17303

11819

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

Marks

1. Attempt any TEN of the following : **20**

(a) How are metal classified ? Name any two types of C.I.

(b) Define pure metal. Give two examples.

(c) Define solid solubility.

(d) State the purpose of normalizing.

(e) Describe cast iron in brief.

(f) State the types of polymer materials.

(g) Define Sintering.

(h) State the different types of elastomers.

(i) Define Nitriding.

(j) Describe the classification of carbon steel.

(k) Define polymorphism.

(l) How the defects are located in magnaflux test ?

(m) Describe perlite in brief.

(n) Define elasticity and malleability of material.

(o) State the application of ABs.

2. Attempt any FOUR of the following : **16**

(a) Define Creep. What are its stages ?

(b) Describe cooling curve of pure metal.

(c) Draw iron-carbon equilibrium diagram and label it.

(d) Compare austempering and martempering.

(e) State the advantages and limitations of nitriding.

(f) Define annealing. State its objective.

3. Attempt any FOUR of the following : **16**

(a) Define carburizing. State its advantages.

(b) Explain with neat sketch BCC and FCC space lattices.

(c) Elaborate the purpose of heat treatment.

(d) Explain solidification of pure metal and alloy.

(e) Explain equilibrium diagram for eutectic system.

(f) What is alloy steel ? State the purpose of alloying elements addition.

4. Attempt any FOUR of the following : **16**

(a) Differentiate between annealing and normalizing.

(b) State the advantages and limitations of tempering.

(c) What is 18:4:1 tool steel ? State its applications.

(d) Define heat treatment ? State its objective.

(e) State the effect of manganese, sulphur, nickel and tungsten alloying element in steel.

(f) State the types of cast iron with microstructure.

5. Attempt any FOUR of the following : **16**

(a) Describe composition and applications of Muntz steel.

(b) Differentiate between white C.I. and grey C.I.

(c) State the composition and application of naval brass and gun metal.

(d) Explain porous self lubricating bearing.

(e) List the applications of high carbon steel.

(f) Explain the following bearing metals with their properties and uses.

(i) white metals

(ii) leaded bronzes

6. Attempt any FOUR of the following : **16**

(a) Describe NDT. Give applications of NDT.

(b) State the applications of glass wool.

(c) Define stainless steel. State its properties.

(d) Describe two characteristics and uses of epoxies.

(e) Explain the procedure of ultrasonic crack detection with neat sketch.

(f) Define composite materials. How they are classified ?
