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Q1. In these questions, a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices. s

Assertion: Ortho substituted anilines are usually weaker bases than anilines.

Reason: This is due to ortho effect.

A Assertion and reason both are correct statements and reason is correct explanation for assertion.
C Assertion is correct statement but reason is wrong statement.

B Assertion and reason both are correct statements but reason is not correct explanation for assertion.
D Assertion is wrong statement but reason is correct statement.

Q2. For Questions two statements are given — one labelled as Assertion (A) and the other labelled as Reason (R). Select **1 Mark** the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

Assertion (A): Ammonolysis of alkyl halides is not a suitable method for the preparation of pure primary amines.

Reason (R): Ammonolysis of alkyl halides yields mainly secondary amines.

A Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
C Assertion (A) is true, but Reason (R) is false.

B Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).
D Assertion (A) is false, but Reason (R) is true.

Q3. ΔG and E°_{cell} for a spontaneous reaction will be: 1 Mark

A Positive, negative **B** Negative, negative **C** Negative, positive **D** Positive, positive

Q4. An electrochemical cell behaves like an electrolytic cell when: 1 Mark

A $E_{\text{cell}} = E_{\text{external}}$. **B** $E_{\text{cell}} = 0$. **C** $E_{\text{external}} > E_{\text{cell}}$. **D** $E_{\text{external}} < E_{\text{cell}}$.

Q5. In a lead storage battery: 1 Mark

A PbO_2 is reduced to PbSO_4 at the cathode.
C Both electrodes are immersed in the same aqueous solution of H_2SO_4 .

B Pb is oxidised to PbSO_4 at the anode.
D All the above are true.

Q6. Which of the following is correct for spontaneity of a cell? 1 Mark

A $\Delta G = -\text{ve } E^\circ = +\text{ve}$
C $\Delta G = -\text{ve } E^\circ = 0$

B $\Delta G = +\text{ve } E^\circ = 0$
D $\Delta G = +\text{ve } E^\circ = -\text{ve}$

Q7. α – D(+) glucose and β – D(+) glucose are: 1 Mark

A Geometrical isomers. **B** Enantiomers. **C** Anomers. **D** Optical isomers.

Q8. Two among the three components of DNA are -D-2-deoxyribose and a heterocyclic base. The third component is: 1 Mark

A Adenine **B** Phosphoric acid **C** Sulphuric acid **D** Uracil

Q9. For Questions two statements are given — one labelled as Assertion (A) and the other labelled as Reason (R). Select **1 Mark** the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

Assertion (A): $(\text{C}_2\text{H}_5)_2\text{NH}$ is more basic than $(\text{C}_2\text{H}_5)_3\text{N}$ in aqueous solution.

Reason (R): In $(\text{C}_2\text{H}_5)_2\text{NH}$, there is more steric hindrance and +I effect than $(\text{C}_2\text{H}_5)_3\text{N}$.

A Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
C Assertion (A) is true, but Reason (R) is false.

B Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).
D Assertion (A) is false, but Reason (R) is true.

Q10. Which of the following is a non-reducing sugar? 1 Mark

A Sucrose. **B** Maltose. **C** Glucose. **D** Lactose.

Q11. The glycosidic linkage involved in linking the glucose units in amylose part of starch is: 1 Mark

A $\text{C}_1 - \text{C}_6 \alpha$ linkage
C $\text{C}_1 - \text{C}_4 \alpha$ linkage

B $\text{C}_1 - \text{C}_6 \beta$ linkage
D $\text{C}_1 - \text{C}_4 \beta$ linkage

Q12. Which of the following is a disaccharide? 1 Mark

A Glucose. **B** Starch. **C** Cellulose. **D** Lactose.

Q13.An α -helix is a structural feature of:

A Sucrose. **B** Polypeptides. **C** Nucleotides. **D** Starch.

Q14.Zinc is coated over iron to prevent rusting of iron because:

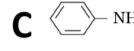
A $E^\circ_{Zn^{2+}/Zn} = E^\circ_{Fe^{2+}/Fe}$
C $E^\circ_{Zn^{2+}/Zn} > E^\circ_{Fe^{2+}/Fe}$

B $E^\circ_{Zn^{2+}/Zn} < E^\circ_{Fe^{2+}/Fe}$
D None of these.

Q15.In a Leclanche dry cell, the cathode is:

A Zn container **B** MnO_2 **C** Graphite rod **D** NH_4Cl

Q16.Which of the following is least basic?

