

DAV PUBLIC SCHOOL HUDCO BHILAI

Question Bank Class 12th Chemistry

Assertion-Reason

In the following questions, a statement of assertion is followed by a corresponding statement of Reason. Of the following statements, choose the correct one.

- Both Assertion and Reason are correct statements and reason is the correct explanation of the Assertion.
 - Both Assertion and Reason are correct statements, but reason is not the correct explanation of the Assertion.
 - Assertion is correct, but reason is incorrect statement.
 - Assertion is incorrect but reason is correct statement.
- Assertion:** Cellulose is not digestable in the human body.
Reason: The human system contain cellulose enzyme which hydrolyse cellulose into glucose.
 - Assertion:** Cu has a unique behavior having a positive E°
Reason: Cu is unable to liberate H_2 form acids.
 - Assertion:** Bromination of phenol takes place even in the absence of Lewis acid.
Reason: In phenol, OH-group attached to benzene ring has highly deactivating effect.
 - Assertion:** Actinoids metals display a variety of structures.
Reason: Structural variability of actinoids has no relationship with their metallic radii.
 - Assertion:** $K_4[Fe(CN)_6]$ will not produce Fe^{2+} and CN^- in aqueous solution.
Reason: $FeSO_4 \cdot (NH_4)_2 \cdot SO_4 \cdot 6H_2O$ is double salt, gives Fe^{2+} , NH_4^+ and SO_4^{2-} ions in aqueous solution.
 - Assertion:** Molar conductivity at infinite dilution of strong electrolyte is equal to sum Molar conductivity of cation as well as anions, as per Kohlrausch law.
Reason: The current carried by cation and anion is always equal.
 - Assertion: $E^\circ Mn^{3+}/Mn^{2+}$ is more positive than $E^\circ Cr^{3+}/Cr^{2+}$.
Reason: The 3rd ionization energy of Mn is larger than Cr.
 - Assertion: Increasing pressure on water decreases its freezing point.
Reason: Density of water is maximum at 277 K.
 - Assertion: Camphor is usually used in molecular mass determination.
Reason: It has low K_f , therefore, cause Greater ΔT_f .
 - Assertion:** F_2 has high reactivity.
Reason: F_2 has low bond dissociation enthalpy, high electron gain enthalpy and F^- has highest hydration energy.
 - Assertion:** $La(OH)_3$ is more basic than $Lu(OH)_3$
Reason: La is largest in size, most electropositive whereas 'Lu' has smallest size, least electropositive.
 - Assertion:** Sodium lauryl sulphate is a biodegradable detergent.
Reason: Detergents having highly branched chains are biodegradable.
 - Assertion:** Melamine-formaldehyde is thermosetting plastic.
Reason: PVC is thermoplastic.
 - Assertion:** $(C_2H_5)_2NH > (C_2H_5)_3N > C_2H_5NH_2$ is order of basicity in aqueous solution.
Reason: Benzyl amine is more basic than aniline.
 - Assertion: Treatment of chloromethane with a saturated solution of AgCN give ethyl isocyanide as the major product.
Reason: Cyanide ion ($:CN^-$) is an ambident nucleophile.
 - Maximum magnetic moment is shown by:
(a) d^5 (b) d^6 (c) d^7 (d) d^8
 - When $KMnO_4$ reacts with Br_2 in alkaline medium gives bromate ion. Then oxidation state of Mn changes from +7 to:
(a) +6 (b) +4 (c) +3 (d) +2
 - Aquaregia convert :-
(a) Pt to $[PtCl_4]^{-2}$ (b) Ag to AgCl
(c) Pt to $PtCl_2$ (d) Au to $[AuCl_4]^-$
 - Which of the following is the characteristic of chemisorptions?

- (a) Reversible nature
 - (b) High specificity
 - (c) Lack of specificity
 - (d) Weak van der Waals' forces
20. The solution that forms maximum boiling azeotrope is
- (a) carbon disulphide – acetone
 - (b) benzene – toluene
 - (c) water – nitric acid
 - (d) n-hexane – n-heptane
21. Predict the number of ions produced per formula unit in an aqueous solution of $[\text{Co}(\text{en})_3]\text{Cl}_3$.
- (a) 4
 - (b) 3
 - (c) 6
 - (d) 2
22. When neopentyl bromide is subjected to Wurtz reaction, the product formed is :
- (a) 2,2,4,4-tetramethylhexane
 - (b) 2,2,4,4-tetramethylpentane
 - (c) 2,2,5,5-tetramethylhexane
 - (d) 2,2,3,3-tetramethylhexane
23. Reimer-Tiemann reaction is useful for the preparation of
- (a) benzaldehyde
 - (b) salicylaldehyde
 - (c) toluene
 - (d) acetophenone.
24. Phenol on distillation with zinc dust gives :
- (a) benzene
 - (b) benzaldehyde
 - (c) benzoic acid
 - (d) benzophenone.
25. Cyanohydrin of which compound gives lactic acid on hydrolysis ?
- (a) Acetaldehyde
 - (b) Formaldehyde
 - (c) Acetone
 - (d) Propanal.

Very Short Answer Type Question: [1 Marks]

26. Give reasons:- Aquatic animals are more comfortable in cold water than in warm water.
27. What possible value of 'i' will it have if solute molecules undergo association in solution?
28. Why does the conductivity of a solution decrease with dilution?
29. How much charge is required for the reduction of 1 mole of Zn^{2+} to Zn?
30. What is the effect of adding a catalyst on
- (a) Activation energy
 - (b) Gibbs energy
31. Addition of Alum purifies the water. Why?
32. Out of AlCl_3 and NaCl , Which is more effective in causing coagulation of a negative sol and Why?
33. Write the name of the method of concentration applied for the following ores:
- i. Bauxite
 - ii. Haematite
 - iii. Zinc blende
34. Draw the structure of the following:
- (a) $\text{H}_2\text{S}_2\text{O}_7$
 - (B) HClO_3
35. Give reason Cu^+ is unstable in aqueous solution.
36. Write IUPAC name of complex $[\text{Co}(\text{en})_2(\text{H}_2\text{O})\text{CN}]^{2+}$.
37. Which will react faster in $\text{S}_{\text{N}}2$ displacement, 1-bromopentane or 2-bromopentane, and why?
38. Arrange the following in increasing order of acidic character.
Benzoic acid, phenol, cresol.
39. CH_3CHO is more reactive than CH_3COCH_3 towards reaction with HCN. Why?
40. Arrange the following in increasing order of boiling points:
 $(\text{CH}_3)_3\text{N}$, $\text{C}_2\text{H}_5\text{OH}$, $\text{C}_2\text{H}_5\text{NH}_2$

Fill in the blanks:-

41. Ethylene glycol is used as _____.
42. Positive catalyst _____ Activation energy.
43. Greater the valency of ion, more will be the coagulation power is _____.
44. The mixture of conc. HCl and anhydrous ZnCl_2 is called _____.
45. If $\Delta_0 > P$ for d_4 , electronic configuration in terms of CFT is _____.

46. 2,4,6-trinitro chloro benzene on warming with water gives _____.
47. Ethanol reacts with I_2 and NaOH to form yellow ppt. of _____.
48. O-nitrophenol has _____ melting point than p-nitrophenol.
49. Benzoate ion is more _____ than acetate ion. Formic acid does not undergo HVZ reaction because it does not have _____.

