BET-013

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

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December, 2016

BET-013 : CHEMISTRY

Time : 2 hours   *Maximum Marks : 70*

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

1.   Answer the following questions in brief :

   (a)   What is law of octaves ?   *2*

   (b)   What is a periodic table ? Name the first two elements in the periodic table.   *2*

   (c)   Define metallic character of an element.   *2*

   (d)   Differentiate between an ore and an alloy.   *2*

   (e)   List different types of hardness of water.   *2*

   (f)   What are lubricating oils ?   *2*

   (g)   What is the hydrological cycle ?   *2*

2. (a) Which one is larger — Na or Na^+ and why ? *4*

(b) Discuss in detail about the modern periodic table. *8*

(c) Write the electronic configuration of Cu (29). *2*

3. (a) Why is the second ionisation energy higher than the first ionisation energy ? *4*

(b) Describe any two methods for preparation of oxygen. *4*

(c) How do you extract aluminium from its ores ? *6*

4. (a) Give the formulae of the following compounds : *4*

(i) Dinitrogen monoxide

(ii) Nitric oxide

(iii) Nitrogen dioxide

(iv) Dinitrogen pentoxide

(b) Differentiate between specific heat and latent heat. *4*

(c) What do you understand by secondary fuels ? Give two examples each. *6*

5. (a) Mention any two units to represent hardness of water and explain them. *4*

(b) What do you understand by pH ? *2*

(c) If pOH of a solution is 9, what is its pH ? ($pK_w = 14$) *4*

(d) Name any four gaseous fuels. *4*

6. (a) Write a detailed note on semi-solid lubricants including their merits and demerits. *8*

(b) Explain about viscosity and viscosity index. *6*

7. (a) What is gutta percha ? *2*

(b) Explain glass transition temperature with a diagram. *6*

(c) Give an account of the important methods to prevent brittle fracture of glass. *6*

8. (a) What is the plasticity of clay ? *4*

(b) How are refractory materials classified ? *6*

(c) How will you determine actual available chlorine in bleaching powder ? *4*