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C20-M-CHOT-RAC-104

7051

BOARD DIPLOMA EXAMINATION, (C-20)

SEPTEMBER/OCTOBER—2021

DME - FIRST YEAR EXAMINATION

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES

Time : 3 hours]

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. State and explain Hund's rule.
2. Define solute, solvent and solution.
3. What is conjugate acid-base pair? Explain with an example.
4. Write any three differences between electrolytic and galvanic cell.
- * 5. Define osmosis and reverse osmosis.
6. Explain addition polymerisation with an example.
7. What are the primary fuels and secondary fuels? Give examples.
8. List the health aspects and pollution impacts of insect repellent.
9. What is acid rain? Write its effects.
10. Define (a) producers, (b) consumers and (c) decomposers.

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* PART—B

8×5=40

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

11. (a) Write the postulates of Bohr's atomic model.

OR

(b) Define covalent bond. Explain the formation of a covalent bond in O_2 and N_2 molecules.

12. (a) Classify solutions based on physical state with suitable examples.

OR

(b) Explain the Lewis theory of acids and bases with examples. Give its limitations.

13. (a) Define alloy. Write the composition and uses of (i) brass, (ii) german silver and (iii) nichrome.

OR

(b) State and explain Faraday's I law and II law of electrolysis. A current of 0.5 amperes is passed through $CuSO_4$ solution for 45 minutes. Calculate the weight of copper deposited. (Atomic weight of Cu = 63.5)

14. (a) Explain about (a) metallic coatings and (b) inorganic coatings.

OR

(b) Describe ion-exchange process for softening of hard water.

15. (a) Define thermoplastics and thermosetting plastics. Write any six differences between the thermoplastics and thermosetting plastics.

OR

(b) Define air pollution. Explain any four controlling methods of air pollution.

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PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) It carries ten marks.

(3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

16. Define Galvanic cell. Write the representation of galvanic cell in which the reaction $\text{Zn(s)} + 2\text{Ag}^+(\text{aq}) \rightarrow \text{Zn}^{2+}(\text{aq}) + 2\text{Ag(s)}$ takes place.

Further show :

(a) Which of the electrode acts as anode and cathode?

(b) The direction of flow of the current in the cell.

(c) Individual reaction at electrode.

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