DAV PS Gevera
CLASS-XII CHEMISTRY (1-MARK QUESTIONS)

1. What is zeta potential?
2. Which is best anti freeze?
3. Which is the best colligative property to determine molecular mass of protein?
4. Method used to refine titanium is
5. The element with the highest negative electron gain enthalpy is
6. H_3PO_2 is good reducing reagent. (T/F)
7. d block elements are soft metals. (T/F)
8. The molarity of pure water is
9. Most reactive aldehyde towards nucleophilic addition reaction is
10. Vant Hoff factor for $MgCl_2(aq)$ is
11. What is reverse Osmosis?
12. For the zero order reaction will the molecularity be zero?
13. Enzymes lower the activation energy. (T/F)
14. The mixture of conc. HCl & anhy. $ZnCl_2$ is called
15. What is Oleum?
16. Give one use of ClO_2 .
17. No. Of unpaired electron in Fe^{2+} is
18. CN is an ligand.
19. Give one example of bidentate ligand.
20. The composition of misch metal is
21. The Co-ordination no. of Co in $[Co(en)_3]^{3+}$ is
22. Name the type of isomerism shown by $[Co(en)_3]^{3+}$.
23. What is the first member of amino acid?
24. Give one example of reducing sugar.
25. If crystal field splitting energy is more than pairing energy for d^6 , electronic configuration in terms of t_{2g} & e_g is
26. Name the complex compound used in the treatment of lead poisoning.
27. What is Lucas reagent?
28. What happens when $C_6H_5N_2Cl$ reacts with HBF_4 & $NaNO_2$.
29. The order of reactivity of alcohol with halogen acid is
30. Primary alkyl halide prefer to undergo (SN^1 OR SN^2).
31. What is the role of $BaSO_4$ in Rosenmund reduction?
32. Arrange the following in the increasing order of
 - I.) $C_2H_5NH_2, C_6H_5NHCH_3, (C_2H_5)_2NH$ & $C_6H_5NH_2$. (pK_b Value)
 - II.) $C_6H_5NH_2, (C_2H_5)_2NH, C_2H_5NH_2$ & $(C_2H_5)_3N$. (Solubility in Water)
33. Reagent to convert Ethane to ethanoic acid is
34. Name the process to convert aromatic amine to diazonium salt.
35. Give one example of essential amino acid.
36. Nucleic acid is polymer of

37. What are the products of maltose?
38. Bullet Proof helmets are made from
39. Buna-N is Co-polymer of
40. Why are rubbers called elastomers?
41. Bithional added to soap, acts as
42. Give one example of an antioxidant.
43. What is soft soap?
44. Where are receptors located?
45. Match the columns

A	B
I.) Ranitidine	a.) Tranquilizer
II.) Furacine	b.) Antibiotics
III.) Phenelzine	c.) Antihistamine
IV.) Chloramphenicol	d.) Antiseptic

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OBJECTIVE QUESTIONS- CLASS XII

SUBJECT- CHEMISTRY

I. Read the passage and answer the questions –

1. Potassium Permanganate is prepared from pyrolusite which is an oxide ore of manganese. Pyrolusite is fused with KOH or K_2CO_3 in presence of air some oxidizing agent. The fused mass is extracted with water and filtered to get a green solution. When chlorine gas is passed through green solution, the colour of the solution changes to purple due to $KMnO_4$.

Answer the following-

1.1. The formula of Pyrolusite is –

- (a) Mn_3O_3 (b) MnO_2 (c) MnO (d) Mn_2O_2

1.2. The green solution contains-

- (a) $KMnO_4$ (b) Mn_3O_4 (c) K_2MnO_4 (d) K_2MnO_3

1.3. When Chlorine gas is passed through green solution, the oxidation number of Mn changes from-

- (a) 6 to 7 (b) 4 to 7 (c) 4 to 6 (d) 7 to 4

1.4. The purple colour of the $KMnO_4$ is due to the-

- (a) d-d transition (b) Charge transfer (c) p-d transition (d) d-p transition

1.5. The hybrid status of Mn in $KMnO_4$ is-

- (a) sp^3d (b) sp^2 (c) dsp^2 (d) sp^3

2. Noble gases are inert gases with a general configuration of ns^2np^6 . These are monoatomic, colourless, odourless and tasteless. The first compound gas of noble gas Xe was obtained by reaction with PtF_6 . A large number of compounds of Xe and fluorine have been prepared. The structure of these compounds can be explained on the basis of V.S.E.P.R. theory as well as concept hybridization.

Answer the following-

2.1. The formula of the compound of Xe and PtF_6 is-

- (a) XeF_6 (b) XeF_4 (c) Xe_2PtF_6 (d) $Xe^+PtF_6^-$

2.2. The structure of XeO_3 is-

- (a) Linear (b) Planar (c) Pyramidal (d) T- shape

2.3. The shape and hybridization of some Xe oxy-fluoride and fluoride are given below, find the incorrect one-

- (a) $XeOF_2$ – T- shape – sp^3d (b) $XeOF_4$ – Square pyramidal
 (c) XeF_2 – Linear – sp^3d (d) XeF_6 – Square planar – dsp^2

2.4. Which of the following is not formed by Xe-

- (a) XeF_5 (b) XeF (c) XeF_3 (d) All the three

- 2.5. The number of lone pair and bond pairs of electron around Xe in XeOF₄ respectively are-
 (a) 0 & 5 (b) 1 & 5 (c) 1 & 4 (d) 2 & 3

Short Questions –

1. Name any two metal which are purified by zone refining method.
2. Which Noble gas is used in diving apparatus.
3. Write the group number of Chromium in the periodic table.
4. Give one example of Chelate Complex.
5. Name the medicine which can act as an analgesic as well as antipyretic. Give its chemical name.
6. Give one example biodegradable polyester.
7. What is Tollen's reagent?
8. Write structural formula of 4 – Chloropent – 2 ene.
9. Name the aldehyde which does not give Fehling test.
10. Give one use of each of the following- (a) Freon (b) DDT

Fill ups-

1. A solution which distils without change in composition is called _____.
2. The chemical formula of rust is _____.
3. Smoke is colloidal solution of _____ is _____.
4. Oleum is _____.
5. Ce(IV) are good _____ agents.

Matching-

COLUMN - I	COLUMN – II
a. Maximum boiling azeotrope	Tin
b. Electrolyte is a paste of KOH/ZnO	Extraction of gold
c. Chemisorption	Mercury cell
d. Cyanide process	High energy of activation
e. Liquation	Solution showing negative deviation

Assertion Reason type Question-

The following questions contain two statements labeled as assertion (A) and other is Reason (R) -

- (a) If both A & R are correct and R is correct reason of A .
 - (b) If both A & R are correct but R is not correct reason A.
 - (c) If A is correct R is wrong.
 - (d) If R is correct A is wrong.
 - (e) If both A & R are wrong.
1. Assertion (A)- Molar mass of Benzoic acid as determined by depression in freezing point method in Benzene and then in water is different.
Reason (R) - Water is a polar solvent whereas Benzene is Non- Polar Solvent.
 2. Assertion (A)- Zinc protects the iron better than tin even after cracks.
Reason (R) - Oxidation potential of zinc is greater than iron but oxidation potential of tin is lesser than iron.
 3. Assertion (A) – Colloidal solution do not show Brownian movement.
Reason (R) – Brownian movement is responsible for stability of Colloid.
 4. Assertion (A)- Pseudo first order reaction occurs slowly.
Reason (R) – Reactions of high order can follow kinetics of first order under specific conditions.
 5. Assertion (A)- Aspartame, an artificial sweetener is used in cold food and softdrinks.
Reason (R) – Aspartame is unstable at cooking temperature.
 6. Assertion (A)- Glycine is optically inactive.
Reason (R) – Glycine is the simplest amino acid.

7. Assertion (A)- Hoffmann's bromamide reaction is given by primary amine.
Reason (R)- Primary amines are more basic secondary amine.
8. Assertion (A) – 2- Methylpropanal undergoes Cannizzaro's reaction.
Reason (R) – It has an α hydrogen atom.
9. Assertion (A)- Equimolar mixture of HCl and $ZnCl_2$ is Lucas reagent.
Reason (R)- Lucas reagent can be used to distinguish methanol and ethanol.
10. Assertion (A) KCN reacts with C_2H_5Br to give ethyl isocyanide.
Reason (R)- Cyanide ion is an ambident nucleophile.

