17303

14115

3 Hours/100 Marks

Seat No. | | | | | | | | |

Instructions *: (1)* ***All*** *questions are* ***compulsory****.*
(2) ***Illustrate*** *your answers with neat sketches* ***wherever*** *necessary.*
(3) Figures to the ***right*** *indicate* ***full*** *marks.*

MARKS

1. Attempt **any ten** : **20**
   a) Define ductility and hardness.
   b) Define plasticity and elasticity.
   c) What is a metal ? How metals are broadly classified ?
   d) State any two corrosion resistant materials added in alloy steels.
   e) Define Ferrite.
   f) Define Austenite.
   g) State the composition of Muntz metal.
   h) State the composition of gun metal.
   i) State the classification of pig iron.
   j) Write the applications of wrought iron.
   k) What is nitriding ?
   l) What are the effects of molybdenum on properties of steel ?
   m) What is the necessity of tempering ?
   n) Define polymer.

2. Attempt **any four** : **16**
   a) How engineering materials are classified ? Give example of each.
   b) Draw iron carbide phase diagram and show various phases in it.
   c) State and explain lever rule.
   d) Differentiate between normalising and annealing.
   e) Compare flame hardening and induction hardening.
   f) State the effects of alloying elements on tool steel.

P.T.O.

MARKS

3. Attempt **any four** : **16**
   a) What is allotropy ? State the allotropic changes of pure iron.
   b) Write a short note on Martensite.
   c) Describe martempering process.
   d) What is case hardening ? What are its advantages ?
   e) Classify Mild steel according to % of carbon and give applications of each type.
   f) Classify various types of stainless steels and give one example of each.

4. Attempt **any four** : **16**
   a) What is subcritical annealing ? What are its purposes ?
   b) What is induction hardening ? What are its features and applications ?
   c) Define pearlite and cementite.
   d) Write down the characteristics and applications of nodular cast iron.
   e) List the advantages and limitations of powder metallurgy.
   f) What is carburizing ? What are its advantages ?

5. Attempt **any four** : **16**
   a) Give applications of brass and bronze.
   b) Give properties and applications of ABS.
   c) What is a composite material ? Give its one example.
   d) Define and explain the concept of powder metallurgy.
   e) Describe compacting process in powder metallurgy.
   f) What is case hardening ? What are its types ?

6. Attempt **any four** : **16**
   a) What is the purpose of normalizing ? How it is carried out ?
   b) Draw flow chart for production of malleable CI.
   c) What are the effects of phosphorous and silicon on properties of steel ?
   d) Give two applications of polyester and epoxy in industry.
   e) Describe blending process in powder metallurgy.
   f) Define creep and toughness.
