

Q.P. Code : 3065

(OLD COURSE)

(2 Hours)

[Total Marks : 75]

- N.B. : (1) Question No. 1 is compulsory.
 (2) Attempt any four from remaining six questions.
 (3) Figures to the right indicate full marks.
 (4) All questions carry equal marks.
 (5) Atomic weight : H = 1, C = 12, N = 14, O = 16, Na = 23, Mg = 24, S = 32, Cl = 35.5, Ca = 40, Ba = 137.5.

1. Attempt any five from the following : 15
- (a) How volatile matters are determined from the coal sample? Write the significance of volatile matter analysis.
- (b) Write the composition, properties and uses of duralumin.
- (c) Write the classification of composite materials.
- (d) Write the difference between cathodic and anodic coating.
- (e) Define and explain activation energy.
- (f) Write a short note on "E green propellant".
2. (a) What are fibre reinforced composite materials. Write their classification. 6
- (b) A sample of coal has the following composition by weight C = 85%, H = 5%, O = 7%, S = 0.6% and remaining ash. Calculate H.C.V. and L.C.V. using Dulong's formula. 5
- (c) Write a short note on "antiknock agents." 4
3. (a) Explain traditional and green route of synthesis of indigo dye. 6
- (b) What is stress corrosion? Explain stress corrosion with the example of season cracking. 5
- (c) What are the applications of powder metallurgy. 4
4. (a) What is catalysis. Explain the adsorption theory of heterogenous catalysts. 6
- (b) Calculate the weight of air needed for complete combustion of 1kg of coal containing C = 65%, H = 7%, O = 9%, S = 1% and remaining nitrogen. 5
- (c) Calculate the percentage atom economy for the following reaction with respect to product toluene. 4



Benzene Methyl Toluene
 Chloride

TURN OVER

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5. (a) How these factors influence the rate of corrosion. 6
(i) pH of the medium,
(ii) Relative areas of anode and cathode,
(iii) Overvoltage.
(b) Write a short note on zeolite as a catalyst. 5
(c) Write are laminar composites. 4
6. (a) What are ceramic powder? Write the manufacture of alumina. 6
(b) Write the transesterification reaction of production of bio-diesel. Explain advantages of bio-diesel. 5
(c) Explain in detail anodic protection method of corrosion control. 4
7. (a) Explain concentration cell corrosion with the help of suitable example. 6
(b) What is cracking. Explain fixed bed catalytic cracking with the help of a neat diagram. 5
(c) Explain "prevention of waste" principle of green chemistry with the help of suitable examples. 4