MULTIPLE CHOICE QUESTIONS

- Which of the following has highest osmotic pressure.
(a) 0.1 M NaCl (b) 0.1 M $BaCl_2$ (c) 0.1 M $Al_2(SO_4)_3$ (d) 0.1 M urea
- Which property of colloidal solution is independent of charge on the colloidal particles
(a) Electrophoresis (b) Electroosmosis (c) Tyndall effect (d) Coagulation
- Which of the following aqueous solution has highest freezing point ?
(a) 0.1 M NaCl (b) 0.1 M $BaCl_2$ (c) 0.1 M $Al_2(SO_4)_3$ (d) 0.1 M urea
- Which of the following pair of metals is purified by Van- Arkel method
(a) Ni & Fe (b) Ga & In (c) Zr & Ti (d) Ag & Au
- Order of boiling point is
(a) $HF > HI > HBr > HCl$ (b) $HF > HBr > HI > HCl$ (c) $HCl > HBr > HI > HF$ (d) $HCl > HI > HBr > HF$
- Baithional is generally added to soap as an additive to function as
(a) a buffering agent (b) an antiseptic (c) a softner (d) a dryer
- The polymer containing strong intermolecular hydrogen bond is
(a) Natural polymer (b) Teflon (c) Nylon 6,6 (d) Polystyrene
- Which of the following alcohols can be prepared from HCHO
(a) Methanol (b) Ethanol (c) Propanol (d) All of these
- Considering the basic strength of amines in aqueous solution which has smallest pKa value
(a) H_2 & Pt (b) Glycol & KOH (c) Zn-Hg/HCl (d) $LiAlH_4$
- Clemmensen reduction of ketone is carried out in presence of which of the following
(a) Dimethylamine (b) Methylamine (c) Aniline (d) Ammonia

DAV PS, Chhal Chemistry (043)

- Q1. Maximum amount of a solid solute that can be dissolved in a specified amount of a given liquid solvent does **not** depend upon _____.
- Temperature
 - Nature of solute
 - Pressure
 - Nature of solvent
- Q2. Low concentration of oxygen in the blood and tissues of people living at high altitude is due to _____.
- low temperature
 - low atmospheric pressure
 - high atmospheric pressure
 - both low temperature and high atmospheric pressure
- Q3. The value of Henry's constant K_H is _____.
- greater for gases with higher solubility.
 - greater for gases with lower solubility.
 - constant for all gases.
 - not related to the solubility of gases

Q4. On the basis of information given below mark the correct option.

Information:

(A) In bromoethane and chloroethane mixture intermolecular interactions of A–A and B–B type are nearly same as A–B type interactions.

(B) In ethanol and acetone mixture A–A or B–B type intermolecular interactions are stronger than A–B type interactions.

(C) In chloroform and acetone mixture A–A or B–B type intermolecular interactions are weaker than A–B type interactions.

(i) Solution (B) and (C) will follow Raoult's law.

(ii) Solution (A) will follow Raoult's law.

(iii) Solution (B) will show negative deviation from Raoult's law.

(iv) Solution (C) will show positive deviation from Raoult's law.

Q5. The difference between the electrode potentials of two electrodes when no current is drawn through the cell is called _____.

(i) Cell potential

(ii) Cell emf

(iii) Potential difference

(iv) Cell voltage

Q6. Which of the following statement is **not** correct about an inert electrode in a cell?

(i) It does not participate in the cell reaction.

(ii) It provides surface either for oxidation or for reduction reaction.

(iii) It provides surface for conduction of electrons.

(iv) It provides surface for redox reaction.

Q7. The quantity of charge required to obtain one mole of aluminium from Al_2O_3 is _____.

(i) 1F

(ii) 6F

(iii) 3F

(iv) 2F

Q8. Conductivity of an electrolytic solution depends on _____.

(i) nature of electrolyte.

(ii) concentration of electrolyte.

(iii) power of AC source.

(iv) distance between the electrodes.

Q9. Molar conductivity of ionic solution depends on _____.

(i) temperature.

(ii) distance between electrodes.

(iii) concentration of electrolytes in solution.

(iv) surface area of electrodes.

Q10. What is electrode potential?

Q11. The role of a catalyst is to change _____.

(i) gibbs energy of reaction.

(ii) enthalpy of reaction.

(iii) activation energy of reaction.

(iv) equilibrium constant.

Q12. Which of the following statements is correct?

(i) The rate of a reaction decreases with passage of time as the concentration of reactants decreases.

(ii) The rate of a reaction is same at any time during the reaction.

(iii) The rate of a reaction is independent of temperature change.

(iv) The rate of a reaction decreases with increase in concentration of

reactant(s).

Q13 Which of the following statement is **not** correct for the catalyst?

- (i) It catalyses the forward and backward reaction to the same extent.
- (ii) It alters ΔG of the reaction.
- (iii) It is a substance that does not change the equilibrium constant of a reaction.
- (iv) It provides an alternate mechanism by reducing activation energy between reactants and products.

Q14. The value of rate constant of a pseudo first order reaction _____.

- (i) depends on the concentration of reactants present in small amount.
- (ii) depends on the concentration of reactants present in excess.
- (iii) is independent of the concentration of reactants.
- (iv) depends only on temperature.

Q15. Which of the following statements are applicable to a balanced chemical equation of an elementary reaction?

- (i) Order is same as molecularity.
- (ii) Order is less than the molecularity.
- (iii) Order is greater than the molecularity.
- (iv) Molecularity can never be zero.

Q16 During decomposition of an activated complex

- (i) energy is always released
- (ii) energy is always absorbed
- (iii) energy does not change
- (iv) reactants may be formed

Q17. Which of the following options are correct?

- (i) Micelle formation by soap in aqueous solution is possible at all temperatures.
- (ii) Micelle formation by soap in aqueous solution occurs above a particular concentration.
- (iii) On dilution of soap solution micelles may revert to individual ions.
- (iv) Soap solution behaves as a normal strong electrolyte at all concentrations.

Q18 H_2 gas is adsorbed on activated charcoal to a very little extent in comparison to easily liquefiable gases due to _____.

- (i) very strong van der Waal's interaction.
- (ii) very weak van der Waals forces.
- (iii) very low critical temperature.
- (iv) very high critical temperature.

Q19 Which of the following colloids **cannot** be coagulated easily?

- (i) Lyophobic colloids.
- (ii) Irreversible colloids.
- (iii) Reversible colloids.
- (iv) Lyophilic colloids.

Q20. What happens when electric field is applied to colloidal solution?

Q21. What causes brownian motion in colloidal dispersion?

Q22. Method of formation of solution is given in Column I. Match it with the type of solution given in Column II.

Column I
II

Column

- | | |
|---|------------------------------|
| (i) Sulphur vapours passed through cold water | (a) Normal electrolyte |
| (ii) Soap mixed with water above critical micelle concentration | (b) Molecular colloids |
| (iii) White of egg whipped with water | (c) Associated colloid |
| (iv) Soap mixed with water below | (d) Macro molecular colloids |

Q24 Match the statement given in Column I with the phenomenon given in Column II.

Column I

Column II

- | | |
|---|-----|
| (i) Dispersion medium moves in Osmosis | (a) |
| an electric field | |
| (ii) Solvent molecules pass through semi permeable membrane towards solvent side | (b) |
| Electrophoresis | |
| (iii) Movement of charged colloidal particles | (c) |
| Electroosmosis | |
| under the influence of applied electric potential towards oppositely charged electrodes | |
| (iv) Solvent molecules pass through semi permeable membranes towards solution side | (d) |
| Reverse osmosis | |

Q25. Match the items of Column I and Column II.

Column I

Column II

- | | |
|--------------------------------|----------------|
| (i) Butter | (a) |
| dispersion of liquid in liquid | |
| (ii) Pumice stone | (b) dispersion |
| of solid in liquid | |
| (iii) Milk | (c) |
| dispersion of gas in solid | |
| (iv) Paints | (d) |
| dispersion of liquid in solid | |

Q26 Zone refining is based on the principle that _____.

