



C14-M/CHOT/RAC-104

4052

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2017

DME—FIRST YEAR EXAMINATION

ENGINEERING CHEMISTRY AND  
ENVIRONMENTAL STUDIES

Time: 3 hours ]

[ Total Marks : 80

**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. Distinguish between oxidation number and valency.
2. Draw the shapes of *s* and *p* orbitals.
3. Define solution, solvent and solute.
4. Calculate the pH of 0.005 M H<sub>2</sub>SO<sub>4</sub> solution.
5. State the compounds responsible to cause hardness to water.
6. Define conductor and electrolyte.
7. State any three differences between thermoplastic and thermo-setting plastic.
8. Mention the composition and uses of water gas and producer gas.
9. Write a note about acid rains.
10. Define pollutant, BOD and producers.

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**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) Explain four quantum numbers. 6  
(b) Explain the formation of MgO through ionic bonding. 4
- 12.** (a) 50 ml of 0.2 M H<sub>2</sub>SO<sub>4</sub> solution is mixed with 100 ml of 0.2 M H<sub>2</sub>SO<sub>4</sub> solution. Calculate the molarity of resulting solution. 5  
(b) Explain Arrhenius' theory of acids and bases. Write any two limitations of it. 5
- 13.** (a) Write the differences between metals and non-metals. 5  
(b) Describe roasting and smelting. 5
- 14.** (a) State and explain Faraday's laws of electrolysis. 6  
(b) How long would it take to deposit 18 g of aluminium from an electrolytic cell containing Al<sub>2</sub>O<sub>3</sub> using a current of 20 amp? (At.Wt. of Al = 27) 4
- 15.** (a) Define corrosion. State the factors affecting rate of corrosion. 5  
(b) Explain the mechanism of rusting of iron. 5
- 16.** (a) What are the disadvantages of using hard water in industries? 4  
(b) Explain ion-exchange process of softening of hard water. 6
- 17.** (a) Write the preparation and uses of polyethene, polyvinyl chloride, teflon and polystyrene. 6  
(b) Explain about vulcanization of rubber. 4
- 18.** (a) Explain the causes of air pollution. Write the method adopted to control air pollution. 6  
(b) Explain the effects of water pollution. 4

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