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**4th Sem / Branch : (Auto, Mec, Prod, T&D, GE, CNC,CAD /CAM, Metallurgy Found & Forg, Adv. Manuf. Tech, Mech Engg (Fabrication Tech), Mech Engg (CAD/CAM Design & Robotics)**

**Subject:- Materials & Metallurgy/Material Science**

Time : 3Hrs. M.M. : 100

### **SECTION-A**

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

- Q.1 The property of a metal by virtue of which it is able to resist abrasion, indentation and scratching by harder bodies is called  
a) Toughness      b) Brittleness  
c) Hardness      d) None of above
- Q.2 Aluminium , copper and Gold have .....type of structure.  
a) Simple cubic      b) B.C.C  
c) F.C.C      d) H.C.P
- Q.3 The iron ore which consists of highest percentage of iron is  
a) Hematite      b) Megnetite  
c) Limonite      d) None of the above
- Q.4 Cast iron has carbon percentage varying between  
a) 1 to 2      b) 2 to 4  
c) 4 to 6      d) 6 to 8

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- Q.5 The hardest phase in iron-carbon system is  
a) Pearlite      b) Baintite  
c) Martensite      d) None of above
- Q.6 For full annealing cooling is done by  
a) Air cooling      b) Water cooling  
c) Furnace cooling      d) None of these
- Q.7 Which of following is adhesive  
a) Mylar      b) Bakelite  
c) Araldite      d) None of these
- Q.8 Polythene and PVC are manufactured by the process of  
a) Addition condensation  
b) Co-polymerization  
c) Condensation polymerization  
d) None of these
- Q.9 Concrete is an example of  
a) Particle reinforced composites  
b) Fibre reinforced composites  
c) Structured composites  
d) None of these
- Q.10 The boundary line between (liquid+solid) and (solid) regions must be part of a  
a) Solvus      b) Solidus  
c) Liquids      d) Tie-line
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## **SECTION-B**

**Note:** Objective type questions. All questions are compulsory.  $(10 \times 1 = 10)$

- Q.11 The purest form of iron is.....
- Q.12 The percentage of carbon in medium carbon steel varies from.....to.....%
- Q.13 P.V.C stand for.....
- Q.14 In grey cast iron.....present act as lubricant.
- Q.15 P.V.C becomes soft beyond .....temperature
- Q.16 The trade name of thermocole is.....
- Q.17 Lack of ductility is called.....
- Q.18 Shining appearance of the surface of metal is known by the name of physical property is called.....
- Q.19 The smallest components of space lattice is known as .....
- Q.20 Conductivity of metal is.....than conductivity of non-metal.

## **SECTION-C**

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions.  $(12 \times 5 = 60)$

- Q.21 Define any five mechanical properties of material.
- Q.22 Give any two properties of Thermocole and its uses.
- Q.23 Define the term Twinning with neat diagram.
- Q.24 What is plastic? Write its application in domestic and automobile sector.

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- Q.25 What is steel? Name an alloy steel and its properties.
- Q.26 What are the various allotropic forms of iron?
- Q.27 What is cork? Give some properties and used of cork.
- Q.28 How will you classify materials?
- Q.29 What is tempering? What is the purpose of tempering?
- Q.30 What is carburizing? Give the advantages of carburizing.
- Q.31 Write short note on body centred cubic.
- Q.32 What are semiconducting materials?
- Q.33 State the forms of carbon present in cast iron?
- Q.34 What are the properties and uses of copper?
- Q.35 What are the various properties of ceramics?

## **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions.  $(2 \times 10 = 20)$

- Q.36 Explain briefly the effect of various alloying elements ins steel.
- Q.37 Draw a neat sketch of iron-carbon diagram. Explain it.
- Q.38 Write short note on following:  
a) Thermoset plastic and thermoplastic  
b) Crystal imperfections

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