

# National Testing Agency

<b>Question Paper Name:</b>	Solutions Phase Equilibrium Conductance Electrochemistry and Functional Group Organic Chemistry II
<b>Subject Name:</b>	Solutions Phase Equilibrium Conductance Electrochemistry and Functional Group Organic Chemistry II
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<b>Actual Answer Key:</b>	Yes

## Solutions Phase Equilibrium Conductance Electrochemistry and Functional Group Organic Chemistry II

<b>Group Number :</b>	1
<b>Group Id :</b>	41652967
<b>Group Maximum Duration :</b>	0
<b>Group Minimum Duration :</b>	120
<b>Revisit allowed for view? :</b>	No
<b>Revisit allowed for edit? :</b>	No
<b>Break time:</b>	0
<b>Group Marks:</b>	100

## Solutions Phase Equilibrium Conductance Electrochemistry and Functional Group Organic Chemistry II

<b>Section Id :</b>	41652967
<b>Section Number :</b>	1
<b>Section type :</b>	Online
<b>Mandatory or Optional:</b>	Mandatory
<b>Number of Questions:</b>	50
<b>Number of Questions to be attempted:</b>	50
<b>Section Marks:</b>	100
<b>Display Number Panel:</b>	Yes
<b>Group All Questions:</b>	No

<b>Sub-Section Number:</b>	1
<b>Sub-Section Id:</b>	41652968
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 1 Question Id : 4165295456 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

The solution is exothermic process.

- a. TRUE
- b. FALSE
- c. may or may not be

**Question Number : 2 Question Id : 4165295457 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

At a constant temperature, the solubility of a gas in a liquid is proportional to the pressure of the gas above it.

This law is

- a. Nernst's distribution law
- b. Raoult's law
- c. Henry's law

**Question Number : 3 Question Id : 4165295458 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

In the process of extraction of a substance from aqueous solution.....is used commonly.

- a. measuring flask
- b. conical flask
- c. separating funnel

**Question Number : 4 Question Id : 4165295459 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Total number of concentration variables for a system with number of components equal to C and number of phases equal to P is

- a.  $C(P - 1)$
- b.  $P(C - 1)$
- c.  $P(C - 1) + 2$

**Question Number : 5 Question Id : 4165295460 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

What is the conjugate base of ethanol?

- a.  $\text{CH}_3\text{CH}_2\text{O}^-$
- b.  $\text{CH}_3\text{CH}_2^-$
- c.  $\text{CH}_3\text{CH}_2\text{OH}_2^+$

**Question Number : 6 Question Id : 4165295461 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

In a cell, the reaction taking place at anode is:

- a. Ionisation
- b. Reduction
- c. Oxidation

**Question Number : 7 Question Id : 4165295462 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

$E^0$  of  $\text{Mg}^{2+}/\text{Mg}$ ,  $\text{Zn}^{2+}/\text{Zn}$  and  $\text{Fe}^{2+}/\text{Fe}$  are - 2.37, - 0.76 and - 0.44V respectively. Which of the following is correct

- a. Zn reduces  $\text{Mg}^{2+}$
- b.  $\text{Zn}^{2+}$  oxidizes Fe
- c. Zn reduces  $\text{Fe}^{2+}$

**Question Number : 8 Question Id : 4165295463 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

In which cell the free energy of a chemical reaction is directly converted into electricity

- a. Concentration cell
- b. Fuel Cell
- c. Lead storage battery

**Question Number : 9 Question Id : 4165295464 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**  
**Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

The Hydrogen electrode is dipped in a solution of pH = 3 at 25°C. the reduction potential of the cell would be:

- a. 0.059
- b. -0.177
- c. -0.087

**Question Number : 10 Question Id : 4165295465 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**  
**Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

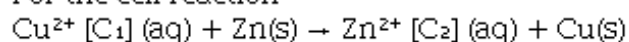
The reduction electrode, potential E of 0.1M solution of M<sup>+</sup> ions (E<sup>°</sup>RP = -2.36 V)

- a. -2.41 V
- b. 1.41 V
- c. 0.41 V

**Question Number : 11 Question Id : 4165295466 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**  
**Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

For the cell reaction



The change in free energy at a given temperature is a function of

- a.  $-\ln [\text{C}_1]$
- b.  $-\ln [\text{C}_1 / \text{C}_2]$
- c.  $-\ln [\text{C}_2 / \text{C}_1]$

**Question Number : 12 Question Id : 4165295467 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**  
**Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

The emf of the cell :  $\text{Zn}^{2+}(0.01\text{M}) \parallel \text{Zn} \parallel \text{Fe}^{2+}(0.001\text{M}) \parallel \text{Fe}$ ,  
at 298 K is 0.2905 what will be the value of equilibrium constant?

