

PHYSICAL CHEMISTRY-III

(Common for B.Sc. Biotech. Industrial Microbiology)
Semester - IV

Time Allowed : Three Hours]

[Maximum Marks : 35

Note : The candidates are required to attempt at least two questions each from Section A and B carrying 7 marks each and the entire Section C consisting of 7 short answer type questions carrying 1 marks each. Attempt five questions in all.

Section : A

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| 1. | (a) | Derive Gibb's phase rule. Define the terms involved in it. | 3 |
| | (b) | Discuss the phase-diagram of water system | 4 |
| 2. | | Describe the following terms in the phase equilibria : | 3 |
| | (a) | Cryohydric point. | 4 |
| | (b) | Eutectic point | 3 |
| 3. | (a) | Define Kohlrausch's Law. Give its importance. | 3 |
| | (b) | Discuss the limitations of Arrhenius theory of electrolytic dissociation. | 4 |
| 4. | (a) | Explain the factors upon which transport number of an in depends. | 3 |
| | (b) | What do you mean by term Conductometric Titrations ? Give few examples. | 3 |

Section : B

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|----|-----|---|---|
| 5. | (a) | What is Salt Bridge ? Give its importance. | 4 |
| | (b) | What is Buffer Solution ? Determine the pH of a buffer mixture of a weak acid and its salt. | 3 |
| 6. | (a) | Define Buffer Capacity and Buffer Index. | 4 |
| | (b) | Define Galvanic Cells and/or Electrochemical Cell. Give one example. | 3 |
| 7. | (a) | What are concentration cells ? Give their different types. | 4 |
| | (b) | Write a note on Over Voltage. | 3 |
| 8. | (a) | Define Corrosion. Give the different methods for its prevention. | 4 |
| | (b) | What are the factors which cause corrosion ? Discuss. | 3 |

Section : C (Compulsory)

9. Write short answers on the following :
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| (a) | Write Nernst equation for measuring the EMF of a cell. |
| (b) | What is electrolytic Cell ? |
| (c) | State Ostwald's Dilution Law. |
| (d) | Define molar conductances and how it varies with dilution. |
| (e) | Define Phase and Component. |
| (f) | Define Raoult's Law. |
| (g) | What are Azeotropes ? |

1×7=7