A $(CH_3)_2NH$ **B** NH_3 **C**  **D** $(CH_3)_3N$

Q17.Amino acids are:

A Acidic. **B** Basic. **C** Amphoteric. **D** Neutral.

Q18.Which one is the complementary base of cytosine in one strand to that in other strand of DNA?

A Adenine. **B** Guanine. **C** Thymine. **D** Uracil.

Q19.The colligative property used for the determination of molar mass of polymers and proteins is:

A Osmotic pressure **B** Depression in freezing point
C Relative lowering in vapour pressure **D** Elevation in boiling point

Q20.If the standard electrode potential of an electrode is greater than zero, then we can infer that its:

A Reduced form is more stable compared to hydrogen gas.
C Reduced and oxidised forms are equally stable.

B Oxidised form is more stable compared to hydrogen gas.
D Reduced form is less stable than the hydrogen gas.

Q21.Two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

Assertion (A): Sucrose is a non-reducing sugar.

Reason (R): Sucrose has glycosidic linkage.

A Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
C Assertion (A) is correct, but Reason (R) is incorrect statement.

B Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
D Assertion (A) is incorrect, but Reason (R) is correct statement.

Q22.The amount of electricity required to produce one mole of Zn from $ZnSO_4$ solution will be:

A 3F **B** 2F **C** 1F **D** 4F

Q23.Kohlrausch given the following relation for strong electrolytes:

$$\Lambda = \Lambda_0 - A\sqrt{C}$$

Which of the following equality holds?

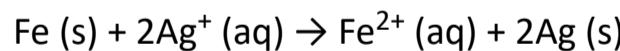
A $\Lambda = \Lambda_0$ as $C \rightarrow \sqrt{A}$
C $\Lambda = \Lambda_0$ as $C \rightarrow 0$

B $\Lambda = \Lambda_0$ as $C \rightarrow \infty$
D $\Lambda = \Lambda_0$ as $C \rightarrow 1$

Q24. $Ag^+(aq) + e^- \rightarrow Ag(s)$ $E^\circ = + 0.80 V$

$Fe^{2+}(aq) + 2e^- \rightarrow Fe(s)$ $E^\circ = -0.44 V$

Find the E° cell for:



A 1.6V **B** -1.16 V **C** 2.04 V **D** 1.24 V

Q25.Two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

Assertion (A): Sucrose is a non-reducing sugar.

Reason (R): Reducing groups of glucose and fructose are involved in glycosidic bond formation.

A Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
C Assertion (A) is correct, but Reason (R) is incorrect statement.

B Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
D Assertion (A) is incorrect, but Reason (R) is correct statement.

Q26.For an electrolyte undergoing association in a solvent, the v factor:

A is always greater than one
C has zero value

B has negative value
D is always less than one

Q27.

1 Mark

For Questions number 15 to 18, two statements are given — one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

Assertion (A): -NH₂ group is o- and p-directing in electrophilic substitution reactions.

Reason (R): Aniline cannot undergo Friedel-Crafts reaction.

A Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

C Assertion (A) is true, but Reason (R) is false.

Q28. Which functional groups of glucose interact to form cyclic hemiacetal leading to pyranose structure?

1 Mark

A Aldehyde group and hydroxyl group at C - 4

C Ketone group and hydroxyl group at C - 4

B Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).

D Assertion (A) is false, but Reason (R) is true.

Q29. Which parts of amino acids molecules are linked through hydrogen bonds in the secondary structure of proteins?

1 Mark

A NH₂ group.

C — C — and — NH — groups.

B COOH group.

D None of the above.

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Q30. In an electrochemical process, a salt bridge is used:

1 Mark

A As a reducing agent.

C To complete the circuit so that current can flow.

B As an oxidizing agent.

D None of these.

Q31. Peptide linkage is present in:

1 Mark

A Carbohydrates.

B Vitamins.

C Proteins.

D Rubber.

Q32. In fuel cell:

1 Mark

A Chemical energy is converted to electrical energy.

B Energy of combustion of fuel is converted to chemical energy.

C Energy of combustion of fuel is converted to electrical energy.

D Electrical energy is converted to chemical energy.

Q33. Out of the following, the strongest base in aqueous solution is:

1 Mark

A Methylamine.

B Dimethylamine.

C Trimethylamine.

D Aniline.

Q34. In the atmosphere of industrial smog, copper corrodes to form:

1 Mark

A Basic copper carbonate and sulphate.