- a.  $e^{0.2905 / 0.0295}$
- b.  $10^{0.2905 / 0.0295}$
- c.  $10^{0.0295 / 0.2905}$

**Question Number : 13 Question Id : 4165295468 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**  
**Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

A weak acid will have \_\_\_\_\_ Ka and \_\_\_\_\_ pKa value.

- a. low, high
- b. high, low
- c. low, low

**Question Number : 14 Question Id : 4165295469 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**  
**Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

What is the pH of a solution containing 0.02 M HA and 0.01 M A<sup>-</sup>? pK<sub>a</sub> of HA = 5.0.

- a. 5.3
- b. 4.7
- c. 7

**Question Number : 15 Question Id : 4165295470 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

In salt bridge, KCl is used because-

- a. KCl present in calomel electrode
- b. K<sup>+</sup> and Cl<sup>-</sup> ions have the same transport number
- c. K<sup>+</sup> and Cl<sup>-</sup> ions are isoelectronic

**Question Number : 16 Question Id : 4165295471 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Which of the following electrode is used as a working electrode in pH determination?

- a. Calomel electrode
- b. Glass electrode
- c. Ag | AgCl | Cl<sup>-</sup> electrode

**Question Number : 17 Question Id : 4165295472 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Effect of electrolyte concentration on electrode potential is expressed by:

- a. Van't Hoff Equation
- b. Gibbs-Helmholtz Equation
- c. Nernst Equation

**Question Number : 18 Question Id : 4165295473 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

A concentration cell is constructed by placing identical Zn electrode in two Zn<sup>2+</sup> solutions. If the concentrations of the two Zn<sup>2+</sup> solutions are 0.10 M and 0.00010 M, respectively, what is the potential of the cell?

- a. +0.763 V
- b. +0.089 V
- c. +0.053 V

**Question Number : 19 Question Id : 4165295474 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Which of the following has been universally accepted as a reference electrode at all temperatures and has been assigned a value of zero volt.

- a. Copper electrode
- b. Platinum electrode
- c. Standard hydrogen electrode

**Question Number : 20 Question Id : 4165295475 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

The solubility of magnesium hydroxide is  $1.71 \times 10^{-4} \text{ mol dm}^{-3}$  at 298 K. What will be the solubility product:

- a.  $3.42 \times 10^{-4} \text{ mol dm}^{-3}$
- b.  $2.00 \times 10^{-11} \text{ mol}^3 \text{ dm}^{-9}$
- c.  $5.84 \times 10^{-8} \text{ mol}^2 \text{ dm}^{-6}$

**Question Number : 21 Question Id : 4165295476 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

The role of an indicator in the solution with the unknown concentration?

- a. It tells when there is enough acid in the solution.
- b. It tells when there is enough base in the solution.
- c. It tells when the equivalence point is obtained

**Question Number : 22 Question Id : 4165295477 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

The vertical line in the phase diagram of binary solid-liquid system is called

- a. isobar
- b. isopleth
- c. isotherm

**Question Number : 23 Question Id : 4165295478 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

The phases that are in equilibrium at the eutectic point are:

- a. 2 solids and 1 liquid
- b. 1 liquid and 1 solid
- c. 2 liquids and 2 solids

**Question Number : 24 Question Id : 4165295479 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

The following statement about Na-K system is not true:

- a. Na and K are partially miscible in the solid state
- b. Na-K system shows compound formation that exhibits incongruent melting point
- c. Na and K are completely miscible in the solid state and also show compound formation

**Question Number : 25 Question Id : 4165295480 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Na and K form a compound that shows an incongruent m.p. and formula of the compound is:

- a.  $\text{Na}_2\text{K}$
- b.  $\text{NaK}$
- c.  $\text{NaK}_2$

**Question Number : 26 Question Id : 4165295481 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Hydrolysis of benzonitrile in presence of acid gives

- a. Benzoic acid
- b. Benzyl alcohol
- c. Phenol

**Question Number : 27 Question Id : 4165295482 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Saponification of ester is carried out by

- a. Aq. HCl
- b. Aq. NaOH
- c.  $\text{CaCO}_3$

**Question Number : 28 Question Id : 4165295483 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Acid chlorides on treatment with ammonia gives

- a. Ester
- b. Amine
- c. Amides

**Question Number : 29 Question Id : 4165295484 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Decarboxylation of propanoic acid with sodalime gives

- a. Methane
- b. Ethane
- c. Propane

**Question Number : 30 Question Id : 4165295485 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Which of the following reagents will convert o-xylene into phthalic acid ?

