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C16–EE/CHPP–104

6037

BOARD DIPLOMA EXAMINATION, (C–16)

SEPTEMBER/OCTOBER - 2020

DEEE—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 orbital. Draw the shapes of *s* and *p* orbitals.

2. What is oxidation number? Calculate the oxidation number of manganese (Mn) in $KMnO_4$.

3. Define mole. Calculate the number of moles present in 108 grams of water.

4. Define pH. Calculate the pH of 0·001*M* NaOH solution.

5. Distinguish between metallic conductors and electrolytic conductors.

6. Write any three essential qualities of drinking water.

7. What are the advantages (any three) of plastics over traditional materials?

8. Classify the fuels based on their occurrence and physical state with examples.

9. Define the terms *(a)* producers, *(b)* consumers and *(c)* decomposers with examples.

10. What is acid rain? Mention its impacts.

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 any five important postulates of Bohr's theory. 5

(b) Write any five differences between properties of ionic compounds and covalent compounds. 5

12. *(a)* Define normality. Calculate the normality of a solution containing 10·6 grams of Na_2CO_3 in 500 ml solution. 5

(b) Describe Arrhenius theory of acids and bases with examples. 5

13. *(a)* Explain froth flotation process for concentration of a sulphide ore. 5

(b) Define the terms *(i)* gangue, *(ii)* mineral, *(iii)* ore, *(iv)* flux and *(v)* slag with examples. 5

14. *(a)* What is a galvanic cell? Explain working of a galvanic cell. 5

(b) State Faraday's first law. Calculate the weight of silver deposited at cathode when 5 amperes of current is passed through $AgNO_3$ solution for 2 minutes.

(Atomic weight of Ag=108) 5

15. *(a)* Explain mechanism of rusting of iron with chemical equations. 5

(b) Explain sacrificial anode method for prevention of corrosion. 5

16. *(a)* Explain ion-exchange process for softening of hard water with a neat diagram. 6

(b) What is reverse osmosis? Write any three applications of reverse osmosis. 4

17. *(a)* What is vulcanization of natural rubber? Write any four properties of vulcanized rubber. 6

(b) Define and explain condensation polymerization with an example. 4

18. *(a)* Define water pollution. What are the causes for water pollution? 6

(b) What is biodiversity? Write any three threats of biodiversity. 4

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