- (i) impurities of low boiling metals can be separated by distillation.
- (ii) impurities are more soluble in molten metal than in solid metal.
- (iii) different components of a mixture are differently adsorbed on an adsorbent.
- (iv) vapours of volatile compound can be decomposed in pure metal.

Q27 In the metallurgy of aluminium _____.

- (i) Al^{3+} oxidised to Al (s).
- (ii) graphite anode is oxidised to carbon monoxide and carbon dioxide.
- (iii) oxidation state of oxygen changes in the reaction at anode.
- (iv) oxidation state of oxygen changes in the overall reaction involved in the process.

Q28. Electrolytic refining is used to purify which of the following metals?

- (i) Cu and Zn
- (ii) Ge and Si
- (iii) Zr and Ti
- (iv) Zn and Hg

Q29. Extraction of gold and silver involves leaching the metal with CN^- ion. The metal is recovered by

- (i) displacement of metal by some other metal from the complex ion.
- (ii) roasting of metal complex.
- (iii) calcination followed by roasting.
- (iv) thermal decomposition of metal complex.

Q30. Which of the following options are correct?

- (i) Cast iron is obtained by remelting pig iron with scrap iron and coke using hot air blast.
- (ii) In extraction of silver, silver is extracted as cationic complex.
- (iii) Nickel is purified by zone refining.
- (iv) Zr and Ti are purified by van Arkel method

Q31. Which of the following ores are concentrated by froth floatation?

- (i) Haematite
- (ii) Galena
- (iii) Copper pyrites
- (iv) Magnetite

Q32. In which of the following method of purification, metal is converted to its volatile compound which is decomposed to give pure metal?

- (i) heating with stream of carbon monoxide.
- (ii) heating with iodine.
- (iii) liquation.
- (iv) distillation.

Q33. Which of the following elements can be involved in $p\pi - d\pi$ bonding?

- (i) Carbon
- (ii) Nitrogen
- (iii) Phosphorus
- (iv) Boron

Q35. Which of the following elements does not show allotropy?

- (i) Nitrogen
- (ii) Bismuth
- (iii) Antimony
- (iv) Arsenic

Q36. Which of the following is correct for P_4 molecule of white phosphorus?

- (i) It has 6 lone pairs of electrons.
- (ii) It has six P–P single bonds.
- (iii) It has three P–P single bonds.
- (iv) It has four lone pairs of electrons.

37. Which of the following statements are correct?

- (i) Among halogens, radius ratio between iodine and fluorine is maximum.
- (ii) Leaving F—F bond, all halogens have weaker X—X bond than X—X' bond in interhalogens.
- (iii) Among interhalogen compounds maximum number of atoms are present in iodine fluoride.
- (iv) Interhalogen compounds are more reactive than halogen compounds.

Q38 Explain why ozone is thermodynamically less stable than oxygen.

ASSERTION REASON TYPE QUESTIONS

Note : In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following explanation of assertion.

- (i) Both assertion and reason are true and the reason is the correct
- (ii) Both assertion and reason are true and the reason is not the correct explanation of assertion.
- (iii) Assertion is true but the reason is false.
- (iv) Both assertion and reason are false.
- (v) Assertion is false but reason is true.

Q39. **Assertion :** Cu is less reactive than hydrogen.

Reason : $E_{\text{Cu}^{2+}/\text{Cu}}$ is negative

Q40. **Assertion :** E_{Cell} should have a positive value for the cell to function.

Reason : $E_{\text{cathode}} < E_{\text{anode}}$

Q41. **Assertion :** Conductivity of all electrolytes decreases on dilution.

Reason : On dilution number of ions per unit volume decreases.

Q42. **Assertion :** $m \Lambda$ for weak electrolytes shows a sharp increase when the electrolytic solution is diluted.

Reason : For weak electrolytes degree of dissociation increases with dilution of solution.

Q43. **Assertion :** Mercury cell does not give steady potential.

Reason : In the cell reaction, ions are not involved in solution.

Q44. **Assertion :** Electrolysis of NaCl solution gives chlorine at anode instead of O_2 .

Reason : Formation of oxygen at anode requires overvoltage.

Q45. **Assertion :** For measuring resistance of an ionic solution an AC source is used.

Reason : Concentration of ionic solution will change if DC source is used.

Q46. **Assertion :** Current stops flowing when $E_{\text{Cell}} = 0$.

Reason : Equilibrium of the cell reaction is attained.

Q47. **Assertion :** $E_{\text{Ag}^+/\text{Ag}}$ increases with increase in concentration of Ag^+ ions.

Reason : $E_{\text{Ag}^+/\text{Ag}}$ has a positive value.

Q48. **Assertion :** Copper sulphate can be stored in zinc vessel.

Reason : Zinc is less reactive than copper.

49. **Assertion :** Order of the reaction can be zero or fractional.

Reason : We cannot determine order from balanced chemical equation.

50. **Assertion :** Order and molecularity are same.

Reason : Order is determined experimentally and molecularity is the sum of the stoichiometric coefficient of rate determining elementary step.

- Non-ideal solutions showing negative deviations:
 - Acetone and chloroform
 - Acetic acid and chloroform
 - Chloroform and CCl_4
 - CCl_4 and Toluene
- Native gold is leached by potassium cyanide in presence of O_2 and H_2O to form which of the following complex:
 - $\text{K}_2[\text{Au}(\text{CN})_2]$
 - $\text{K}[\text{Au}(\text{CN})_2]$
 - $\text{K}_2[\text{Au}(\text{CN})_4]$
 - $\text{K}_3[\text{Au}(\text{CN})_4]$
- Soaps and detergents are
 - Multimolecular colloids
 - Associated colloids in high concentration
 - Electrolytes in high concentration
 - Macromolecular colloids
- Tin is purified by
 - Distillation
 - liquation
 - Electrolytic refining
 - vapour phase refining
- Which of the following is diamagnetic?
 - O_2
 - S_2 in vapour state
 - O_3
 - KO_2
- Which of the following metal is purified by Van- Arkel method using I_2 ?
 - Ni
 - Cu
 - Ti
 - Zr
- Bauxite ore is purified by leaching with
 - Na_3AlF_6
 - NaOH
 - KCN
 - Na_2S
- Match the following :
 - Cationic detergent
 - Dishwashing liquid
 - Non-ionic detergent
 - Cetyl trimethyl ammonium bromide
- Match the following :
 - Food preservative
 - Saccharine
 - Artificial sweetener
 - Sodium benzoate
- Which of the following is an antifertility drug?
 - Norethindrone
 - Ethynyl estradiol
 - Ranitidine
 - Salvarsan
- Which of the following is a biodegradable polymer?
 - PHBV
 - Glyptal
 - Nylon 6,6
 - Bakelite
- The formula of potassium trioxalato chromate (III) is _____ .
- _____ and _____ are monomers of Buna – N.
- Mn^{2+} is more stable than Mn^{3+} because it has _____ configuration which is more stable.
- The lanthanoid cerium shows oxidation state _____ because after losing _____ electrons, it acquires stable electronic configuration.
- The heterocyclic base present in DNA but not in RNA is _____ .
- Penicillin is an example of _____ spectrum.
- $[\text{Cr}(\text{C}_2\text{O}_4)_3]^{3-}$ shows optical isomerism but does not show geometrical isomerism. [True/False]
- DNA has double helix structure whereas RNA has single helix structure. [True/False]
- Vitamin B_1 deficiency causes Beri- Beri. [True/False]
- Bakelite is a thermoplastic polymer of phenol and formaldehyde. [True/ False]
- State the Raoult's law for volatile solute.