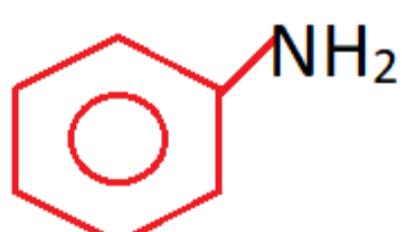
B Copper oxide.

C Copper sulphide.

D Copper nitrate.

Q35. The compound shown is a _____ amine.

1 Mark



A 1° aryl

B 1° arylalkyl

C 2° aryl

D 2° arylalkyl

Q36. The passage of electricity in the Daniell cell when Zn and Cu electrodes are connected:

1 Mark

A From Cu to Zn inside the cell.

B From Cu to Zn outside the cell.

C From Zn to Cu outside the cell.

D None of the above.

Q37. K_m of enzyme is:

1 Mark

A The substrate concentration at 1/2 of maximum velocity of enzyme action.

B The substrate concentration at maximum velocity of enzyme action.

C Half of maximum velocity of enzyme at unit substrate concentration at infinite velocity of enzyme action.

D Substrate concentration at infinite velocity of enzyme action.

Q38. Which of the following is not a disaccharide?

1 Mark

A Cane sugar

B Raffinose

C Lactose

D Maltose

Q39. The synthetic polymer which resembles natural rubber is:

1 Mark

A Neoprene

B Buna - S

C Nylon

D Rayon

Q40. The monomer of Buna-S are:

1 Mark

A Styrene and butadiene

B Isoprene and butadiene

C Vinyl chloride and Sulphur

D Butadiene.

Q41. The S in Buna- S refers to:

1 Mark

A Sulphur

B Styrene

C Sodium

D just a trade name

Q42. Which of the following is/are true statement(s) for the preparation of Teflon?

1 Mark

A It is produced by condensation polymerization.

B Water acts as catalyst.

C The monomer used is tetrafluoroethane.

D The monomer is obtained from carbon tetrachloride.

Q43. $E_{\text{Cell}}^{\ominus} = 1.1\text{V}$ for Daniell cell. Which of the following expressions are correct description of state of equilibrium in this cell?

1 Mark

A $1.1 = K_c$

B $\frac{2.303RT}{2F} \log K_c = 1.1$

C $\log K_c = \frac{2.2}{0.059}$

D $\log K_c = 1.1$

Q44. The bases that are common in both RNA and DNA are:

1 Mark

A Adenine, guanine, thymine

B Adenine, uracil, cytosine

C Adenine, guanine, cytosine

D Guanine, uracil, thymine

Q45. For two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

1 Mark

Assertion: Electrolysis of NaCl solution gives chlorine at anode instead of O_2 .

Reason: Formation of oxygen at anode requires overvoltage.

A Both A and R are true and R is the correct explanation of A.

B Both A and R are true but R is not the correct explanation of A.

C A is true but R is false.

D A is false and R is also false.

Q46. The polymer used in making handles of cookers and frying pans is:

1 Mark

A Bakelite

B Nylon-2-nylon-6

C Orlon

D Polyvinyl chloride

Q47. For two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

1 Mark

Assertion: N, N-Diethylbenzene sulphonamide is insoluble in alkali.

Reason: Sulphonyl group attached to nitrogen atom is strong electron withdrawing group.

A Both A and R are true and R is the correct explanation of A.

B Both A and R are true but R is not the correct explanation of A.

C A is true but R is false.

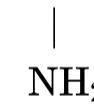
D A is false and R is also false.

Q48. Amino acids are classified as acidic, basic or neutral depending upon the relative number of amino and carboxyl groups in their molecule. Which of the following are acidic?

1 Mark

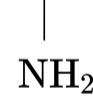
A $(\text{CH}_3)_2\text{CH} - \text{CH} - \text{COOH}$

B $\text{HOOC} - \text{CH}_2 - \text{CH}_2 - \text{CH} - \text{COOH}$



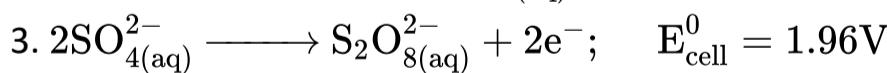
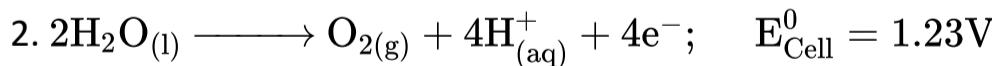
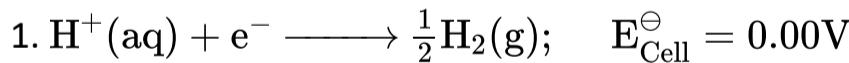
C $\text{H}_2\text{N} - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{COOH}$

D $\text{HOOC} - \text{CH}_2 - \text{CH} - \text{COOH}$



Q49. $E_{\text{Cell}}^{\ominus}$ for some half cell reactions are given below. On the basis of these mark the correct answer.

