explain the following:  
 a) Domestic use of plastic  
 b) Refractory material with its properties

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