17227

14115

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) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

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

(8) Use of Steam tables, logarithmic, Mollier's chart is permitted.

Marks

1. Attempt any SEVEN of the following: **14**

a) Define corrosion. Mention the types of corrosion.

b) Name the factors affecting atmospheric corrosion.

c) Why galvanised utensils are not used for storing food stuffs.

d) Define the terms:

(i) calorific value

(ii) ignition temperature.

e) Mention any two characteristics of a good fuel.

Marks

f) Give the composition of LPG with its two applications.

g) Define lubricant. Give its classification.

h) Explain any two functions of solid lubricants.

i) Define hardness of water and mention the types of hardness of water.

j) What is meant by softening of hard water? Write chemical formulae of soda and lime.

2. Attempt any <u>FOUR</u> of the following: **12**

a) Explain the mechanism of wet corrosion.

b) Explain sacrificial anodic protection of metal from corrosion.

c) Describe the process of metal spraying.

d) Define fuel. Give its classification.

e) Describe galvanising process with diagram.

f) Mention the types of oxide film formed. Which type of oxide film is more protective against corrosion?

3. Attempt any <u>FOUR</u> of the following: **12**

a) What is proximate analysis of coal? Explain the methods to determine the percentage of ash and percentage of fixed carbon in coal.

b) State two advantages and two disadvantages of solid fuels.

c) What is CNG? Write its composition and two uses.

d) State two general characteristics and applications each of liquid lubricants.

e) How higher calorific value of a solid fuel is determined by using Bombs calorimeter.

f) Write composition, two properties and applications each of biogas.

Marks

4. Attempt any <u>FOUR</u> of the following: **12**

a) Explain the mechanism of boundary lubrication.

b) Define the terms:

(i) viscosity

(ii) viscosity index

(iii) acidity or neutralisation number

(iv) saponification value.

c) Explain zeolite process of softening of hard water.

d) State any two advantages and two disadvantages of chlorination.

e) What is buffer solution? Write the types of buffer solution.

f) Define pH of a solution. Calculate the pH of a solution whose hydrogen ion concentration is 3.5×10^{-5} gm ion/liter.