1 Mark



A In dilute sulphuric acid solution, hydrogen will be reduced at cathode.

B In concentrated sulphuric acid solution, water will be oxidised at anode.

C In dilute sulphuric acid solution, water will be oxidised at anode.

D In dilute sulphuric acid solution, SO_4^{2-} ion will be oxidised to tetrathionate ion at anode.

Q50. The correct order of basicity of amines in water is:

1 Mark

A $(\text{CH}_3)_2\text{NH} > (\text{CH}_3)_3\text{N} > \text{CH}_3\text{NH}_2$

B $\text{CH}_3\text{NH}_2 > (\text{CH}_3)_2\text{NH} > (\text{CH}_3)_3\text{N}$

C $(\text{CH}_3)_3\text{N} > (\text{CH}_3)_2\text{NH} > \text{CH}_3\text{NH}_2$

D $(\text{CH}_3)_3\text{N} > \text{CH}_3\text{NH}_2 > (\text{CH}_3)_2\text{NH}$

Q51. The difference between the electrode potentials of two electrodes when no current is drawn through the cell is called _____.

1 Mark

A Cell potential.

B Cell emf.

C Potential difference.

D Cell voltage.

Q52. For two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

1 Mark

C Secondary aliphatic amines are stronger bases than primary aliphatic amines.

D Tertiary aliphatic amines are weaker bases than arylamines.

Q69. Which one of the following statements about starch is correct?

A It occurs in the cell walls of plants.
C It is present in roots and seeds of plants.

B It is a disaccharide.
D It gives a red orange precipitate on boiling with Fehlings solution.

Q70. Which of the following statements is true?

A Electrolysis is one of the applications of chemical effects of current.
C Like charges attract each other.

B A metal wire shows chemical effect when a current is passed through it.
D Charge flows only through negative charge carriers.

Q71. Which of the following has the maximum value of pK_b ?

A $(CH_3)_2NH$ **B** $(CH_3CH_2)_2NH$

C $C_6H_5 - NH - C_6H_5$ **D** $C_6H_5 - NH - CH_3$

Q72. In these questions, a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

Assertion: Valine is an essential amino acid.

Reason: The lack of essential amino acids in the diet causes Kwashiorkor.

A Assertion and reason both are correct statements and reason is correct explanation for assertion.
C Assertion is correct statement but reason is wrong statement.

B Assertion and reason both are correct statements but reason is not correct explanation for assertion.
D Assertion is wrong statement but reason is correct statement.

Q73. Carbonyl compound and primary Amine react together to form which type of compound?

A Imines **B** Aldehyde **C** Amine **D** Quinones

Q74. Which of the vitamins given below is water soluble?

A Vitamin C **B** Vitamin D **C** Vitamin E **D** Vitamin K

Q75. Which of the following compound is the strongest base?

A Ammonia **B** Aniline **C** Methylamine **D** N - methyl aniline

Q76. Best method for preparing primary amines from alkyl halides without changing the number of carbon atoms in the chain is:

A Hoffmann Bromamide reaction.
C Sandmeyer reaction.

B Gabriel phthalimide synthesis.
D Reaction with NH_3 .

Q77. Rubber is hardened for making tyres by:

A Adding H_2 **B** Adding carbon black **C** Saturating it **D** All of the above

Q78. Diastase enzyme converts _____ to _____.

A Glucose to ethyl alcohol
C Maltose to glucose

B Starch to maltose
D Sucrose to glucose

Q79. Which of the following is the most basic amine?

A $CH_3 - NH_2$ **B** $ClCH_2NH_2$ **C** $Cl_2CH - NH_2$ **D** $CCl_3 - NH_2$

Q80. In these questions, a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

Assertion : On increasing dilution, the specific conductance keep on increasing.

Reason : On increasing dilution, degree of ionisation of weak electrolyte increases and molality of ions also increases.