- a.  $\text{KMnO}_4$
- b. Na / Ethanol
- c.  $\text{LiAlH}_4$

**Question Number : 31 Question Id : 4165295486 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

An amine on heating with KOH and chloroform gives foul smell of isocyanide, therefore it should be a

- a. a primary amine
- b. a secondary amine
- c. a tertiary amine

**Question Number : 32 Question Id : 4165295487 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Sandmeyer reaction involves

- a. Cupric chloride
- b. Cupric bromide
- c. Cuprous cyanide

**Question Number : 33 Question Id : 4165295488 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Which of the following does not give positive Azo-dye test

- a. Benzyl amine
- b. 1-Naphthyl amine
- c. p-Nitroaniline

**Question Number : 34 Question Id : 4165295489 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Hinsberg test is used to distinguish primary, secondary and tertiary.....

- a. Alcohol
- b. Amines
- c. Alkyl halide

**Question Number : 35 Question Id : 4165295490 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

In peptide sequence the C-terminal residue is generally shown on

- a. Left side
- b. Right side
- c. Either left or right side

**Question Number : 36 Question Id : 4165295491 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Which of the following can protect  $-NH_2$  group of amino acid?

- a. BOC
- b.  $C_6H_5CH_2OCOC$
- c. All the selected options

**Question Number : 37 Question Id : 4165295492 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Which of following is aromatic amino acid?

- a. Leusine
- b. Alanine
- c. Tyrosine

**Question Number : 38 Question Id : 4165295493 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Which of following is used for amino acid synthesis?

- a. Kolbe's reaction
- b. HVZ reaction
- c. Sandmeyer reaction

**Question Number : 39 Question Id : 4165295494 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Nitrogen base found in DNA but absent in RNA is:

- a. Uracil
- b. Thymine
- c. Cytosine

**Question Number : 40 Question Id : 4165295495 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

All naturally existing, alpha amino acids found in proteins are:

- (i) chiral except for glycine
  - (ii) have Fischer projections in which carboxylate group is at the top, R group at the bottom, and amino group on the left
  - (iii) are the D isomers
  - (iv) are the L isomers
  - (v) some are D and some are L
- a. (i) and (ii) are correct
  - b. (i), (ii) and (iii) are correct
  - c. (i), (ii) and (iv) are correct

**Question Number : 41 Question Id : 4165295496 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

The correct sequence of bases on the complementary DNA strand having base sequence TGATGACT will be

- a. ACTACTGA
- b. UCTUCTGU
- c. ACUACUGA

**Question Number : 42 Question Id : 4165295497 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Which of the following is Globular protein

- a. Enzymes
- b. Horns
- c. Muscles

**Question Number : 43 Question Id : 4165295498 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Mannose and glucose are

- a. Epimers
- b. Anomers
- c. Tautomers

**Question Number : 44 Question Id : 4165295499 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Osones are obtained by

- a. hydrolysis of osazones.
- b. reduction of osazones.
- c. oxidation of cyanohydrins.



**Question Number : 45 Question Id : 4165295500 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Which of the following is a polymer of fructose?

- a. inulin
- b. dextrin
- c. cellulose

**Question Number : 46 Question Id : 4165295501 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

$\alpha$ -D (-)-Fructofuranose and  $\beta$ -D(-)-Fructofuranose are anomers of:

- a. L (-)-Fructose
- b. D (-)-Fructose
- c. Arabinose

**Question Number : 47 Question Id : 4165295502 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Which of following gives osazone from glucose?

- a. Hydroxyl amine
- b. Excess phenylhydrazine
- c. 1 mol phenylhydrazine

**Question Number : 48 Question Id : 4165295503 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Glucose on reduction with  $H_2$  / Catalyst gives

- a. Sorbitol
- b. Fructose
- c. Cyclohexane

**Question Number : 49 Question Id : 4165295504 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Glucose contains \_\_\_\_\_ hydroxyl groups

- a. Four
- b. Five
- c. Six

**Question Number : 50 Question Id : 4165295505 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

Galactose is a

- a. Monosaccharide
- b. Disaccharide
- c. Trisaccharide