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C 40516 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. (CBCSS—UG) DEGREE EXAMINATION MARCH 2023

Chemistry/Industrial Chemistry/Polymer Chemistry

CHE 6B 11—PHYSICAL CHEMISTRY—III

(2019 Admission onwards)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answers)

Answer **all** *questions.*
Each question carries 2 *marks.*
Ceiling 20.

1. Explain the limitations of Ostwald's dilution law.
2. For the cell : $Mg(s)/Mg^{2+}(aq)//Ag^{+}(aq)/Ag(s)$, calculate the standard Gibbs free energy change. Given : $E^{0}_{Mg2+/Mg} = -2.37$ V and $E^{0}_{Ag+/Ag} = +0.80$ V.
3. Explain the construction of a glass electrode.
4. State Raoult's law of vapour pressure lowering.
5. Calculate the osmotic pressure of an aqueous solution containing 10g of glucose in 600 mL of it at 27° C.
6. Potassium acetate in its 0.01 M solution undergoes hydrolysis to the extent of 0.023 %. Calculate its hydrolysis constant and the concentration of hydroxide ions.
7. Explain common ion effect.
8. Define solubility product of a salt.
9. Mention the applications of buffer solutions.
10. Differentiate between intrinsic and extrinsic semiconductors.
11. Explain briefly band theory for metals.
12. Which are the types metal excess defects ?

(Ceiling of marks : 20)

Turn over

Section B (Paragraph)

Answer **all** *questions.*

Each question carries 5 *marks.*

Ceiling 30.

13. Illustrate the applications of conductivity measurements.

14. Describe the set up and working of a hydrogen-oxygen fuel cell.

15. Explain the electrochemical theory of corrosion of metals.

16. Explain reverse osmosis and its applications.

17. Differentiate between positive deviation and negative deviation of Raoult's law using su examples.

18. Derive Bragg's equation.

19. Explain the various cubic systems of solid crystals. Define liquid crystals and give example

(Ceiling of mark

Section C (Essay)

Answer any **one** *questions.*

Each question carries 10 *marks.*

20. Explain Hittorf s method.

21. Explain various close packing in solids with examples.

(1 × 10 = 10 m