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SUBJECT CODE NO:- B-2012
FACULTY OF SCIENCE AND TECHNOLOGY
B.Sc. S.Y (Sem-IV)
Examination November/December- 2022
Chemistry Paper-XI
(Physical Chemistry-II)

[Time: 1:30 Hours]

[Max. Marks:50]

Please check whether you have got the right question paper.

- N.B
- i) Attempt all the Questions.
 - ii) Figures to the right indicate full marks.
 - iii) Use of non-programmable calculator is allowed.
- Q.1
- a) What is phase rule? Explain the lead-silver system with diagram. 10
 - b) Define transport number. How it is determined by moving boundary method. 10
- OR**
- c) Explain Ostwald's dilution law. The resistance of 0.02N solution of a salt is found to be 300 ohms. Calculate equivalent conductance of the solution (cell constant = 1.1 cm^{-1}) 10
 - d) What is reference electrode? Describe construction and working of calomel electrode. 10
- Q.2
- a) Explain ideal and non-ideal solutions. 10
 - b) Define pH and pka. Derive Henderson-Hasselbalch equation. 10
- OR**
- Write short notes on (any four) 20
- 1) Arrhenius theory of electrolytic dissociation.
 - 2) Specific and equivalent conductance.
 - 3) Azeotropic mixture.
 - 4) Triple point.
 - 5) Wet Corrosion.
 - 6) Basic buffer and its mechanism.
- Q.3 Choose and write the correct answer of the following. 10
- 1) Number of phases in a mixture of O_2 , N_2 and CO_2 gases are ____.
- a) 1 b) 2 c) 3 d) 4

- 2) Water system has three phases - ice, water and vapour, the number of components in the system is ____
- a) two b) one c) three d) four
- 3) For one component and one phase system, the degree of freedom are ____.
- a) two b) one c) three d) four
- 4) The critical solution temperature of phenol-water system is ____.
- a) 100°C b) 45°C c) 66°C d) 10°C
- 5) Specific conductance is the conductance of ____
- a) one centimeter cube of solid electrolyte
b) one centimeter cube of solution of an electrolyte
c) one gram of the solution of an electrolyte
d) one gram of solid electrolyte
- 6) The equivalent conductance of a solution of an electrolyte ____
- a) increases with dilution b) decreases with dilution
c) does not vary with dilution d) none of these
- 7) The transport number of nitrate ion in silver nitrate solution is 0.68, the transport number of silver ion will be ____
- a) zero b) 01 c) 0.68 d) 0.32
- 8) On the addition of small amount of an acid or a base, the pH value of buffer solution ____
- a) increases b) decrease c) remains unaltered d) none of these
- 9) The pH of 0.1M KOH solution is ____
- a) 0 b) 1 c) 14 d) 13
- 10) The standard electrode potential of hydrogen electrode is ____
- a) one b) zero c) two d) three