



BRAINWARE UNIVERSITY
Term End Examination 2020 - 21
Programme – Diploma in Civil Engineering
Course Name – Chemistry
Course Code - DCE103
Semester / Year - Semester I

Time allotted : 75 Minutes

Full Marks : 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

1. (Answer any Sixty)

(i) The nucleons are

- | | |
|--------------------------|---------------------------|
| a) Protons and electrons | b) Neutrons and electrons |
| c) Protons and neutrons | d) None of these |

(ii) The electrons present in the outermost shell of an atom are called

- | | |
|---------------------|----------------------|
| a) Core electrons | b) Duplet electrons |
| c) Octate electrons | d) Valence electrons |

(iii) In an alpha scattering experiment, few alpha particles rebounded because

- | | |
|---|--|
| a) Most of the space in the atom is occupied | b) Positive charge of the atoms is in very little space |
| c) The mass of the atom is concentrated in the centre | d) All the positive charge and mass of the atom are concentrated in small volume |

(iv) Quantum number values for 2p sub shell are

- | | |
|-------------------|-------------------|
| a) $n = 2, l = 1$ | b) $n = 1, l = 1$ |
| c) $n = 2, l = 0$ | d) $n = 1, l = 0$ |

(v) The maximum number of electrons that can be accommodated by p orbital is

- | | |
|------|-------|
| a) 6 | b) 10 |
|------|-------|

c) 2

d) 14

(vi) No two electrons in the same atom can have identical set of four quantum numbers. This statement is known as

a) Aufbau rule

b) Octet rule

c) Hund's rule

d) Pauli's Exclusion principle

(vii) The state of hybridization of Carbon in the molecule acetylene ($\text{H-C}\equiv\text{C-H}$) is

a) sp

b) sp^3d

c) sp^2

d) sp^3

(viii) An electrolyte is a substance which

a) conducts electricity

b) decomposes on heating

c) is acidic in nature

d) when dissolved in water, dissociates into ions

(ix) Substances which give the good conducting aqueous solution are called :

a) Weak electrolyte

b) Strong electrolyte

c) Non-electrolyte

d) catalysis

(x) Which one is the correct question that represent the first law of electrolysis?

(C = amount of current)

a) $MZ = ct$

b) $M = cZt$

c) $Mc = Zt$

d) $C = mZt$

(xi) When one coulomb of electricity is passed through an electrolytic solution, the mass deposited on the electrode is equal to :

a) equivalent weight

b) molecular weight

c) electrochemical equivalent

d) One gram

(xii) Copper sulphate solution is electrolysed between two platinum electrodes. A current is passed until 1.6 g of oxygen is liberated at anode, The amount of copper deposited at cathode during the same period is :

- a) 6.36 g
- b) 63.6 g
- c) 12.7 g
- d) 3.2 g

(xiii) When electricity is passed through a solution of AlCl_3 , 13.5 g of Al is deposited. The amount of charge passed is :

- a) 1.5 F
- b) 0.5 F
- c) 1.0 F
- d) 2.0 F

(xiv) The number of electrons involved when one faraday of electricity is passed through an electrolytic solution is:

- a) 96500
- b) 8×10^6
- c) 12×10^{23}
- d) 6×10^{23}

(xv) Carbon atom combines with other C atoms to form a long chain. This property is known as

- a) Isomerism
- b) Acetylene
- c) Catenation
- d) Homologous series

(xvi) General formulae of alkyne is

- a) $\text{C}_n\text{H}_{2n-2}$
- b) $\text{C}_n\text{H}_{2n+1}\text{OH}$
- c) $\text{C}_n\text{H}_{2n+2}$
- d) C_nH_{2n}

(xvii) The functional group present in Methyl alcohol is

- a) -CHO
- b) -O-
- c) -COOH
- d) -OH

(xviii) An example of aromatic compound is

- a) Benzene
- b) Napthalene

- c) Both Benzene and Napthalene d) None of these

(xix) Butan- 1,ol and Butan-2,ol are what type of isomers?

- a) functional group b) chain
c) position d) stereoisomers

(xx) Stereoisomers have different relative arrangement of atoms in

- a) 1D b) 2D
c) 3D d) 4D

(xxi) The compounds in which two identical groups are on the same side of the double bond are known as

- a) Trans b) Meso
c) Cis d) Threo

(xxii) Molten sodium chloride conducts electricity due to the presence of:

- a) free electron b) free ions
c) free molecules d) free atoms of Na and Cl

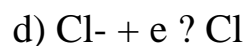
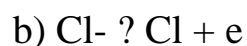
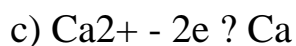
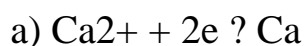
(xxiii) A solution of sodium sulphate in water is electrolysed using platinum electrodes. The products at cathode and anode are the :

- a) H₂ ,O₂ b) O₂, H₂
c) O₂ , Na d) O₂ , SO₂

(xxiv) The amount of electricity that can deposit 108 g of silver from silver nitrate solution is

- a) 1 ampere b) 1 coulomb
c) 1 Faraday d) 2 ampere

(xxv) Which reaction will take place at cathode when fused calcium chloride is electrolyzed?



