

1E2004

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B.Tech. I Sem. (Main/Back) Examination - 2014
104 Engineering Chemistry
Common to all Branches

Time : 3 Hours]

[Total Marks : 80
[Min. Passing Marks : 24

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? Describe the manufacturing of coke by Beehive Oven Method. (8)
- (b) What is Synthetic Petrol? Explain, with the help of figure, Fisher Trapsh process of making synthetic petrol. (8)

OR

- 1. (a) Differentiate the characteristic of Solid, Liquid and Gaseous Fuels. (8)
- (b) Write notes on the following (4+4)
 - (i) Octane Number
 - (ii) Composition of Petroleum
 - (iii) Oil gas

UNIT - II

- 2. (a) What is Calorific Value of Fuel? Describe the working of Bomb Calorimeter. (10)
- (b) A sample of coal containing C = 75%, H₂ = 8%, O₂ = 7.5%, S = 5.0% and rest is ash. Calculate the gross and net calorific value of coal. (6)

OR

- 2. (a) What is proximate analysis of coal? Explain the steps involved in proximate analysis of coal. (10)
- (b) A coal sample contains following composition :
C = 75%, H₂ = 6%, O₂ = 7%, S = 5%, Ash = 7%
Calculate the weight of air required for the complete combustion of 1 kg of coal, if 40% excess of air is supplied. (6)

UNIT - III

- 3. Write short notes on any two of the following : (8+8)
 - (a) Polymerization mechanisms.
 - (b) Synthetic rubber
 - (c) Vulcanization of Rubber

OR

- 3. (a) What is Organic Electronic Materials? Explain how conductivity is induced in polypyroles. (8)
- (b) Explain the manufacturing, properties and uses of fullerenes. (8)

UNIT - IV

- 4. What is Portland Cement? Describe the manufacturing of cement by Rotatory Kiln Technology. (16)

OR

- 4. Write short notes on any four of the following :
 - (a) Role of Gypsum
 - (b) Making of Optical Fiber Glass
 - (c) Annealing in glass manufacturing
 - (d) Borosilicate glass

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(4x4=16)

- (e) Basic constituents of cement
- (f) Safety glass

UNIT - V

5. (a) What is Refractory? Describe properties of refractories.
(b) Explain Silica Refractory.

OR

5. (a) Explain Thick Layer Lubrication.
(b) Write short note on any two of the following :
(i) Viscosity and its measurement
(ii) Flash & fire points
(iii) Classification of lubricants
(iv) Requisites of good refractory

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