QP Code: RM22MSC117 Reg. No | | | | | | | | | | | AY 22

# GIET UNIVERSITY, GUNUPUR – 765022

M. Sc. (Fourth Semester) Examinations, May – 2024

## 20CHPC401 - Physical Chemistry - III

(Chemistry)

Time: 3 hrs Maximum: 70 Marks

**(The figures in the right hand margin indicate marks.)**

**PART – A** **(2 x 10 =20 Marks)**

| Q.1. Answer ALL Questions | CO# | Blooms Level |
|---|---|---|
| a. Calculate the ionic strength of 0.5M of $(NH_4)_3PO_4$ | CO1 | K2 |
| b. Calculate the standard cell potential $Ni/Ni^{2+}_{(1M)}\| Ag^{+}_{(1M)}/Ag$<br>$E^{o}_{Ni^{2+}/Ni}$= -0.25 V<br>$E^{o}_{Ag^{+}/Ag}$ = 0.80 V | CO2 | K2 |
| c. Differentiate between physical and chemical adsorption. | CO3 | K2 |
| d. What is F- center formation? | CO4 | K2 |
| e. On titrating conductometrically a NaOH solution with a mixture of HCl and $CH_3COOH$ solutions, plot the volume of mixed acid added (b) in Y axis against the conductance(A) in X axis is expected to look like: | CO1 | K2 |
| f. Discuss about solution pressure and osmotic pressure. | CO2 | K2 |
| g. What is microemulsion? | CO3 | K2 |
| h. Find the M.I for intercept a. (a,2b,3c), b. ( -2,1,3) | CO4 | K2 |
| i. Explain cationic and anionic surface active agents. | CO3 | K2 |
| j. Write the Braggs equation for constructive and destructive interference. | CO4 | K2 |

**PART – B** **(10 x 5 = 50 Marks)**

| Answer ***ANY FIVE*** the questions | | Marks | CO# | Blooms Level |
|---|---|---|---|---|
| 2. | Derive lappimann's equation. | 10 | CO1 | K4 |
| 3.a. | Discuss about the working of Galvanic cell | 8 | CO2 | K4 |
| b. | What are the standard conditions for electrode potential? | 2 | CO2 | K2 |
| 4. a. | Derive the Langmuir Theory of adsorption (Dissociative). | 10 | CO3 | K4 |
| 5.a. | Classify unit cell on the basis of location of lattice point. | 5 | CO4 | K3 |
| b. | Classify unit cell on the basis of axial length and interfacial bond angle. | 5 | CO4 | K3 |
| 6. a. | Explain activity and activity coefficient with an example. | 10 | CO1 | K4 |
| 7.a. | Describe about Wet corrosion and pitting corrosion. | 5+5 | CO2 | K3 |
| 8. a. | Explain the structure of $CaF_2$, calculate the formula unit, coordination number and density. (Given side a= 1 unit) | 8 | CO4 | K4 |
| b. | Write the 2D structure of DCC. | 2 | CO4 | K2 |

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