(xxvi) When lead accumulator is charged, it is :

a) an electrolytic cell

c) a Daniell cell

b) a galvanic cell

d) none of these

(xxvii) Strongest reducing agent is:

a) K

c) Al

b) Mg

d) I

(xxviii) Hydrogen gas will not reduce:

a) heated cupric oxide

c) heated stannic oxide

b) heated ferric oxide

d) heated aluminium oxide

(xxix) Which of the following is the best reducing agent?

a) F⁻

c) Br⁻

b) Cl⁻

d) I⁻

(xxx) If a spoon of copper metal is placed in a solution of ferrous sulphate:

a) Cu will precipitate out

c) Cu and Fe will precipitate

b) iron will precipitate

d) no reaction will take place

(xxxii) Which of the following metals is most readily corroded in moist air?

a) Cu

c) Ag

b) Fe

d) Ni

(xxxii) Which of the following gains electrons more easily?

a) Na⁺

c) Al³⁺

b) Zn²⁺

d) H⁺

(xxxiii) The standard electrode potential of hydrogen electrode at pH 10 is:

- a) 0.51 volt
- b) 0.0 volt
- c) - 0.591 volt
- d) 0.591 volt

(xxxiv) The compounds in which two identical groups are on the opposite side of the double bond are known as

- a) Trans
- b) Meso
- c) Cis
- d) Threo

(xxxv) The product formed by reaction of methane with 4 moles of Chlorine is

- a) CH_3Cl
- b) CH_2Cl_2
- c) CHCl_3
- d) CCl_4

(xxxvi) The product formed by ozonolysis of acetylene is

- a) HCHO
- b) CH_3CHO
- c) CHO-CHO
- d) CH_4

(xxxvii) The product formed by ozonolysis of ethylene is

- a) HCHO
- b) CH_3CHO
- c) CHO-CHO
- d) CH_4

(xxxviii) Ethyl alcohol reacts with Conc H_2SO_4 at 170°C to produce

- a) Methane
- b) Ethylene
- c) Acetylene
- d) Benzene

(xxxix) Brass is an alloy of

- a) Cu and Zn
- b) Cu and Sn
- c) Zn and Sn
- d) Cu and Al

(xl) Bronze is an alloy of

- a) Cu and Zn
- b) Cu and Al

c) Cu and Sn

d) Cu, Zn and Ni

(xli) Name the metal extracted by self reduction process

a) Cu

b) Al

c) Zn

d) Fe

(xlii) The chief ore of Al is

a) Diaspore

b) Gibbsite

c) Bauxite

d) Cryolite

(xliii) The minimum quantity of carbon content is present in

a) stainless steel

b) cast iron

c) wrought iron

d) steel

(xliv) The process in which the concentrated ore is heated at a temperature below its temperature of fusion in absence of air is known as

a) Roasting

b) Calcination

c) Smelting

d) Carbon reduction

(xlv) The Haber process is the name we give to the industrial production of

a) Ammonia

b) Salt

c) Sodium Hydroxide

d) Soap

(xlvi) What is the purpose of a catalyst in the Haber Process?

a) To speed up the reaction

b) To prevent ammonia from changing back to hydrogen and nitrogen

c) To liquify the ammonia

d) To heat up the products

(xlvii) Select the incorrect statement from the following option.

a) The taste of hard water is better than soft water. b) The dissolved calcium in hard water can water.

c) 3

d) 4

(lv) CH_3MgBr on reaction with water produces

a) $\text{CH}_3\text{-CH}_3$

b) C_3H_8

c) CH_4

d) C_6H_6

(lvi) Calcium carbide on hydrolysis produces the solution which has pH

a) 7

b) <7

c) >7

d) 0

(lvii) The position of the double bond in alkene is denoted by

a) Br_2 water

b) Bayer's reagent

c) Ozonolysis

d) $\text{NH}_4\text{OH}/\text{AgNO}_3$ solution

(lviii) Which one does not react with acetylene?

a) NaOH

b) $\text{NH}_4\text{OH}/\text{AgNO}_3$

c) Na

d) HCl

(lix) The metal which is used to regenerate Cu from CuSO_4

a) Fe

b) He

c) Na

d) Ag

(lx) In the Thermit process Al is used as

a) Oxidizing agent

b) Reducing agent

c) Catalyst

d) Flux