



C16-M/CHOT/RAC-107

6054

BOARD DIPLOMA EXAMINATION, (C-16)

SEPTEMBER/OCTOBER - 2020

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. Write the charge and mass of fundamental particles.
2. What are the  $n$ ,  $l$  values for  $3s$ ,  $3p$  and  $3d$  orbitals?
3. Define the terms solution, solute and solvent.
4. What is conjugate acid-base pair? Give an example.
5. What is the effect of temperature on metallic and electrolytic conductors?
6. Define osmosis and reverse osmosis.
7. Define addition polymerisation and condensation polymerisation with an example.
8. Define fuel. State any four characteristics of a good fuel.

\* 9. What is depletion of ozone layer? Mention its effects.

10. Write any three threats to biodiversity.

**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) Write the postulates of Bohr's atomic model. What are its limitations? 7

(b) Draw the shapes of *s* and *p* orbitals. 3

12. (a) Define normality. Calculate the weight of  $\text{Na}_2\text{CO}_3$  present in 100 ml of 0.5 *N* solution. 5

(b) Explain different types of Lewis acids with examples. 5

13. (a) Write any six differences between metals and non-metals. 6

(b) Define the terms mineral, ore, gangue and flux. 4

14. (a) State and explain Faraday's laws of electrolysis. 5

(b) What are the differences between electrolytic cell and galvanic cell? 5

15. (a) What is rusting? Explain the rusting of iron with chemical equations. 6

(b) Explain the cathodic protection by sacrificial anode method. 4

16. (a) Describe the method of removing hardness of water by permutit process. 6

(b) State the disadvantages of using hard water in industries. 4

- \* 17. (a) What are plastics? Explain the differences between thermoplastics and thermosetting plastics. 6
- (b) Write the structures of isoprene, neoprene, polystyrene and teflon. 4
18. (a) Define water pollution. Explain the causes of water pollution. 6
- (b) Define the following terms : 4
- (i) Pollutant
  - (ii) Contaminant
  - (iii) Receptor
  - (iv) Threshold limit value

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