

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

Term-End Examination

June, 2015

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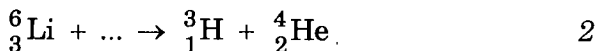
BET-013 : CHEMISTRY

Time : 2 hours

Maximum Marks : 70

Note : Answer any *five* questions. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (a) Write down the electronic configuration of ${}_{17}\text{Cl}$ and ${}_{24}\text{Cr}^{++}$. 2
- (b) Which one of O and O^- is larger and why? 2
- (c) What is a triad ? Give one example of a triad. 2
- (d) Write the names of any three elements of Group IA. 2
- (e) Complete the following nuclear reaction :



- (f) Complete the chemical reaction given below : 2
- $$\text{NH}_3 (\text{g}) + \text{HCl} (\text{g}) \rightarrow \dots$$
- (g) What is the percentage of oxygen in the exhaled air ? 2
2. (a) What is atomic radii ? How does it vary in a group and in a period ? Explain with examples. 8
- (b) What are the different natural sources of water ? 3
- (c) What is the major function of atmospheric water ? 3
3. (a) Define atmosphere. What is the importance of different zones of atmosphere in our life ? 6
- (b) Describe the preparation, properties and uses of oxygen. 6
- (c) Give the structure of hydrazine. 2
4. (a) Explain the removal of temporary hardness of water with appropriate chemical equations. 6
- (b) How is chlorine prepared in the laboratory ? Name two important compounds of chlorine with their uses. 6
- (c) Why is water a better solvent for ionic compounds than other solvents ? 2

5. (a) (i) Explain one industrial method used in the preparation of hydrogen. 4
- (ii) Give two important uses of hydrogen. 2
- (b) Write short notes on any *two* of the following: $2 \times 4 = 8$
- (i) Reverse Osmosis
- (ii) Distillation
- (iii) Lignite
- (iv) Bituminous Coal
6. (a) Draw a neat and labelled diagram of Blast furnace and describe the manufacturing of steel from iron. 6
- (b) What are the main causes of scale formation in the boiler ? List out its disadvantages. 6
- (c) One gm of NaOH is dissolved in 1 L water. Calculate the amount of Na in ppm. 2
7. (a) (i) What is meant by refining of petroleum ? 2
- (ii) Explain fractional distillation of petroleum and name any three fractions obtained during the process. 6
- (b) (i) Define copolymers. Give the names of any two copolymers with their uses. 4
- (ii) What is vulcanization ? 2

8. (a) What are the main properties of glasses ? 4
- (b) What are the important steps involved in the manufacturing of refractories ? 4
- (c) Name four important raw materials used in the manufacturing of glass. 4
- (d) Why does copper turn pale green on standing for a long time in air ? 2
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