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PRESIDENCY UNIVERSITY BENGALURU

**SET-A**

SCHOOL OF ENGINEERING

**END TERM EXAMINATION – MAY/JUNE 2024**

**Semester :** Semester II -2023

**Course Code :** CHE1017

**Course Name :**  Applied Chemistry

**Program :** B.Tech

**Date :** June 11, 2024

**Time :** 1:00 PM - 4:00 PM

**Max Marks :** 100

**Weightage :** 50%

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and non-programmable calculator are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

**PART A**

**ANSWER ANY 10 QUESTIONS 10Q X 2M=20M**

* 1. Define Degree French and write its relationship with ppm.
  2. Define brackish water and desalination process?
  3. What are the monomer units for polystyrene and polyethylene?

(CO4,CO3,CO2,CO1) [Knowledge] (CO4,CO3,CO2,CO1) [Knowledge] (CO1,CO2,CO3,CO4) [Knowledge]

* 1. Why is hardness always expressed in terms of equivalents of calcium carbonate?

(CO1,CO2,CO3,CO4) [Knowledge]

* 1. Write down the electrolyte present for the following batteries: a) Pb-Acid, b) Li-MnO2.

(CO1,CO2,CO3,CO4) [Knowledge]

* 1. Mention the importances of the Nernst equation.
  2. Write down the difference between hard water and soft water.
  3. What is Fuel Cell? Mention one of its application.
  4. What is standard electrode potential, and what is its unit?
  5. What is a battery? Give two examples of battery.
  6. What is a heteropolymer? Give an example.

(CO4,CO3,CO2,CO1) [Knowledge] (CO1,CO2,CO3,CO4) [Knowledge] (CO3,CO4,CO2,CO1) [Knowledge] (CO2,CO3,CO4,CO1) [Knowledge] (CO1,CO2,CO3,CO4) [Knowledge] (CO4,CO3,CO2,CO1) [Knowledge]

* 1. Define elastomers and give an example.

(CO1,CO2,CO3,CO4) [Knowledge]

**PART B**

**ANSWER ANY 8 QUESTIONS 8Q X 5M=40M**

* 1. Discuss the limitations of natural rubber and the advantages of synthetic rubber.

(CO3,CO4,CO2,CO1) [Comprehension]

* 1. What is cathodic protection? Discuss sacrificial anode method?

(CO3,CO4,CO2,CO1) [Comprehension]

* 1. Discuss the significance of polymers in everyday life, providing examples of their various applications.

(CO1,CO2,CO4,CO3) [Comprehension]

* 1. In the following pairs of metals, identify which metal undergoes corrosion. Justify your answer for each pair: a) Fe-Zn and b) Fe-Cu.
  2. Define Corrosion and list out the effects of corrosion.

(CO2,CO4,CO3,CO1) [Comprehension]

(CO1,CO2,CO4,CO3) [Comprehension]

* 1. List the various sources of water and detail the impurities found in wastewater.

(CO3,CO4,CO2,CO1) [Comprehension]

* 1. Describe the construction, cell output and applications of a Li-MnO2 cell.

(CO3,CO4,CO2,CO1) [Comprehension]

* 1. Discuss the classification of batteries, providing example for each category.

(CO1,CO2,CO4,CO3) [Comprehension]

* 1. Discuss the specifications of Drinking water.

(CO3,CO4,CO2,CO1) [Comprehension]

* 1. Discuss the Synthesis and Applications of Nylon 6,6.

(CO1,CO4,CO2,CO3) [Comprehension]

**PART C**

**ANSWER ANY 4 QUESTIONS 4Q X 10M=40M**

* 1. Describe the construction, electrode reactions, cell output and applications of a lead acid battery.

(CO4,CO3,CO2,CO1) [Application]

* 1. Discuss in detail the electrochemical theory of corrosion, using the rusting of iron as an example.

(CO4,CO3,CO2,CO1) [Application]

* 1. Explain the detailed classification of polymers based on four specific properties.

(CO3,CO4,CO2,CO1) [Application]

* 1. Determine the temporary, permanent and total water hardness (in degree Clarke and degree French) for a water sample containing: Ca(HCO3)2=20 mg/L, Mg(HCO3)2=17.3 mg/L, CaSO4=11.6 mg/L, MgSO4=16.0 mg/L, CaCl2=7.7 mg/L. (Atomic Weights: Ca:40, Mg: 24, H: 1, C: 12, O:16, S: 32, Cl: 35.5).

(CO2,CO3,CO4,CO1) [Application]

* 1. Discuss common boiler troubles such as scale and sludge formation, priming, and foaming. Also, explore preventive measures against these problems.

(CO1,CO4,CO3,CO2) [Application]

* 1. What is differential aeration corrosion? Discuss the types of aeration corrosion: waterline corrosion and pitting corrosion.

(CO4,CO3,CO2,CO1) [Application]