23. Write one difference between order and molecularity of a reaction.
24. What do you mean by colligative properties?
25. Why does HCOOH not undergo Hell Vohlard Zelinsky reaction?
26. Identify the reaction order from the following rate constant, $k = 2.3 \times 10^{-5} \text{ s}^{-1}$.
27. Write the dehydrohalogenation product of 2- bromobutane in presence of alcoholic KOH.
28. The mixture of conc. HCl and anhydrous ZnCl_2 is called _____ .
29. Write the formula of the following coordination compound: Tetraamminediaquacobalt(III) chloride
30. Write the IUPAC name of the compound: $\text{K}_3[\text{Fe}(\text{CN})_6]$
31. Arrange in order of increasing boiling points: Bromomethane, Bromoform, Chloromethane, Dibromomethane .
32. Out of Ethanol and Methoxymethane which one is having higher boiling point and why?
33. Why is Butan-1-ol optically inactive but Butan-2-ol is optically active?
34. A tertiary alkyl halide would undergo SN_1 or SN_2 reaction and why?
35. Why cannot aromatic primary amines be prepared by Gabriel phthalimide synthesis?
36. Aniline does not undergo friedel craft reaction, why?
37. I_2 gets oxidised to _____ by conc. HNO_3 .
38. Why is H_2S more acidic than H_2O ?
39. Silver atom has completely filled d-orbitals($4d^{10}$) in its ground state. How can you say that it is a transition element?
40. Ortho and para- nitrophenols are more acidic than phenol.
41. Which of the following is a non-reducing sugar:
 - a) Glucose
 - b) Sucrose
 - c) Maltose
 - d) Lactose
42. Arrange the following in increasing order of basic strength: aniline, p-nitroaniline and p-toluidine.
43. Which of the following polymers is stored in the liver of animals?
 - a) Amylose
 - b) Cellulose
 - c) Amylopectin
 - d) Glycogen
44. State Kohlrausch's law of independent migration of ions.
45. What is the function of SiO_2 in the metallurgy of copper?

ANSWER KEY

1. (a)
2. (b)
3. (b)
4. (b)
5. (c)
6. (c) and (d)
7. (b)
8. (i) – (b) and (ii) – (a)
9. (i) – (b) and (ii) – (a)
10. (a) and (b)
11. (a)
12. $\text{K}_3[\text{Cr}(\text{C}_2\text{O}_4)_3]$
13. 1,3- Butadiene and Acrylonitrile
14. $3d^5$ (half filled, more stable)
15. +4 and 1 electron
16. Thymine
17. Narrow spectrum antibiotic
18. True
19. True
20. True
21. False

22. Raoult's law – In a solution of volatile liquids, the partial pressure of each component is directly proportional to its mole fraction.

23.

1. It is the sum of powers to which concentration terms are raised in rate law expression.	1. It is the number of molecules which take part in a chemical reaction.
2. It can be fraction, zero, or a natural number.	2. It is always a whole number.
3. It is determined experimentally.	3. It is determined theoretically.

24. The properties which depends on the no. of solute particles and not on the nature of solute are called colligative properties.

25. Because it does not have any α – hydrogen.

26. First order

27. But-1-ene and But-2-ene

28. Lucas reagent

29. $[\text{Co}(\text{NH}_3)_4(\text{H}_2\text{O})_2]\text{Cl}_3$

30. Potassium hexacyanidoferrate (III)

31. Chloromethane, bromomethane, dibromomethane, Bromoform

32. Ethanol has higher boiling point because it is associated with intermolecular H-bonding.

33. Because butan-2-ol is chiral i.e. has chiral carbon attached to 4 different groups.

34. SN_1 reaction because 3° carbocations are more stable.

35. It is because there is double bond character $\text{C}=\text{X}$ bond due to which it cannot be broken easily.

36. It is because aniline is basic which can form adduct with AlCl_3 (Lewis acid).

37. HIO_3

38. It is because bond dissociation energy of H-S bond is less than H-O bond due to longer bond length.

39. Silver is a transition metal because it can exhibit +2 oxidation state which has incompletely filled d-orbital.

40. This is because $-\text{NO}_2$ group is electron withdrawing (-R effect), it increases the stability of o- and p-nitrophenoxide ions as compared to phenoxide ion.

41. (b)

42. p-nitroaniline, aniline, p-toluidine

43. d) Glycogen

44. It states that the limiting molar conductivity of an electrolyte is equal to the sum of contribution of cations as well as anions.

45. It acts as flux. It reacts with FeO to form FeSiO_3 which can be easily removed.

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DAV PS, Rajhara

Short Answer Questions(1 mark Questions)

Session 2019-20

Class 12th - CHEMISTRY

Passage based Question (Comprehensive type)

(A). Read the passage and answer of questions number 1 to 5

Potassium dichromate is used in leather industry and act as an oxidant for the preparation of many azo compound . It is a crystalline ionic solid having bright, reddish orange colour . It is odourless with density around 2.67gcm^{-3} . It soluble in water and insoluble in alcohol, acetone, etc. Being highly water soluble , it is extensively used as an oxidising agent in organic chemistry.

1. Give the name and chemical formula of the ore from which potassium dichromate is prepared ?

2. Draw the structure of dichromate and chromate ion ?
3. What are the oxidation state in chromate and dichromate ion ?
4. At which PH chromate and dichromate remain in equilibrium , what are the colour of these both ions ?
4. Give the uses of potassium dichromate ?

(B) Read the passage and answer of questions number 6 to 10

Glucose is an aldohexose, It found in two crystalline form α -D (+) –Glucose and β -D (+)- glucose , While fructose is ketohexose , it also found in two form α –D (-) Fructose and β -D (-) Fructose . Sucrose , a disaccharide form when α -D (+) –Glucose and β -D (-) Fructose combine through glycosidic bond. Glucose is a invert sugar.

6. What is Aldose , ketose and hexose ?
7. D and L prefix written before the name of monosaccharide represent what?
8. What is anomers write example ?
9. Why sucrose is called invert sugar ?
- 10 Draw the pyranose structure of β -D (-) Fructose

Assertion-Reason

In the following questions , a statement of Assertion is followed by a corresponding statement of Reason . Of the following statements , Choose the correct one .

Choose (a) If both Assertion and Reason are correct statements and reason is the correct explanation of the Assertion

Choose (b)) If both Assertion and Reason are correct but reason is not the correct explanation of the Assertion

Choose (c) If Assertion is correct , but Reason is not correct

Choose (d) if Assertion is incorrect, but Reason is correct

11, ASSERTION -Polar solute dissolves in polar solvents and non -Polar solute dissolves in non polar solvents

REASON –A solute dissolve in a solvent having similar intermolecular interaction., i.e. like dissolve like

12 ASSERTION – Mercury cells give a constant voltage throughout the life

REASON – Electrolyte KOH is not involve in the cell reaction

13. ASSERTION – Aniline does not undergo alkylation and acetylation.

REASON –Nitrogen of aniline acquires positive charge in presence of $AlCl_3$

14. ASSERTION – $KMnO_4$ Oxidises oxalic acid to CO_2 and itself changes to Mn^{2+}

REASON - - $KMnO_4$ act as a oxidising agent in acidic medium.

15.. ASSERTION – It is necessary to avoid traces of moisture from Grignard reagent.

REASON – Grignard reagent react with water and convert into hydrocarbon.

16. ASSERTION – As compare to non –chelated complexes , Chelated complex are more stable

REASON - -Labile complexes are the complexes which contain ligands those can be replaced by other ligands.

17. ASSERTION – Cellulose is digestable in human body .

REASON- Human body do not contain cellulose enzyme for hydrolysis of cellulose into Glucose.

18. ASSERTION – Bromination of phenol occurs even in the absence of lewis acid.

REASON- OH group of phenol is highly deactivating group.

19. ASSERTION –During acylation of amines equilibrium shifts to the right hand side in the presence of pyridine.

REASON- Pyridine is stronger base than amine so it remove HCl which form during acylation of amine.

20. ASSERTION - Benzene diazonium salt are soluble in water.

REASON- They are covalent in nature so they are soluble in water.

