Q.25 Differentiate between slip and twinning. (CO-2)
Q.26 Find the number of atoms per unit cell in BCC and in FCC. (CO-1)
Q.27 Differentiate between iron & steel. (CO-2)
Q.28 List and explain any five properties of ceramics. (CO-1)
Q.29 Differentiate Point defects and line defects in crystals. (any five) (CO-2)
Q.30 Classify heat concept of plastic coating. Give its types. (CO-2)
Q.31 Explain the terms Recovery, Recrystalization and grain growth. (CO-2)
Q.32 Define Plastics. Explain its types. (CO-1)
Q.33 State the main objectives of heat treatment? (CO-2)
Q.34 Differentiate between ferrous metals and non-ferrous metals. (CO-2)
Q.35 Derive an expression for the atomic radius of body centered cubic structure. (CO-1)

SECTION-D

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

Q.36 Draw and explain Iron carbon diagram listing its constituents and phase. (CO-3)
Q.37 What are Heat Insulating materials? Explain any two materials, their engineering applications and properties. (CO-6)
Q.38 What is alloy steel? What are its different types? Explain briefly. (CO-1)

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3rd Sem. / Auto. Mechanical

Subject : Materials and Metallurgy

Time : 3 Hrs. M.M. : 100

SECTION-A

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

Q.1 Which of the following is a non metal? (CO-1)
a) Iodine b) Graphite
c) Carbon d) All of the abvoe

Q.2 The crystal of alpha iron is (CO-1)
a) Body centred cubic
b) Face centred cubic
c) Hexagonal close packed
d) Cubic structure

Q.3 In nitriding steel components, the following atmosphere is generally used in the furnace (CO-1)
a) Inert b) Ammonia
c) Liquid nitrogen d) Carbon

Q.4 The ability of the material to resists fracture due to high impact load is. (CO-2)
a) Toughness b) Hardness
c) Brittleness d) None of these

Q.5 The percentage of carbon in pig iron varies from (CO-1)

a) 0.1 to 1.2% b) 1.5 to 2.5%

c) 2.5 to 4% d) 3.5 to 4.5%

Q.6 Which of the following is not the objective of annealing (CO-1)

a) Remove internal stresses

b) Refine grain size

c) Refine structure

d) Improve machinability

Q.7 Which of the following is a point defect? (CO-1)

a) Interstitial defect b) Schottky defect

c) Frenkel defect d) All of these

Q.8 Amorphous material is one (CO-1)

a) In which atoms align themselves in a geometric pattern upon solidification

b) In which there is no definite atomic structure and atoms exists in a random pattern just as in a liquid.

c) Which is not attacked by phosphorous

d) Which emits fumes on melting

Q.9 In structure, all metals are (CO-1)

a) Crystalline b) Granular

c) Wrought d) Amorphous

Q.10 Which of the following is an alloy? (CO-3)

a) Brass b) Gold

c) Silver d) Aluminium

SECTION-B

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

Q.11 Name any two semi-conductors. (CO-1)

Q.12 Name two types of solids. (CO-2)

Q.13 Define creep. (CO-1)

Q.14 How many atoms are in one FCC unit cell? (CO-1)

Q.15 Define coordination No. (CO-2)

Q.16 Write two alloys of copper with composition. (CO-1)

Q.17 Write the composition of 18-4-1 high speed steel. (CO-2)

Q.18 Brass is the alloy of _____ (CO-1)

Q.19 Define thermoplastics. (CO-2)

Q.20 Describe glass wool. (CO-2)

SECTION-C

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

Q.21 What are heat treatment process? Explain any two process. (CO-3)

Q.22 What are smart materials? Explain any two. (CO-1)

Q.23 What do you mean by Alloy? Write any five uses of Alloys. (CO-1)

Q.24 Write the five uses of bio-materials. (CO-1)