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3004

BOARD DIPLOMA EXAMINATION, (C-09)

MARCH/APRIL—2016

FIRST YEAR (COMMON) 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. What are the groups and periods in the modern periodic table? Explain with examples.

2. Calculate the oxidation number of S in Na_2SO_3 and $Na_2S_4O_6$.

3. What is equivalent weight? Calculate the equivalent weight of sodium carbonate.

4. Define Lewis acid and base. Give examples.

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5. Write the differences between the metallic conductors and electrolytic conductors.

6. Write about any three disadvantages of using hard water in industries.

7. What is Buna-S rubber? Give its preparation and two uses of it.

8. Define fuel. Give the classification of the fuels on their physical states.

9. What is meant by 'biodiversity'? Mention any four threats to it.

10. Define the terms *(a)* air pollution, *(b)* water pollution and *(c)* eco-system.

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 the valuation is the content but not the length of the answer.

11. *(a)* What are quantum numbers? Explain different quantum numbers. 6

(b) State and explain Pauli's exclusion principle with example. 4

12. *(a)* Explain Bronsted–Lowry acid-base theory. 5

(b) 12·6 grams of oxalic acid (mol. weight 126) is dissolved in 2 liters solution. Find the molarity and normality of the solution. 5

13. *(a)* What is meant by 'concentration of ore'? Explain the concentration of ore by froth floatation and gravity process. 6

(b) Write the composition and uses of Brass and German silver. 4

14. *(a)* Define electrochemical series. What is the significance of that? 4

(b) Explain the electrolysis of fused NaCl with a neat diagram. 6

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15. (a) Describe the softening of the hard water by zeolite process with a neat diagram. 7

(b) Define degree of hardness. Mention the units of it. 3

16. (a) What is meant by 'vulcanization of rubber'? Explain with chemical equations. 6

(b) What are the advantages of plastics over the traditional materials? 4

17. (a) Explain different types of the galvanic cells formed during the corrosion. 6

(b) Explain the prevention of corrosion by impressed voltage method. 4

18. (a) What is acid rain? What are the causes and effects of it? 5

(b) Explain the controlling methods of air pollution. 5

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