BET-013

DIPLOMA IN CIVIL ENGINEERING DCLE(G) / DIPLOMA IN MECHANICAL ENGINEERING (DME) / DCLEVI / DMEVI / DELVI / DECVI / DCSVI / ACCLEVI / ACMEVI / ACELVI / ACECVI / ACCSVI

Term-End Examination

⊡⊡ㄢ?ㄥ   **December, 2018**

BET-013 : CHEMISTRY

Time : 2 hours   *Maximum Marks : 70*

Note : *Question no. 1 is **compulsory**. Answer any **four** questions from questions no. 2 to 8. All questions carry equal marks.*

1. (a) What is Aufbau Principle ?   2

    (b) Write the two abundant components of air, along with their percentage content.   2

    (c) Define metallic character of an element.   2

    (d) Give oxidation states of nitrogen in NO_2 and HNO_2.   2

    (e) What do you know about hydrogen bonding in water ?   2

    (f) What is sliding friction ?   2

    (g) Name any two 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) Why is the second ionisation energy higher than the first ionisation energy ? Explain. *4*

   (c) Write any four uses of chlorine. *4*

3. (a) Explain the ammonia synthesis by Haber process. *5*

   (b) Describe the zeolite process to remove water hardness. *4*

   (c) List the advantages of sludge formation. *5*

4. (a) List important ores of aluminium. Describe the electro-metallurgy method for production of aluminium. *10*

   (b) Explain coagulation and flocculation process for treatment of water. *4*

5. (a) Write a detailed note on Boiler corrosion and its prevention. *8*

   (b) What are the functions of a lubricant ? *4*

   (c) Give two examples for copolymers. *2*

6. (a) Define the calorific value and explain the construction of a bomb calorimeter. *8*

(b) What are the uses of biogas ? *2*

(c) Discuss the synthesis of Nylon 6, 6 and its properties. *4*

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

(b) Write the formula and structure of bleaching powder. *4*

8. (a) Explain about Viscosity and Viscosity Index. *6*

(b) pOH of a solution is 9. What is its pH ? $(pK_w = 14)$ *4*

(c) Give an account of silica refractory bricks. *4*

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