A If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.
C If the Assertion is correct but Reason is incorrect.

B If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.
D If both the Assertion and Reason are incorrect.

Q81. Negative terminal of a dry cell is formed by:

A Zinc container. **B** Carbon rod.

C Graphite rod. **D** Both A and B.

Q82. Which one of the following is the weakest base?

A $(C_2H_5)_3N$ **B** $(C_2H_5)_2NH$

C $C_2H_5NH_2$ **D** NH_3

Q83. The secondary battery is such a battery:

A Which cannot be recharged.
C Which can be reused after replacing its chemical.

B Which can be recharged.
D Which is charged by primary cells.

Q84. In the rusting of iron, iron has been:

A Oxidised **B** Reduced

C Vaporised **D** Decomposed

1 Mark

Q85. A compound A has molecular formula C_7H_7NO . On treatment with Br_2 and KOH, A gives an amine B which gives carbylamine test. B upon diazotization and coupling with phenol gives an azo dye. A can be:

1 Mark

A $C_6H_5CONHCOCH_3$
C $C_6H_5NO_2$

B $C_6H_5CONH_2$
D O, m or p - $C_6H_4(NH_2)CHO$

Q86. Which of the following principles is not true for zymogen activation?

1 Mark

A Liberation of activation molecules.
C Splitting off an inhibitor precursors.

B Hydrolysis of large, inactive precursors.
D Conformational change brings certain amino acid residues together.

Q87. Tertiary butyl amine is a:

1 Mark

A 1° amine **B** 2° amine **C** 3° amine **D** Quaternary salt

Q88. Which of the following polymer is condensation as well as cross-linked polymer?

1 Mark

A Bakelite **B** Nylon-6.6 **C** Nylon-2, Nylon-6 **D** Dacron

Q89. For two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

1 Mark

Assertion: Polyamides are best used as fibres because of high tensile strength.

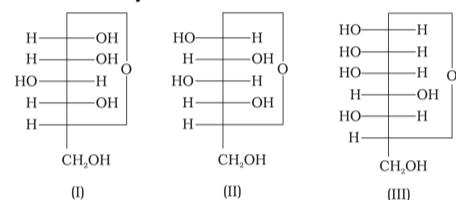
Reason: Strong intermolecular forces (like hydrogen bonding within polyamides) lead to close packing of chains and increase the crystalline character, hence provide high tensile strength to polymers.

A Both A and R are true and R is the correct explanation of A.
C A is true but R is false.

B Both A and R are true but R is not the correct explanation of A.
D A is false and R is also false.

Q90. Three cyclic structures of monosaccharides are given below which of these are anomers.

1 Mark



A I and II **B** II and III
C I and III **D** III is anomer of I and II

Q91. A polymer used in paints is:

1 Mark

A Nomex **B** Thiokol **C** Saran **D** Glyptal

Q92. Water is decomposed into hydrogen and oxygen by means of electric current by the process:

1 Mark

A Electrolysis. **B** Electric heating. **C** Electroplating. **D** None of these.

Q93. What are polymers?

1 Mark

A Macromolecules composed of many repeated sub units.
C Both A and B.

B Monomers bonded together in a long chain.
D None of the above.

Q94. 1 faraday = _____.

1 Mark

A 10000 C **B** 95000 C **C** 96.5 C **D** 96500 C

Q95. _____ are the chemical messengers that are used by multicellular organisms for control and coordination.

1 Mark

A Vitamins **B** Minerals **C** Antibiotics **D** Hormones

Q96. Which is most basic among the following?

1 Mark

A CH_3NH_2 **B** $CH_3CH_2NH_2$ **C** NH_3 **D** $(CH_3)_2CHNH_2$

Q97. the gas evolved when Methylamine reacts with nitrous acid is _____.

1 Mark

A NH_3 **B** N_2 **C** H_2 **D** C_2H_6

Q98. Anode in the galvanic cell is:

1 Mark

A Negative electrode. **B** Positive electrode. **C** Neutral electrode. **D** None of the above.

Q99. The internal resistance of a lead acid battery can be reduced by:

1 Mark

A Using strips of wood or celluloid as separators between electrodes.

B Using grids of hard lead-antimony alloy.

C Using a specific manner of assembly of electrodes with wood or celluloid separators in between.

D Both option A and B.

Q100. The EMF of a galvanic cell is determined by using a:

1 Mark

A Voltmeter. **B** 1potentiometer. **C** Coulometer. **D** Ammeter.