6054
BOARD DIPLOMA EXAMINATION
MARCH/APRIL - 2019
DIPLOMA IN MECHANICAL ENGINEERING
ENGINEERING CHEMISTRY & ENVIRONMENTAL STUDIES
FIRST YEAR EXAMINATION

Time: 3 Hours **Total Marks: 80**

PART - A (3m x 10 = 30m)

Note 1:Answer all questions and each question carries 3 marks

2:Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. Write the electronic configuration of following :
   1) Sc (2) K (3) Cl
2. Define Orbital. Draw the shapes of s & p orbitals?
3. Calculate the Equivalent weight of following
   (1) H_2SO_4 (2) NaOH (3) $CaCO_3$
4. Define Ionic product of water. What is the value of K_w at 25° C
5. Write any three differences between metallic conductor and electrolytic conductor.
6. List out the names and formulae of salts that cause for permanent hardness of water
7. State any three advantages of plastics over traditional materials.
8. Define fuel. Write any four characteristics of good fuel
9. Define Producers, Consumers and Decomposers of ecosystem
10. Write any three effects of water pollution on living things

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PART - B (10m x 5 = 50m)

Note 1:Answer any five questions and each carries 10 marks

2:The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. (a) Define covalent bond. Explain it in the formation of O_2 molecule by Lewis dot method. (6M)
    (b) Write any 4 properties of Covalent Compounds 4M

12A. Define Normality. How much volume of water is required to dilute 50 ml of 0.4N HCl solution to 0.1N HCl solution 5M

B. Define Bronsted – Lowry Acid, Base & Neutralisation. Write one example for each 5M

13. (a) Write any five differences between characteristics of metals and non-metals 5M
    (b) Define (1) Mineral (2)Ore (3)Gangue (4) Flux (5) Slag 5M

14. (a) What is Electrolysis? Explain the Electrolysis of fused NaCl with equations 4M
    (b) State & Explain Faradays First law? Calculate the Weight of copper deposited for 100 amperes current in 20 minutes passing through $CuSO_4$ solution?(Atomic Weight of Cu = 63.5) 6M

15. (a) Write short notes on (i) Composition cell (ii) Stress cell 2x3=6M
    (b) Explain mechanism of rusting of iron 4M

16. a) Write the differences between osmosis and reverse osmosis 4M
    b) Explain the softening of hard water by zeolite process with equations and sketch. 6M

17. a) Distinguish between Thermoplastics and Thermosetting plastics. 6M
    b) What is vulcanization of Natural rubber? write its equations. 4M

18. a) Explain Green House Effect and Acid rain 2x2½=5M
    b) What are Renewable and Non–renewable energy sources? Give examples. 2x2½=5M

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