[Total No. of Questions:6]   [Total No. of Printed pages :2]
[Time : 2 Hours]   [Max. Marks : 50]
Instructions :

*(1) Solve **Q.1 or Q.2,Q.3 or Q.4 and Q.5 or Q.6***
(2) Neat diagrams must be drawn wherever necessary.
(3) Figures to right indicate full marks.
(4) Assume suitable data, if necessary.

Q.1. A) Define calorific value of fuel. Explain bomb calorimeter for   [7]

determination of calorific value of solid fuel with figure, working

and formula.

B) What is power alcohol ? Give preparation reactions, merits and   [6]

demerits of power alcohol

C)A liquid fuel sample contains 85% C and 15% H calculate the   [4]

quantity of air with 5% excess required for complete combustion of

2 kg of fuel

OR

Q.2 A) Explain refining of petroleum with principle, diagram and process   [7]

Give the composition, boiling range and uses of any three useful fuels

obtained.

B) What is rocket propallent ? Explain different types of propallents with [6]

examples.

C) Calculate 5% in coal sample when 2.5 gm of coal is combusted in   [4]

Bomb calorimeter. The solution from bomb pot on treatment with $BaCl_2$

for 0.222 gm. of $BaSo_4$ precipitate.

Q.3 A) Explain various factors affecting the rate of corrosion of metal   [6]

B) Explain galvanising and tinning methods for metal coating with figure[6]
and process

C) Explain reaction and nature of oxide film for atmospheric corrosion of [4]
Mg and Ag.

OR

Q.4 A) Explain mechanism of electrochemical corrosion by hydrogen   [6]
   evolution and oxygen absorption

B) What is principle of cathodic protection ? Discuss the various types   [6]
of cathodic protection methods

C) Write note on powder coating.   [4]

Q.5 A) Explain ion exchange method for demineralization of water with   [7]
figure, process, reactions and advantages.

B) How Cl^- quantity in water is determined by Mohr's method   [6]

C) State Gibb's phase rule. Explain the terms involved in it with suitable [4]
examples.

OR

Q.6 A) Draw and explain sulphur system.   [7]

B) Discuss corrosion of boiler by dissolved gases and dissolved salts with [6]
chemical reactions and its prevention.

C) 50 ml of an alkaline water sample requires 4.8 ml of 0.025 N HCl   [4]
upto phenolphthalein end point and 13.6 ml up to methyl orange end point.
Find the type and amount of alkalinity in water sample.