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4th Sem./ Auto, Mech. Prod. T&D, GE/CAD/CAM/ CNC, Metallurgy. Found & Forg., adv. Manuf Tech., Mech Engg (Fabrication Tech), Mech Engg (CAD/CAM Dsgn & Robotics) Mech (LAB / CAM Desg. Robotics)
Subject : Materials & Metallurgy / Mat. Sci.

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Multiple type Questions. All Questions are compulsory. (10x1=10)

Q.1 Which of the following is an example of a thermoplastic? (CO06)

a) Melamine b) Epoxide
c) Urethane d) Acetal

Q.2 Which of the following is the primary element used for making stainless steel alloy? (CO05)

a) Vanadium b) Indium
c) Chromium d) Zirconium

Q.3 What disadvantage does silicon carbide have? (CO04)

a) Thermal conductivity b) Tensile strength
c) Cost d) Oxidation resistance

Q.4 Which of the following term is used to define the temperature at which a substance changes its status from solid to liquid? (CO03)

a) Melting point b) Freezing point
c) Boiling point d) Condensation point

Q.5 What is phase? (CO04)

a) The substance which is physically distinct
b) The substance which is homogenous chemically
c) The substance which is both physically distinct and chemically homogenous
d) The substance which is both physically distinct and chemically heterogenous

Q.6 Which of the following is not a stage of annealing? (CO03)

a) Heating b) Soaking
c) Tempering d) Quenching

Q.7 Non equilibrium phases are shown for their time and transformation using_____. (CO04)

a) Fe-Fe3C diagram b) TTT diagram
c) CCT diagram d) TTT & CCT diagram

Q.8 Bainite in iron carbon alloys has a___structure. (CO04)

a) Dendritic b) Non lamellar
c) Linear d) Hexahedral

Q.9 Which of the following is not a non-ferrous metal? (CO01)

a) Aluminium b) Lead
c) Zinc d) Iron

Q.10 Plastics are _____in weight. (CO06)

a) Very heavy b) Light

c) Negligible d) Heavy

Section-B

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

Q.11 Define space lattice. (CO02)

Q.12 Give the percentage of carbon in cast iron. (CO01)

Q.13 Describe binary allow. (CO04)

Q.14 Define formability. (CO03)

Q.15 What is heat resistant steel. (CO08)

Q.16 Define stud welding. (CO05)

Q.17 Describe carburizing. (CO03)

Q.18 Define ceramics. (CO07)

Q.19 Write constituents of asbestos. (CO08)

Q.20 Give full form of PTFE. (CO06)

Section-C

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

Q.21 Write short note on semi conducting materials. (CO01)

Q.22 Difference between the ductility and elasticity. (CO01)

Q.23 Find the number of atoms per unit cell in BCC and in FCC. (CO02)

Q.24 Explain lever rule. (CO03)

Q25 Write a short note on solid solutions. (CO04)

Q.26 Write the properties and uses of white cast iron. (CO05)

Q.27 Write main uses plain carbon steels. (CO04)

Q.28 Explain the process of manufacturing of stainless steel. (CO05)

Q.29 What are the effects of various applications of stainless steel. (CO05)

Q.30 Enlist the variour applications of stainless steel. (CO05)

Q.31 Explain the object (Purpose) of heat treatment. (CO03)

Q.32 What are type of heat treatment furnaces? Explain. (CO03)

Q.33 Give the physical metallurgy of stainless steel and gives its qualities. (CO05)

Q.34 Write a short note on bearing materials. (CO07)

Q.35 Enlist the properties and uses of glass wool. (CO08)

Section-D

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

Q.36 Write short note on following : (CO02)

a) Various failure modes of materials

b) Crystal defects

Q.37 Describe aluminium its alloys. Give the properties and uses of aluminium and its alloys. (CO04)

Q.38 Explain normalizing and nitriding heat treatment processes in detail. (CO03)