No. of Printed Pages : 4 120342/30342

Roll No. .....

4th Sem. / Auto Mech,Prod.,T&D, CAD/CAM,GE,CNC,Metallurgy,Mech. Engg,(Fabrication Tech)

Subject : MATERIAL AND METALLURGY

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

Q.1 a) Name various chemical properties of Engineering materials.

b) What is cementite?

c) Define creep.

d) List four types of cast iron.

e) Name the furnace in which Pig iron is refined as cast iron.

f) Define atomic packing factor.

g) What is unit cell?

h) Define fatigue.

I) Enlist two metals which have BCC structure.

j) Give composition of grey cast iron.

k) What is case hardening?

l) Why alloys are developed?

m) Name the process in which Nitrogen is diffused on surfaces.

n) What are refractory materials?

o) State the form of carbon present in cast iron.

p) Enlist two properties of ceramics.

q) Give two uses of High Speed Steels.

r) What is tempering process.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

Q.2 I) Enumerate various methods of manufacturing steel.

ii) Give the arrangement of atoms of F.C.C. structure.

iii) Explain fracture & creep.

iv) State the objectives of annealing.

v) State the effect of chromium as alloying element in steel.

vi) Explain crystallography.

vii) Differentiate between iron and steel.

viii) What is Atomic Packing Factor?

ix) List different types of cast iron.

x) What is solid solution?

xi) List properties of composites.

xii) Explain case hardening.

xiii) Define annealing.

xiv) Give few applications of Plastics.

xv) Explain unit cell with diagram.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.3 Draw iron carbon diagram and list various constituents and phases.

Q.4 Write short note on:-

(I) Pearlite Transformation.

(ii) Martensitic Transformation .

Q.5 Differentiate between case hardening and surface hardening.

Q.6 How are deformations classified? Explain.

Q.7 What are ceramics? Explain their properties and applications.