Q.29 Show flow diagram for production of iron. (CO4)
Q.30 Write a short note on alloy steel. (CO4)
Q.31 What are main objectives of heat treatment? (CO3)
Q.32 Classify the plastics. (CO5)
Q.33 What are main safety features for usage of plastic containers? (CO5)
Q.34 Write the five properties required for cutting tool materials. (CO7)
Q.35 Write the five properties of refractory materials. (CO7)

SECTION-D

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

Q.36 What is cast iron? Give in detail the types, their properties and uses. (CO2)
Q.37 Explain any two heat treatment processes in detail (CO3)
Q.38 Write Short note on:-
i) Plastic coating on metals (CO5)
ii) Different material for bearing alloys. (CO7)

No. of Printed Pages : 4 170331
Roll No. .....

3rd Sem / Auto, Mech.
Subject:- Materials and Metallurgy

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 Which of the following is not a property of engineering materials? (CO1)
a) Mechanical properties
b) Chemical properties
c) Polymorphism
d) Electrical properties

Q.2 Which of the following factors affect the mechanical properties of a material under applied loads? (CO2)
a) Grain size
b) Shape of material
c) Content of alloys
d) Imperfection and defects

Q.3 Packing efficiency of a crystal structure is the ratio of: (CO2)
a) Volume occupied by particles to the total volume of the unit cell
b) Volume occupied by particles to that by voids
c) Total volume of the unit cell to the volume occupied by particles
d) Volume occupied by voids to that by particles

Q.4 Coordination number of HCP and FCC lattices respectively are: (CO2)

a) 12, 12 b) 4,4
c) 12, 8 d) 8, 8

Q.5 What is a phase? (CO3)

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

Q.6 Finer size pearlite is called_____ (CO4)

a) Troostite b) Ledeburite
c) Ferrite d) Sorbite

Q.7 Time temperature transformation diagrams are drawn for_____ (CO4)

a) Iron b) Manganese
c) Any alloy d) Only steel

Q.8 Which of the following is a method of applying a protective zinc coating to steel? (CO7)

a) Galvanizing b) Glazing
c) Hydroforming d) Metal punching

Q.9 For steel, which one of the following properties can be enhanced upon annealing? (CO3)

a) Hardness b) Toughness
c) Ductility d) Resilience

Q.10 Plastics are _____ in weight. (CO5)

a) Very heavy b) Light
c) Negligible d) Heavy

SECTION-B

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

Q.11 Define crystallography. (CO1)
Q.12 What are line defects? (CO2)
Q.13 Define alloy. (CO3)
Q.14 Define solvent. (CO4)
Q.15 Define allotropy. (CO4)
Q.16 What is twinning ? (CO2)
Q.17 What is eutectoid? (CO4)
Q.18 Define curie point. (CO4)
Q.19 Define refractory material. (CO6)
Q.20 Define abrasive materials. (CO7)

SECTION-C

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

Q.21 Explain mechanical properties of metals. (CO1)
Q.22 Write short note on semi conducting materials. (CO7)
Q.23 Explain various environmental issues of material usage. (CO1)
Q.24 Give the comparison between elastic deformation and plastic deformation. (CO2)
Q.25 Explain plastic deformation by slip. (CO2)
Q.26 Explain cooling curve of pure metals. (CO2)
Q.27 Write a short note on 18-4-1 high speed steel. (CO3)
Q.28 Write a short note on different micro structures of iron and steel. (CO4)