No. of Printed Pages : 4     **BET-013**

# DIPLOMA IN CIVIL ENGINEERING/DIPLOMA IN MECHANICAL ENGINEERING (DCLE(G)/DME/DCLEVI)

## Term-End Examination

## June, 2019

**BET-013 : CHEMISTRY**

*Time : 2 Hours*          *Maximum Marks : 70*

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

1. (a) What is Law of Octaves ?          2

   (b) Name any *two* zones of Atmosphere.          2

   (c) Name *four* important ores of Iron.          2

   (d) Name any *two* substances used for sterilization of water.          2

   (e) What is Crude Oil ?          2

   (f) What is a Lubricant ?          2

   (g) Name any *four* colouring materials of glass.          2

2. (a) Explain the periodic variation of the following properties : 6

   (i) Atomic radius

   (ii) Ionisation energy

   (iii) Metallic character

   (b) Which one is larger and why ? Na *or* $Na^+$.

   4

   (c) Write the electronic configuration of the following elements. Atomic numbers are given in parentheses : 4

   (i) Li(3)

   (ii) O(8)

   (iii) Cl(17)

   (iv) Mn(25)

3. (a) Describe the commercial production of sulphuric acid by Contact process. 6

   (b) Explain sludge and scale formation in boilers. List disadvantages of sludge formation. 6

   (c) What is an alloy ? Give suitable examples. 2

4. (a) What is Froth Floatation ? 4

(b) Discuss the various methods for removal of temporary and permanent hardness of water. 8

(c) Give any *two* uses of biogases. 2

5. (a) What is water gas ? How is it prepared ? List its uses. 6

(b) Name the processes involved in refining of petroleum. Describe fractional distillation. 8

6. (a) Define calorific value and explain the construction of a Bomb-calorimeter. 8

(b) pH of a solution is 4. What will be the pOH of the solution ? ($pKw = 14$) 4

(c) Mention any *two* units used for representing hardness of water. 2

7. (a) Give the merits and demerits of solid and liquid fuels. 10

(b) Explain the cationic polymerisation with an example. 4

8. (a) Give the formula and structure of Bleaching powder. 4

   (b) What is the difference between Fire point and Flash point ? 4

   (c) What are ceramics ? 2

   (d) Explain any *two* varieties of glasses. 4