

**1E2004**

Roll No. : \_\_\_\_\_

Total Printed Pages : **3****1E2004**

**B. Tech. (Sem. I) (Main/Back) Examination, December - 2013**  
**104 Engineering Chemistry**  
**(Common to All Branch)**

Time : 3 Hours]

[Total Marks : 80

[Min. Passing Marks : 26 (Main)

Min. Passing Marks : 24 (Back)

*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.*

Use of following supporting material is permitted during examination.  
 (Mentioned in form No. 205)

1. \_\_\_\_\_ **NIL** \_\_\_\_\_2. \_\_\_\_\_ **NIL** \_\_\_\_\_**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, Fischer Tropsch process of making synthetic petrol. 8

**OR**

- (a) Differentiate the characteristics of solid, liquid and gaseous fuels. 8
- (b) Write short notes on any **two** of the following :
- (i) Octane Number
- (ii) Composition of petroleum
- (iii) Oil gas. 4+4



## 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%, H<sub>2</sub> = 8%, O<sub>2</sub> = 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%, H<sub>2</sub> = 6%, O<sub>2</sub> = 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
- (1) Polymerization mechanisms
  - (2) Synthetic rubber ✓
  - (3) Vulcanization of rubber. ✓

OR

- 3 (a) What is organic electronic materials ? Explain how conductivity is induced in polypyrroles. ✓ 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 :

- (i) Role of gypsum
- (ii) Making of optical fiber glass
- (iii) Annealing in glass manufacturing
- (iv) Borosilicate glass
- (v) Basic constituents of cement
- (vi) Safety glass.

4×4=16

### UNIT - V

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

10

(b) Explain silica refractory.

6

OR

5 (a) Explain thick layer lubrication.

4

(b) Explain any **two** of the following :

- (i) Viscosity and its measurement
- (ii) Flash and fire point
- (iii) Classification of lubricants
- (iv) Requisites of good refractory.

6+6

