1E2004

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B. Tech. 1 Semester (Back) Examination, Dec. 2018
104 Engineering Chemistry

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary). Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) What is coke? Explain the manufacturing of coke by Beehive oven method. (8)

   b) What is synthetic petrol? Explain it by Fischer Tropsch process. (8)

OR

2. a) Write short notes on any two-

   i. Octane number

   ii. Oil gas

   iii. Coal gas (2×4=8)

   b) Explain Refining of petroleum crude. (8)

Unit - II

3. a) Explain High and low calorific value of fuel. How will you determine calorific value of gaseous fuel by Junker's calorimeter. http://www.rtuonline.com (8)

   b) Write short notes on any two

   i. Flue gas Analysis

   ii. Ultimate Analysis

   iii. Proximate Analysis. (2×4=8)

OR

4. a) Describe the Bomb calorimeter for the determination of calorific value of solid fuel and explain corrections also. (8)

b) A coal sample found to have following composition.

C = 76%, H = 8.0%, O = 5.2%, N = 3.0%

Ash = Rest. Calculate minimum amount of oxygen and air required (by weight) for complete combustion of 1 Kg of coal. Calculate amount of Air required if 60% excess air is supplied. (8)

Unit - III

5. Write short notes on following.

   i. Neoprene rubber and its valcanization

   ii. Buna - S

   iii. Buna - N

   iv. Butyl Rubber (4×4=16)

OR

6. a) Discuss the free radical polymerization mechanism. (8)

   b) Explain the manufacturing properties and uses of fullerenes. (8)

Unit - IV

7. What is portland cement? Describe the manufacturing of cement by Rotary Kiln Technology. http://www.rtuonline.com (16)

OR

8. Write the short notes on following

   i. Optical fiber grade glass

   ii. Annealing in glass

   iii. Role of gypsum

   iv. Basic constitutions and composition of cement. (4×4=16)

Unit - V

9. a. What is refractory? Describe properties of refractories. (10)

   b. Explain silica refractory. (6)

OR

10. Explain following-

   i. Classification of lubricant

   ii. Viscosity and its measurement

   iii. Cloud and pour point

   iv. Flash and fire point. (4×4=16)