FE/Sem-II (R) 22/5/13
A·C-II
28·949 → 10 mention.

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

Con. 6921–13. (REVISED COURSE) GS–5481

(2 Hours) [Total Marks : 60

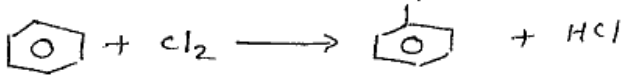
N.B. (1) Question No. 1 is **compulsory**.
(2) Attempt any **three** from remaining **five** questions.
(3) **All** questions **carries** equal marks.
(4) **Atomic weight :—**

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**
   (a) Why silver, gold and platinum do not undergo oxidation corrosion ?
   (b) Define Octane number and Cetane number. Give their significance.
   (c) Give the composition, properties and uses of German silver.
   (d) Give classification of composite material.
   (e) What is Green chemistry ? List the 12 principles of Green chemistry.
   (f) State the characteristics of a good paints.
   (g) A coal sample was subjected to ultimate analysis, 0·6 gm of coal on combustion in a Bomb colorimeter, produces 0·05 gm $BaSO_4$. 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) Calcualte % atom economy for following reactions :— **4**

w.r.t. Clorobenzene



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**
      (i) pH of medium
      (ii) Relative area of cathode and anode parts ?

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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. Give advantages of bio-diesel as a fuel. 6
   (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.