One word answer type question

21. Name the compound formed when benzoic acid reacts with $Br_2/ FeBr_3$

22. Name the polymer that have weakest intermolecular forces.

23 Write the formula of compound in which manganese metal is in +6 oxidation state.

24. Write the unit of zero order reaction?

25. Out of Chloro, Fluoro and Bromo –Benzene which can not be prepared by sandmeyer reaction ?
26. Arrange the following compound in the increasing order of acidic strength
o-nitrophenol , o-Cresol , Phenol
27. Draw the structure of pyrosulphuric acid ?
28. Write the name and formula of any aldol ?
29. Write the symbol of radioactive element of 17 th group.
30. Draw the structure of XeF_6 ?
31. Which halogen acid have highest bond dissociation enthalpy ? (i) HF (ii) HI (iii) HBr (iv) HCl
32. What is the correct order of reactivity of alcohols in the following reaction ?
(i) $1^\circ < 2^\circ > 3^\circ$
(ii) $1^\circ > 2^\circ > 3^\circ$
(iii) $3^\circ > 1^\circ > 2^\circ$
(iv) $3^\circ > 1^\circ > 2^\circ$
33. At high concentration of soap in water, behave as
(i) True solution
(ii) Molecular colloid
(iii) Associated colloid
(iv) Multimolecular colloid
34. Which of following compounds will give butanone on oxidation alkaline KMnO_4
(i) Butan -1-ol
(ii) Butan-2-ol
(iii) Both of these
(iv) None of these
35. Caprolactum is a monomer of (i) Terylene (ii) Nylon -6 (iii) Nylon-6,6 (iv) Teflon
36. 0.02M aqueous solution of NaCl was diluted by adding one litre of water. The molarity of the solution is
.....
(i) 0.004M (ii) 0.008M (iii) 0.012M (iv) 0.016 M
37. Which of the following is target molecule for drug function in body
(i) Enzyme (ii) paracetamol (iii) H_2O (iv) Carbohydrate
- 38 Freshly prepared precipitate sometimes gets converted to colloidal solution by
(i) Diffusion (ii) Electrolysis (iii) Coagulation (iv) Peptization
- 39 Which of the following molecule is chiral in nature
(i) 2-Bromobutane
(ii) 1-Bromobutane
(iii) 2-Bromopropane
(iv) 2-Bromopropan-2-ol
40. In the extraction of copper from its sulphide ore , the metal is formed by the reduction of Cu_2O with:- (i) FeS (ii) CO (iii) Cu_2S (iv) SO_2

DAV PS, CHIRIMIRI

1. Low concentration of oxygen in the blood and tissues of people living at high altitude is due to_____.
- (i) low temperature
(ii) low atmospheric pressure
(iii) high atmospheric pressure
(iv) both low temperature and high atmospheric pressure

2. Considering the formation, breaking and strength of hydrogen bond, predict which of the following mixtures will show a positive deviation from Raoult's law?
- Methanol and acetone
 - Chloroform and acetone.
 - Nitric acid and water.
 - Phenol and aniline.
3. Colligative properties depend on _____.
- the nature of the solute particles dissolved in solution..
 - the number of solute particles in solution.
 - the physical properties of the solute particles dissolved in solution.
 - the nature of solvent particles.
4. Which of the following aqueous solutions should have the highest boiling point?
- 1.0 M NaOH
 - 1.0 M Na₂SO₄
 - 1.0 M NH₄NO₃
 - 1.0 M KNO₃
5. The difference between the electrode potentials of two electrodes when no current is drawn through the cell is called _____.
- Cell potential
 - Cell emf
 - Potential difference
 - Cell voltage
6. Which of the following statement is not correct about an inert electrode in a cell?
- It does not participate in the cell reaction.
 - It provides surface either for oxidation or for reduction reaction.
 - It provides surface for conduction of electrons.
 - It provides surface for redox reaction.
7. An electrochemical cell can behave like an electrolytic cell when _____.
- $E_{\text{cell}} = 0$
 - $E_{\text{cell}} > E_{\text{ext}}$
 - $E_{\text{ext}} > E_{\text{cell}}$
 - $E_{\text{cell}} = E_{\text{ext}}$
8. During decomposition of an activated complex
- energy is always released
 - energy is always absorbed
 - energy does not change
 - reactants may be formed
9. According to Maxwell Boltzmann distributon of energy, _____.
- the fraction of molecules with most probable kinetic energy decreases at higher temperatures.
 - the fraction of molecules with most probable kinetic energy increases at higher temperatures.
 - most probable kinetic energy increases at higher temperatures.
 - most probable kinetic energy decreases at higher temperatures.
10. Which of the following statements are in accordance with the Arrhenius equation?
- Rate of a reaction increases with increase in temperature.
 - Rate of a reaction increases with decrease in activation energy.
 - Rate constant decreases exponentially with increase in temperature.
 - Rate of reaction decreases with decrease in activation energy.
11. Extent of adsorption of adsorbate from solution phase increases with _____.
- increase in amount of adsorbate in solution.
 - decrease in surface area of adsorbent.
 - increase in temperature of solution.
 - decrease in amount of adsorbate in solution.
12. Which one of the following is not applicable to the phenomenon of adsorption?

- (i) $\Delta H > 0$
(ii) $\Delta G < 0$
(iii) $\Delta S < 0$
(iv) $\Delta H < 0$
13. Which of the following is not a favourable condition for physical adsorption?
(i) high pressure
(ii) negative ΔH
(iii) higher critical temperature of adsorbate
(iv) high temperature
14. A number of elements are available in earth's crust but most abundant elements are _____.
(i) Al and Fe
(ii) Al and Cu
(iii) Fe and Cu
(iv) Cu and Ag
15. Zone refining is based on the principle that _____.
(i) impurities of low boiling metals can be separated by distillation.
(ii) impurities are more soluble in molten metal than in solid metal.
(iii) different components of a mixture are differently adsorbed on an adsorbent.
(iv) vapours of volatile compound can be decomposed in pure metal.
16. Affinity for hydrogen decreases in the group from fluorine to iodine. Which of the halogen acids should have highest bond dissociation enthalpy?
(i) HF
(ii) HCl
(iii) HBr
(iv) HI
17. In the preparation of compounds of Xe, Bartlett had taken $O_2^+ Pt F_6^-$ as a base compound. This is because:
(i) both O_2 and Xe have same size.
(ii) both O_2 and Xe have same electron gain enthalpy.
(iii) both O_2 and Xe have almost same ionisation enthalpy.
(iv) both Xe and O_2 are gases.
18. On addition of conc. H_2SO_4 to a chloride salt, colourless fumes are evolved but in case of iodide salt, violet fumes come out. This is because
(i) H_2SO_4 reduces HI to I_2
(ii) HI is of violet colour
(iii) HI gets oxidised to I_2
(iv) HI changes to HIO_3
19. Which of the following statements is not correct?
(i) Copper liberates hydrogen from acids.
(ii) In its higher oxidation states, manganese forms stable compounds with oxygen and fluorine.
(iii) Mn^{3+} and Co^{3+} are oxidising agents in aqueous solution.
(iv) Ti^{2+} and Cr^{2+} are reducing agents in aqueous solution.
20. Although Zirconium belongs to 4d transition series and Hafnium to 5d transition series even then they show similar physical and chemical properties because _____.
(i) both belong to d-block.
(ii) both have same number of electrons.
(iii) both have similar atomic radius.
(iv) both belong to the same group of the periodic table.

Assertion and Reason Type :

Note : In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

- (i) Assertion and reason both are correct and reason is correct explanation of assertion.
(ii) Assertion and reason both are correct statements but reason is not correct explanation of

assertion.

(iii) Assertion is correct but reason is wrong statement.

(iv) Assertion is wrong but reason is correct statement.

(v) Assertion and reason both are wrong statements.

21. **Assertion :** Toxic metal ions are removed by the chelating ligands.

Reason : Chelate complexes tend to be more stable.

