

Applied Chemistry

FE - Sem II

A.C. II

88 : 1ST HALF-13 (r)-JP

Con. 6921-13.

(REVISED COURSE)

GS-5481

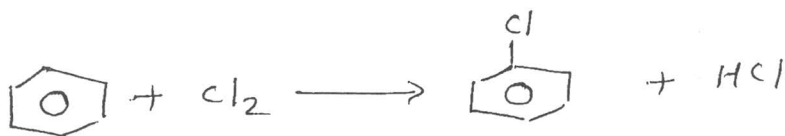
(2 Hours)

[Total Marks : 60

- N.B.** (1) Question No. 1 is **compulsory**.
 (2) Attempt any **three** from remaining **five** questions.
 (3) **All** questions carries equal marks.
 (4) **Atomic weight** :—

H = 1,	Cl = 35.5,
C = 12,	Ba = 137.3,
N = 14,	Mg = 24,
O = 16,	Na = 23,
S = 32,	Ca = 40

1. Answer any **five** from the following :— 15
- Why silver, gold and platinum do not undergo oxidation corrosion ?
 - Define Octane number and Cetane number. Give their significance.
 - Give the composition, properties and uses of German silver.
 - Give classification of composite material.
 - What is Green chemistry ? List the 12 principles of Green chemistry.
 - State the characteristics of a good paints.
 - A coal sample was subjected to ultimate analysis, 0.6 gm of coal on combustion in a Bomb calorimeter, produces 0.05 gm BaSO₄. Calculate the percentage of 'S' in coal sample.
2. (a) What are metallic coatings ? Distinguish between Galvanizing and Tinning. 6
 (b) Explain refining of petroleum with suitable diagram. 5
 (c) Calculate % atom economy for following reactions :— 4



3. (a) A coal sample has the following composition by weights : C = 82%, H = 3%, O = 8%, S = 2%, N = 2% and Ash = 3%. Calculate the minimum amount of air required both by weight and volume for complete combustion of 2 kg of coal. (mol-wt. of air = 28.949 gm). 6
- (b) Explain traditional and greener route of production of *Indigo dye*. By this reactions which principle of green chemistry is shown ? 5
- (c) How is the rate of corrosion influenced by :— 4
- pH of medium
 - Relative area of cathode and anode parts ?

[TURN OVER

Con. 6921-GS-5481-13.

2

4. (a) Write a note on Compacting and Sintering. 6
(b) Explain wet corrosion in acidic medium with schematic diagram and mechanism. 5
(c) Explain Laminar composite with suitable ~~diagram~~ Example. 4
5. (a) What is bio-diesel ? Explain the method to obtain bio-diesel from vegetable oil. 6
Give advantages of bio-diesel as a fuel.
(b) Distinguish between Brass and Bronze. 5
(c) State the chemical factors influencing adhesive action. 4
6. (a) What is cathodic protection ? Describe impressed current method of corrosion control. 5
(b) A gaseous fuel has the following composition by volume : 5
 $H_2 = 10\%$, $CH_4 = 30\%$, $C_3H_8 = 20\%$, $CO = 20\%$, $CO_2 = 15\%$, $N_2 = 5\%$.
Calculate the volume of air required for complete combustion of $1m^3$ of this gas.
(c) Explain the effect of following elements on alloying :— 5
(i) Nickel
(ii) Chromium
(iii) Cobalt
(iv) Molybdenum
(v) Tungsten.
-