



C09-CHOT-104/C09-M-104/C09-RAC-104

3042

BOARD DIPLOMA EXAMINATION, (C-09)

MARCH/APRIL—2014

DME—FIRST YEAR EXAMINATION

ENGINEERING CHEMISTRY AND  
ENVIRONMENTAL STUDIES

Time : 3 hours ]

[ Total Marks : 80

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PART—A

3×10=30

**Instructions** : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Write any three differences in properties of ionic compounds and covalent compounds.
2. Define oxidation number. What is the oxidation number of nitrogen (N) in  $\text{HNO}_3$ ?
3. Define equivalent weight of base. Calculate the equivalent weight of sodium hydroxide (NaOH).
4. Define pH. Calculate pH of 0.001 M HCl solution.
5. Write any three differences between metallic conductor and electrolytic conductor.

- \* 6. What are the salts responsible for temporary hardness and permanent hardness of water?
7. Define addition polymerisation and condensation polymerisation.
8. Give the composition and two uses of (a) Acetylene gas and (b) Producer gas.
9. Define the following giving examples :  
 (a) Producers  
 (b) Consumers
10. Define the terms 'pollutant' and 'contaminant' with an example of each.

**PART—B**

10×5=50

**Instructions :** (1) Answer *any five* questions.  
 (2) Each question carries **ten** marks.  
 (3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. (a) State Pauli's exclusion principle. 2  
 (b) State the postulates of Bohr's atomic theory. Write any two limitations. 8
12. (a) State any four differences between metals and non-metals. 4  
 (b) Give the composition and uses of Brass, German Silver and Nichrome. 6
- \* 13. (a) Define galvanic cell. Explain the construction of galvanic cell with an example. 6  
 (b) Define electrochemical series. Write any three significances of electrochemical series. 4

- \* 14. (a) What is rust? Explain the mechanism of rusting of Iron with chemical equations. 6  
(b) Explain the different types of protective coatings used in prevention of corrosion. 4
15. (a) Explain the municipal method of treatment of water for drinking purpose with a neat diagram. 7  
(b) What is reverse osmosis? Mention two advantages. 3
16. (a) What is vulcanisation of rubber? Explain giving chemical equations. 5  
(b) Write any five characteristics of vulcanised rubber. 5
17. (a) State and explain any three causes of air pollution. 5  
(b) Explain any three methods of control of air pollution. 5
18. (a) Define molarity. Calculate the molarity of 250 ml solution containing 5.3 g sodium carbonate (GMW=106). 5  
(b) Explain Lewis theory of acids and bases. 5

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