22. **Assertion :** $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_2$ and $[\text{Fe}(\text{H}_2\text{O})_6]\text{Cl}_2$ are reducing in nature.

Reason : Unpaired electrons are present in their d-orbitals.

23. **Assertion :** Linkage isomerism arises in coordination compounds containing ambidentate ligand.

Reason : Ambidentate ligand has two different donor atoms.

24. **Assertion :** Complexes of MX_6 and MX_5L type (X and L are unidentate) do not show geometrical isomerism.

Reason : Geometrical isomerism is not shown by complexes of coordination number 6.

25. **Assertion :** The boiling points of alkyl halides decrease in the order : $\text{RI} > \text{RBr} > \text{RCl} > \text{RF}$

Reason : The boiling points of alkyl chlorides, bromides and iodides are considerably higher than that of the hydrocarbon of comparable molecular mass.

26. **Assertion :** KCN reacts with methyl chloride to give methyl isocyanide.

Reason : CN – is an ambident nucleophile.

27. **Assertion :** tert-Butyl bromide undergoes Wurtz reaction to give 2, 2, 3, 3-tetramethylbutane.

Reason : In Wurtz reaction, alkyl halides react with sodium in dry ether to give hydrocarbon containing double the number of carbon atoms present in the halide.

28. **Assertion :** Addition reaction of water to but-1-ene in acidic medium yields butan-1-ol

Reason : Addition of water in acidic medium proceeds through the formation of primary carbocation.

29. **Assertion :** o-Nitrophenol is less soluble in water than the m- and p-isomers.

Reason : m- and p- Nitrophenols exist as associated molecules.

30. **Assertion :** Aldehydes and ketones, both react with Tollen's reagent to form silver mirror.

Reason : Both, aldehydes and ketones contain a carbonyl group.

31. Name the electrophile produced in the reaction of benzene with benzoyl chloride in the presence of anhydrous AlCl_3 .

32. Oxidation of ketones involves carbon-carbon bond cleavage. Name the products formed on oxidation of 2, 5-dimethylhexan-3-one.

33. Arrange the following in decreasing order of their acidic strength and give reason for your answer.

$\text{CH}_3\text{CH}_2\text{OH}$, CH_3COOH , ClCH_2COOH , FCH_2COOH , $\text{C}_6\text{H}_5\text{CH}_2\text{COOH}$

34.. Why does acetylation of $-\text{NH}_2$ group of aniline reduce its activating effect?

35. Explain why MeNH_2 is stronger base than MeOH ?

36. What is the role of pyridine in the acylation reaction of amines?

37. Arrange the following compounds in increasing order of dipole moment.

$\text{CH}_3\text{CH}_2\text{CH}_3$, $\text{CH}_3\text{CH}_2\text{NH}_2$, $\text{CH}_3\text{CH}_2\text{OH}$

38. Aldopentoses named as ribose and 2-deoxyribose are found in nucleic acids. What is their relative configuration?

39. Which sugar is called invert sugar? Why is it called so?

40. Why must vitamin C be supplied regularly in diet?

41. Identify the type of polymer : $-\text{A}-\text{B}-\text{B}-\text{A}-\text{A}-\text{A}-\text{B}-\text{A}-$

42. Why are rubbers called elastomers?

43. Can enzyme be called a polymer?

44. Which type of drugs come under antimicrobial drugs?

45. Where are receptors located?

46. What is the harmful effect of hyperacidity?

Read the given passage and answer the questions 47 to 50 that follow: A metal Complex having the molecular formula $\text{Cr}(\text{NH}_3)_4\text{Cl}_2\text{Br}$ have been isolated in two forms (A) and (B). The form (A) reacts with AgNO_3 giving white precipitate readily soluble in dilute NH_4OH , while (B) gives yellow precipitate soluble in concentrated NH_4OH .

47. Write the formula of complex A.
48. State the hybridisation state of Chromium in complexes B.
49. Indicate the type of isomerism exhibited by (A) and (B).
50. Draw one of the geometrical isomers of the complex $[\text{Pt}(\text{en})_2\text{Cl}_2]^{2-}$ which is optically inactive.

CHEMISTRY(043) : 2019-20
Class – XII

Maximum Marks: 50

Time allowed: 3 hours

General Instructions:-

- a) *All questions are compulsory.*
b) *Fifteen minutes time has been allotted to read this Question paper. During this time, the students will read the question paper only and will not write any answer on the answer book.*
c) *Use log tables, if necessary. Use of calculator is not allowed.*

Questions 1 to 20 are Multiple Choice Questions.

1. Low concentration of oxygen in the blood and tissues of people living at high altitude is due to_____.
- (i) low temperature
(ii) low atmospheric pressure
(iii) high atmospheric pressure
(iv) both low temperature and high atmospheric pressure
2. Considering the formation, breaking and strength of hydrogen bond, predict which of the following mixtures will show a positive deviation from Raoult's law?
- (i) Methanol and acetone
(ii) Chloroform and acetone.
(iii) Nitric acid and water.
(iv) Phenol and aniline.
3. Colligative properties depend on _____.
- (i) the nature of the solute particles dissolved in solution..
(ii) the number of solute particles in solution.
(iii) the physical properties of the solute particles dissolved in solution.
(iv) the nature of solvent particles.
4. Which of the following aqueous solutions should have the highest boiling point?
- (i) 1.0 M NaOH
(ii) 1.0 M Na_2SO_4
(iii) 1.0 M NH_4NO_3
(iv) 1.0 M KNO_3
5. The difference between the electrode potentials of two electrodes when no current is drawn through the cell is called _____.
- (i) Cell potential
(ii) Cell emf
(iii) Potential difference

DAV PS, BISHRAMPUR

1) In comparison to a 0.01M solution of glucose, the depression in freezing point of a 0.01 M $MgCl_2$ solution is
a) the same b) about twice c) about three times d) about six times

Ans (c)

2) The values of Van't Hoff factors for $KCl, NaCl, K_2SO_4$, respectively are

a) 2, 2 and 2 b) 2, 2, 3 c) 1, 1, 2 d) 1, 1, 1

Ans (b)

3) An electrochemical cell can behave like an electrolytic cell when

a) $E_{cell} = 0$ b) $E_{cell} > E_{ext}$ c) $E_{ext} > E_{cell}$ d) $E_{cell} = E_{ext}$

Ans (c)

4) The quantity of charge required to obtain one mole of aluminium from Al_2O_3 is

a) 1F b) 6F c) 3F d) 2F

Ans (b)

5) If 75% of the first order reaction was completed in 32 minutes, 50% of the same reaction would be completed in

a) 8 min b) 4 min c) 16 min d) 24 min

Ans (c)

6) The rate constant of a reaction is $2.0 \times 10^{-6} \text{ mol}^{-2} \text{ L}^2 \text{ s}^{-1}$. The order of the reaction is

a) 0 b) 1 c) 2 d) 3

Ans (d)

7) Which property of colloidal solution is independent of charge on the colloidal particles?

a) Electro osmosis b) Tyndall effect c) Coagulation d) Electrophoresis

Ans (b)

8) Which of the following electrolytes will have maximum coagulating value for AgI / Ag^+ solution?

a) Na_2S b) Na_3PO_4 c) Na_2SO_4 d) $NaCl$

Ans (d)

9) Electrolytic refining is used to purify which of the following metals?

a) Cu and Zn b) Ge and Si c) Zr and Ti d) Zn and Hg

Ans (a)

10) Extraction of gold and silver involves leaching the metal with CN^- ion. The metal is recovered by

a) displacement of metal by some other metal from the complex ion

b) roasting of metal complex

c) calcination followed by roasting

d) thermal decomposition of metal complex

Ans (a)

11) In the preparation of compounds of Xe, Bartlett had taken $O_2^+ Pt F_6^-$ as a base compound. This is because

a) both O_2 and Xe have same size b) both O_2 and Xe have same electron gain enthalpy

c) both almost have same ionization enthalpy d) both Xe and O_2 are gases.

