

**514051**

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**BET-013**

**DIPLOMA IN CIVIL  
ENGINEERING/DIPLOMA IN  
MECHANICAL ENGINEERING  
[DCLE(G)/DME]**

**Term-End Examination**

**December, 2019**

**BET-013 : CHEMISTRY**

*Time : 2 Hours*

*Maximum Marks : 70*

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*Note : Question No. 1 is compulsory. Answer any  
four questions from Question Nos. 2 to 8.*

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1. (a) What is the basis of classification of  
elements in Modern Periodic Table ? 2
- (b) Name any *four* important gases present in  
dry air. 2
- (c) Name any *two* allotropic forms of oxygen. 2

- (d) What is the difference between a mineral and an ore ? 2
- (e) Give the names of any *four* gaseous fuels. 2
- (f) What is Aniline point ? 2
- (g) What is Vulcanisation ? 2
2. (a) What are *f*-block elements ? Name any *four* *f*-block elements. 4
- (b) Why an anion is always larger than its parent atom ? 4
- (c) Discuss various isotopes of Hydrogen along with their uses. 6
3. (a) Explain the functioning of a Blast Furnace with neat diagram. 8
- (b) Describe the hydrological cycle, with a labelled diagram. 6
4. (a) What are primary and secondary fuels ? Give *two* examples of each. 6
- (b)  $\text{pOH}$  of a solution is 10. What will be the  $\text{pH}$  ? ( $\text{pK}_w = 14$ ). 4

(c) Write the electronic configuration of the following elements : 4

(i) He (2)

(ii) C (6)

(iii) Cl(17)

(iv) Fe (26)

Atomic numbers are given in parentheses.

5. (a) Explain the following : 8

(i) Solid lubricants

(ii) Liquid lubricants

(iii) Semi-solid lubricants

(iv) Synthetic lubricants

(b) Explain the process of free radical polymerisation. 6

6. (a) What are the types of Addition Polymerisation ? 3

(b) What are Zeigler-Natta catalysts ? 4

(c) . Why glass is called "Super Cooled" liquid ? 4

(d) What are the main groups of refractories ? 3

7. (a) What is Hydrogen Bond ? Explain its importance. 4
- (b) What do you understand by water gas ? 4
- (c) Write a detailed note on composition, properties and uses of any *two* groups of glasses. 6
8. (a) List any *four* functions of a Lubricant. 4
- (b) Write the structure of bleaching powder and any *four* uses of it. 4
- (c) What are the elements present in the shortest period of the Modern Periodic Table ? 2
- (d) Name important ores of copper. 4