Roll No. ....

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CBC-576-T

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

Third Semester (End Semester)

Examination Dec., 2018

CHEMISTRY

Paper - CHE-CC-311

(Physical and Organic Chemistry)

Time : Three Hours]   [Maximum Marks : 60

Note :– Attempt all questions.

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SECTION-A

(Objective Type Questions)   10×1=10

Note :– Attempt all the questions. Each question carry one mark. Choose the correct option.
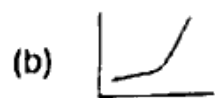
1. Claypeyron-equation is applicable for :

    (a) Two component - Two phase system

    (b) Two component - Three phase system

    (c) One component - Three phase system
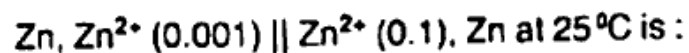
    (d) One component - Two phase system

2. Which of the following statement is true for an ideal solution :

    (a) It obeys Roults law

    (b) The enthalpy of mixture is zero

    (c) The volume of mixing is zero

    (d) All of these

3. Which of the following graph represent the conductometric titration of a weak acid against a strong base :

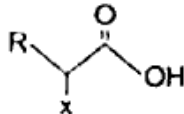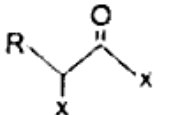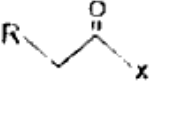(a)

(b)

(c)

(d)

4. The EMF of cell represented as

Zn, Zn^{2+} (0.001) $||$ Zn^{2+} (0.1), Zn at 25 °C is :

(a) 0.0591 V

(b) − 0.0591 V

(c) 0.0295 V

(d) − 0.0295 V

5. Which of the following has lowest PK value :

(a) CCl_3 COOH

(b) CF_3 COOH

(c) CH_3 COOH

(d) CCl_2 COOH

6. An important intermediate of the HV2 reaction is :

(a)

(b)

(c)

(d) All of them

7. Benzene diazonium chloride when reacts with hypophorus acid produces :

(a) Benzen

(b) Phenyle phosphate

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(c) Phenol

(d) Phenyl esocyanide

8. Which of the following is not an aromatic acid :

(a) Tyrosine

(b) Indole

(c) Glutamine

(d) Argenine

9. A straight chain hexose sugar forms which type of ring :

(a) Pyranose ring

(b) Ketose ring

(c) Proline ring

(d) Furanose ring

10. An amino acid with no side chain :

(a) Proline

(b) Glycine

(c) Methionine

(d) Serine

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SECTION-B

(Short Answer Type Questions) 4×5=20

Note :– Attempt any four questions. Each question carries five marks.

1. Drive Clausius Claparon equation and its importance in phase-equeylibria.

2. What do you understand by Transference Number? And how do you determine if experimently by using Hittort and moving boundary methods?

3. Derive Nernest equation and its importance during the measurement of EMF of cell.

4. What do you understand by isoelectric point and electrophoresis?

5. What is Mutarotion? How will you convert α-D glucose to β-D glucose?

6. How will you prepare a simple dipeptide with merrifield solid-phase synthesis methods?

SECTION - C
(Long Answer Type Questions) 3×10=30

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

1. (a) What do you understand by immiscibility of liquids? What is the principle of steam distillation?

    (b) What is congruent and in-congruent melting point? Draw the phase diagram for sulphur system. http://www.dhsgsu.com

2. (a) The specific conductance of saturated solution of silver chloride at 25 °C after subtracting the specific conductance of water is 2.28×10^{-4} sm^1. Calculate the solubility of AgCl in gram/dm^3 at this temperature :

    $$\Lambda^{\circ}_{m,AgCl} = 138.3 \times 10^{-4} \, sm^2/mol$$
    and $M_{AgCl} = 143.5$ g/mol

    (b) Explain the effect of dilution on conductance of sparingle soluble electrolyte and strong electrolytes.

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3. The hydrolysis and esterification of special class of compounds can be explained by the following reaction mechanisms. Explain each of them by giving suitable examples :

    (a) A_{AC^1}

    (b) A_{AC^2}

    (c) B_{AC^1}

    (d) B_{AC^2}

4. Explain the following reaction mechanism :

    (a) Gabriel's phthalimide synthesis

    (b) Hofmann bromamide reaction

    (c) Electrophilic substitution of amine for nitration and bromination

    (d) Schotten-Baumann reaction

5. Describe the following :

    (a) 1^0, 2^0, 3^0 and quaternary structure of proteins

    (b) α-amino acid preperation

    (c) Edmann degradation

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