Ans (c)

12) Gadolinium belongs to 4f series. Its atomic number is 64. Which of the following is correct electronic configuration of Gd.

a) $[Xe]4f^7 5d^1 6s^2$ b) $[Xe]4f^6 5d^2 6s^2$ c) $[Xe]4f^8 6d^2$ d) $[Xe]4f^9 5s^1$

Ans (a)

13) $KMnO_4$ acts as an oxidizing agent in an alkaline medium. When alkaline $KMnO_4$ is treated with KI, iodide ion is oxidized to

a) I_2 b) IO^- c) IO_3^- d) IO_4^-

Ans (c)

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

a) Assertion and reason both are correct statements and reason is correct explanation for assertion.

b) Assertion and reason both are correct statements but reason is not correct explanation for assertion

c) Assertion is correct but reason is wrong statement.

d) Assertion is wrong statement but reason is correct statement

14) A: The vapour pressure of a liquid decreases if some non volatile solute is dissolved in it

R: The relative lowering of vapour pressure of a solution containing non volatile solute is equal to the mole fraction of solute in the solution.

Ans (b)

15) A: Electrolysis of NaCl solution gives chlorine at anode instead of O₂.

R: Formation of oxygen at anode requires overvoltage.

Ans (a)

16) A: If the activation energy of a reaction is.

R: Formation of oxygen at anode requires overvoltage.

Ans (a)

16) A: If the activation energy of a reaction is zero, temperature will have no effect on rate constant.

R: Lower the activation energy faster is the reaction.

Ans (c)

17) A: In chemisorptions, all gases are absorbed on all solids.

R: Chemisorption takes place at elevated temperature.

Ans (d)

18) A: Zirconium can be purified by Van Arkel method.

R: ZrI₄ is volatile and decomposes at 1800K

Ans (a)

19) A: Hydrometallurgy involves dissolving the ore in a suitable reagent followed by precipitation by a more electropositive metal.

R: Cu is extracted by hydrometallurgy.

Ans (c)

20) A: SF₆ cannot be hydrolysed but SF₄ can

R: Six F atoms in SF₆ prevent the attack of H₂O on sulphur atom of SF₆.

Ans (a)

21. Benzene diazonium chloride on reaction with phenol in weakly basic medium gives

A. Diphenyl ether

B. p-hydroxy azo benzene

C. Chloro benzene

D. Benzene

22. Which one of the following on reduction with Li AlH₄ yield a secondary amine

(A) C₂ H₅ NO₂

(B) CH₃ NC

(C) CH₃CON H₂

(D) CH₃ CN

23. The compound which reacts faster with Lucas reagent is

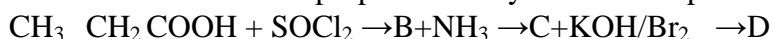
(A) Butan -1-ol

(B) Butan -2-ol

(C) 2- methyl propan -1-ol

(D) 2-methyl propan -2- ol

24. In a set of reactions propionic acid yielded a compound D.



D would be

A CH₃ CH₂ CH₂ NH₂

B. CH₃ CH₂CON H₂

C CH₃ CH₂ NH CH₃

D. CH₃ CH₂ NH₂

25. The number of moles of KMnO₄ that will be needed to react with one mole of sulphite ion in acidic solution.

A. 3/5

B.4/5

C. 2/5

D. 1

26. The highest magnetic moment is shown by the transition ion with configuration.

A. $3d^2$

B. $3d^5$

C. $3d^7$

D. $3d^9$

27. Which of the following is coloured,

A. Ag_2SO_4

B. CuF_2

C. ZnF_2

D. Cu_2Cl_2

28. Spin only magnetic moment value of Cr^{3+} ion is —

A. 2.87 B.M

B. 3.87 B.M

C. 3.47 B.M

D. 3.57 B.M

29. The coagulating power of electrolytes having ions Na^+ , Al^{3+} , Ba^{2+} for Arsenic sulphide sol increase in the order.

A. $Al^{3+} < Ba^{2+} < Na^+$

B. $Na^+ < Ba^{2+} < Al^{3+}$

C. $Ba^{2+} < Na^+ < Al^{3+}$

D. $Al^{3+} < Na^+ < Ba^{2+}$

30. The amount of electrolytes required to coagulate a given amount of Ag I colloidal solution (-charge) will be in the order.

A. $NaNO_3 > Al_2(NO_3)_3 > Ba(NO_3)_2$

B. $Al_2(NO_3)_3 > Ba(NO_3)_2 > NaNO_3$

C. $Al_2(NO_3)_3 > NaNO_3 > Ba(NO_3)_2$

D. $NaNO_3 > Ba(NO_3)_2 > Al_2(NO_3)_3$

31. Bleaching action of SO_2 is due to its

A. Oxidising property

B. Acidic property

C. Basic property

D. Reducing property

32. Oxidation number of sulphur in $H_2S_2O_8$ is

A. +6

B. +8

C. +21

D. +7

33. $NaOCl$ is used as bleaching agent & sterilising agent it can be synthesised by action of—

A. $NaCl$ with H_2O

B. NH_4Cl with $NaOH$

C. Cl_2 with cold & dilute $NaOH$

D. Cl_2 with Hot & conc. $NaOH$.

34. Which one of the following order is not in accordance with the property stated against it?

A. $F_2 > Cl_2 > Br_2 > I_2$ Oxidising power

B. $HI > HBr > HCl > HF$ Acidic property in water

C. $F_2 > Cl_2 > Br_2 > I_2$ Electronegativity

D. $F_2 > Cl_2 > Br_2 > I_2$ Bond Dissociation energy

35. Which of the following is not a broad spectrum antibiotic

A. Tetracycline

B. Chloromycetin

C. Penicillin

D. None of these

36. Purest form of iron is

A. Pig Iron

B. Wrought Iron

C. Cast Iron

D. Steel

37. $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$ (At. No. Cr=24) has a magnetic moment of 3.83 BM. The correct distribution of 3d electron in chromium of complex is

A. $3d^1_{x^2-y^2}$ $3d^1_{z^2}$ $3d^1_{xz}$

B. $3d^1_{xy}$ $3d^1_{x^2-y^2}$ $3d^1_{yz}$

C. $3d^1_{xy}$ $3d^1_{yz}$ $3d^1_{xz}$

D. $3d^1_{z^2}$ $3d^1_{xz}$ $3d^1_{z^2}$

38. To dissolve Argentite ore which of the following is used

A. $\text{Na}[\text{Ag}(\text{CN})_2]$

B. NaCN

C. NaCl

D. HCl

39. Which of the following possess highest melting point

A. p-dichloro benzene

B. m-dichloro benzene

C. o-dichloro benzene

D. Chloro benzene

Reasoning Assertion Based Questions

A. If both assertion and reason are true and reason is the correct explanation for the assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

40. Assertion- The $[\text{Ni}(\text{en})_3]\text{Cl}_2$ has lower stability than $[\text{Ni}(\text{NH}_3)_6]\text{Cl}_2$

Reason- In $[\text{Ni}(\text{en})_3]\text{Cl}_2$ the geometry of Ni is trigonal bipyramidal

41. Assertion- HClO_4 is a stronger acid than HClO_3

Reason - Oxidation state of Cl in HClO_4 is +8 and in HClO_3

is +5

42. Assertion- Benzaldehyde is more reactive than ethanal towards

Nucleophilic attack

Reason - The overall effect of -I effect and +R effect of phenyl group

decreases the electron density on carbon of C=O group in

benzaldehyde

43. Assertion- Sucrose is a non-reducing sugar

Reason - It has glycosidic linkage and so both aldehyde group

and ketonic group are not free

44. Assertion- t-butyl methyl ether is not prepared by reaction of t-butyl bromide with sodium methoxide

Reason- Sodium methoxide is a strong nucleophile

45. Assertion- F-F bond has low bond dissociation energy

Reason - Fluorine has lower reactivity