# 17203

**13141**

**2 Hours / 50 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.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Attempt any NINE :** **18**

(a) List any two ores of iron with chemical formula.

(b) What is the function of coke and limestone in the extraction of iron from its ore in the blast furnace ?

(c) State two properties and two applications of high carbon steel.

(d) Why is an alloying element nickel added in steel ?

(e) Define atmospheric corrosion. Name the type of oxide film formed over noble metal like gold and platinum.

(f) Write two examples of corrosion due to galvanic cell action.

(g) Differentiate between metal spraying and methal cladding. (any two points)

(h) Name any four important constituents of paint.

(i) Define calorific value and ignition temperature.

(j) State any two characteristics of biodiesel.

(k) Give any two advantages of gaseous fuel over solid fuel.

(l) How is oiliness of lubricant important in lubrication process ?

**2. Attempt any FOUR :** **16**

(a) Write following chemical reactions occurring in zone of heat absorption in the blast furnace.
  (i) Reduction of iron oxide with red hot carbon.
  (ii) Formation of slag
  (iii) Reduction of phosphorous pentaoxide.
  (iv) Reduction of manganese dioxide.

(b) Give percentage composition of pig iron with its two properties and two applications.

(c) Explain normalizing method of heat treatment of steel.

(d) State any four characteristics of good fuel.

(e) What is the source of biogas ? Give three properties of biogas as a fuel.

(f) Give two applications each of petroleum ether and gasoline.

**3. Attempt any FOUR :** **16**

(a) Explain hydrogen evolution mechanism of immersed corrosion with neat labelled diagram.

(b) How is sacrificial anodic protection method used for protection of heavy machinery ?

(c) Draw the labelled diagram of galvanizing process and explain why the utensils are tinned and not galvanized.

(d) Define – viscosity, fire point, cloud point and neutralization point.

(e) Suggest the type of lubricant used for following jobs :
  (i) Clock
  (ii) Tractor
  (iii) Cutting tools
  (iv) Gears

(f) Explain the mechanism of fluid film lubrication with neat labelled diagram.

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