

**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



- 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 :

- (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. ✓
- (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



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