

Roll No.

CBC-1933-U

B. Sc. / B. Sc. B. Ed.

Third Semester (End Semester)

Examination Dec., 2019

CHEMISTRY

Paper - CHE-CC-311

(Physical and Organic Chemistry)

Time : Three Hours]

[Maximum Marks : 60

Note :- Attempt all the questions.

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SECTION-A

(Objective Type Questions) 10x1=10

Note :- Attempt all questions. Each question carry one mark. Choose the correct option.

1. According to the phase rule which of the following is true Gibbs phase rule for general system :

(a) $P + F = C - 1$

(b) $P + F = C + 1$

(c) $P + F = C - 2$

(d) $P + F = C + 2$

2. Two isotonic solution will have same :

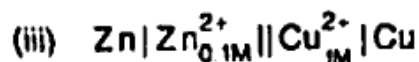
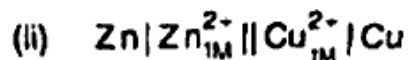
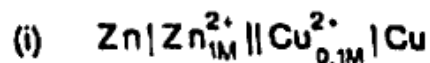
(a) Vapour pressure

(b) Freezing point

(c) Boiling point

(d) Osmotic pressure

3. E_1, E_2, E_3 are the EMF values of the three galvanic cells respectively :



Which one of the following is true :

(a) $E_2 > E_3 > E_1$

(b) $E_3 > E_2 > E_1$

(c) $E_1 > E_2 > E_3$

(d) $E_1 > E_3 > E_2$

4. Which of the following is true :

"The degree of dissociation at infinite dilution is 1 (one)"

(a) For weak electrolyte only

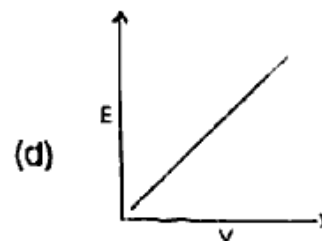
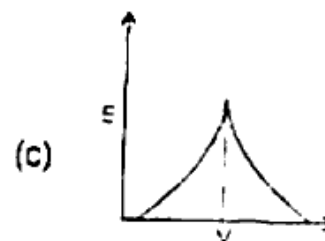
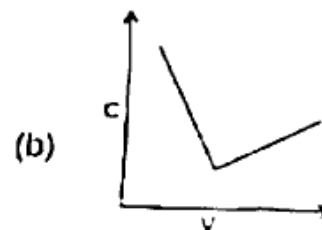
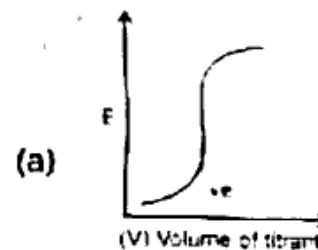
(b) For strong electrolyte only

(c) For both (a) and (b)

(d) For medium electrolyte

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Which of the following curve represent a typical potentiometric titration curve :



6. Benzoic acid is an strong acid than acetic acid due to :

- (a) -M effect of phenyl group
- (b) +M effect of phenyl group
- (c) -I effect of phenyl group
- (d) +I effect of phenyl group

7. The Zaitsev product is more stable product during elimination process due to :

- (a) Resonance
- (b) Stric effect bulky group
- (c) Hyperconjugation
- (d) E₂ elimination process

8. A hair cell protein keratin is a helical of protein which is also stabilized by a (S-S) cross linkage and help to stabilize the structure. Which of the following amino acid is responsible for the "S-S" linkage :

- (a) Phenylalanine
- (b) Threonine

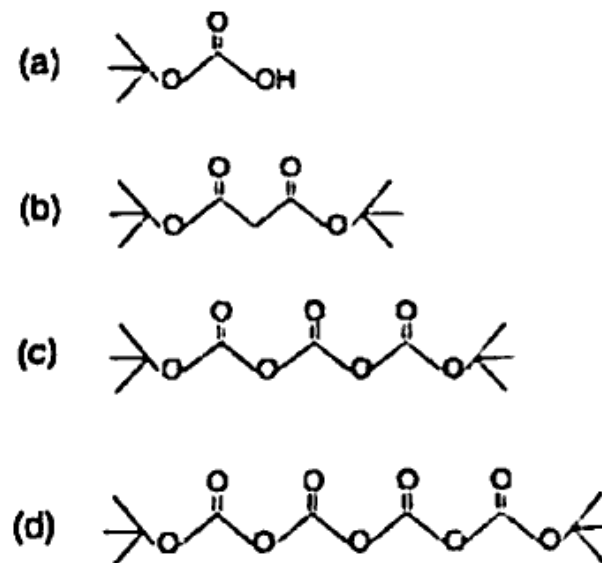
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- (c) Serine
- (d) Cysteine

9. Which of the following is not disaccharide :

- (a) Sucrose
- (b) Lactose
- (c) Ketose
- (d) Cellobiose

10. Which of the following is the structure of tert-Butoxy carbonyl anhydride (t_{bu}o₂) :



SECTION-B

(Short Answer Type Questions) 5×4=20

Note :- Attempt any four questions. Each question carry five marks.

1. Describe the following :
 - (a) Nernst distribution law
 - (b) Thermodynamics of ideal solution
2. What are the reversible and irreversible cells? How will you measure the EMF of these cells?
3. Discuss all the reaction based on the comparative study of nucleophilicity of acyl derivatives.
4. What do you understand by Mutarotation? How will you convert α -D-glucose to β -D-glucose?
5. How will you synthesize one simple dipeptide by using protection and deprotection techniques?
6. By using Gabriel's phthalimide synthesis discuss the synthesis of 1^o and 2^o amines.

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SECTION - C

(Long Answer Type Questions) 3×10=30

Note :- Attempt any three questions. Each question carries ten marks.

1. What do you understand by degree of freedom of system? Discuss Gibbs phase rule and its thermodynamic derivation.
2. Describe the following :
 - (a) Standard electrode potential
 - (b) Liquid junction potential and salt bridge
 - (c) Hydrogen electrode
 - (d) Quinhydrone electrode
3. Write the reaction mechanism of :
 - (a) HVZ reaction
 - (b) Reformatsky reaction
 - (c) Perkin condensation
 - (d) B_{AC}^2

4. (a) Discuss any two electrophilic substitution reaction of Aniline.
- (b) Discuss the application of diazonium salt for the conversion of phenols and dyes.
5. What are Carbohydrates? Discuss their classification and general properties. How will you determine absolute configuration of glucose and fructose?