



C16-C/CM-104

6019

BOARD DIPLOMA EXAMINATION, (C-16)

OCTOBER—2020

DCE—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. Define unit cell and coordination number.
2. What is orbital? Draw the shapes of *d*-orbital.
3. Define solute, solvent and solution.
4. What is acid buffer and base buffer? Give an example for each.
5. Write any three differences between metallic conductors and electrolytic conductors.
6. Define reverse osmosis. Write any two applications of reverse osmosis.

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7. Write any three advantages of plastics over traditional materials.
8. Write the compositions and uses of water gas and producer gas.
9. What are renewable and non-renewable energy sources? Give examples.
10. Define producers, consumers and decomposers. Give example.

PART—B

10×5=50

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

11. (a) Write the postulates and limitations of Bohr's atomic theory. 7
(b) Calculate the oxidation number of underlined atoms in $\underline{\text{KMn}}\text{O}_4$ and $\text{K}_2\underline{\text{Cr}}_2\text{O}_7$. 3
12. (a) Define normality. Calculate the normality of 500 ml of sulphuric acid solution containing 4.9 g of sulphuric acid. 5
(b) Describe about Brønsted–Lowry theory of acid-base. 5
13. (a) Explain about roasting, calcination and smelting with examples. 7
(b) Define alloy and write the composition and uses of brass. 3
14. (a) State and explain Faraday's laws of electrolysis. 6
(b) 10 amperes of current is passed through zinc sulphate solution for 10 minutes. Calculate the weight of zinc deposited. (atomic weight of Zn = 65.3; valency of Zn = 2) 4

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- 15.** (a) Define corrosion. Mention the factors which effect the rate of corrosion. 6
- (b) Explain about preventive method of corrosion by impressive voltage method. 4
- 16.** (a) What is degree of hardness? Mention its units. 4
- (b) Describe about softening of hard water by ion exchange process. 6
- 17.** (a) What is polymerization? Explain different types of polymerization with examples. 6
- (b) What is vulcanization? Explain with structures. 4
- 18.** (a) What is air pollution? Explain about any four causes of air pollution. 5
- (b) Explain about greenhouse effect. 5

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