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CHEMISTRY

DIFFERENCE BETWEEN

ALL DIFF. BTW QNS WITH ANSWERS

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12TH CHEMISTRY

DIFFERENCE BETWEEN QUESTIONS

1. **What are the difference between Minerals and Ores ? (Sep-20) (May-22)**

Minerals	Ores
A naturally occurring substance obtained by mining which contains the metal in free state or in the form of compounds	Ore contains a high percentage of metal which can be extracted conveniently and economically
All minerals are not ores	All ores are minerals
It contains a low percentage of metal	It contains a high percentage of metals
Ex: Minerals of Al is Bauxite and China Clay	Ex: Ore of Al is Bauxite ($Al_2O_3.nH_2O$)

2. **Distinguish between Roasting and Calcination.**

Roasting	Calcination
Roasting is a process in which ore is heated in the presence of excess of air	Calcination is a process in which ore is heated in the absence of air
As a result of roasting the sulphide ores are converted into their oxides	As a result of calcination, the carbonate ore is converted into its oxides
$2PbS + 3O_2 \xrightarrow{\Delta} 2PbO + 2SO_2$	$CaCO_3 \xrightarrow{\Delta} CaO + CO_2$
Roasting removes impurities such as arsenic, sulphide, phosphorus by converting them into their volatile oxide	During calcination of hydrated ore, the water of hydration is expelled as vapour.

3. **Distinguish Between Diamond and Graphite.**

Diamond	Graphite
C is sp^3 hybridized	C is sp^2 hybridized
Tetrahedral structure	Hexagonal net structure
Crystalline, transparent with extra brilliance	Crystalline, opaque and shiny substance
It is hard with high density and high melting point	It is soft with low density and high melting point
Bad Conductor of heat and electricity	Good conductor of heat and electricity

4. **Distinguish between White phosphorus and Red phosphorus.**

White Phosphorus	Red Phosphorus
It is colourless	It is deep red in colour
It is poisonous in nature	It is not poisonous
It shows phosphorescence	It does not show phosphorescence
Its ignition temperature is very low	It does not ignite at low temperature
It has garlic smell	It is odourless

5. **Compare Lanthanides and Actinides.**

Lanthanoids	Actinoids
Differentiating electrons enter in 4f orbital	Differentiating electron enters in 5f orbital
Binding energy of 4f orbital are higher	Binding energy of 5f orbital are lower
They show less tendency to form complexes	They show greater tendency to form complexes
Most of the lanthanoids are colourless	Most of the actinoids are coloured
They do not form oxocations	They do form oxocations
Besides +3 oxidation state lanthanoids show +2 and +4 oxidation states in few cases	Besides +3 oxidation state actinoids show higher oxidation states such as +4, +5, +6, and +7

6. **Difference between Double salts and Coordination compounds.**

Double Salts	Coordination Compounds
Double salts contains two simple salt in equimolar proportion	The simple salts from which they are formed may or may not be in equimolar proportion
They exist only in solid state and dissociate into consistent species in their solution	They retain their identity in solid as well as in solution sate
They lose their identity in dissolved state	They do not lose their identity in dissolved state
Their properties essential the same as these of constituent species	Their properties are different form their constituents for etc... $K_4[Fe(CN)_6]$ does not show the test of the Fe^{2+} and CN^- ions
In double salts the metal atom/ion exhibits normal valency	The metal ion exhibits two types of valencies such as primary and secondary valency

7. Difference between Crystalline and Amorphous solids. (June-20)

Crystalline Solids	Amorphous Solids
Long range orderly arrangement of constituents	Short range, random arrangement of constituents
Definite Shape	Irregular Shape
Generally crystalline solids are anisotropic in nature	They are isotropic* like liquids
They are true solids	They are considered as pseudo solids (or) super cooled liquids
Definite heat of fusion	Heat of fusion is not definite
They have sharp melting point	Gradually soften over a range of temperature and so can be moulded
Examples: NaCl, diamond etc.,	Examples: Rubber, plastics, glass etc

8. Difference between Isotropy and Anisotropic in solids

Isotropy	Anisotropic
It means uniformity in all directions	Anisotropy is the property which depends on the direction of measurements
In solids state isotropy means having identical values of physical properties such as refractive index, electrical conductance, etc.., in all directions	Crystalline solids are anisotropic and they show different value of physical properties when measured along different direction

9. Difference between the properties of ionic and metallic crystals

Property	Ionic Crystals	Metallic Crystals
Electrical Conductivity	They conduct electricity in the molten state or in aqueous solution but not in solid state	They conduct electricity in solid state as well as in molten state
Binding Forces	It is strong due to electrostatic force of attraction	It may be a weak or strong depending upon the number of valence electrons
Physical Nature	Ionic crystals are hard, but brittle	Metallic crystals are usually hard and malleable.

10. Distinguish between Hexagonal Close Packing (hcp) and Cubic Close Packing (ccp).

Hexagonal Close Packing (hcp)	Cubic Close Packing (ccp)
ABA arrangement	ABC arrangement
The spheres of the third layer is exactly aligned as first layer	The sphere of third layer is not aligned with those of either the first or second layer
The hexagonal close packing is based on hexagonal unit cells with sides of equal length	The cubic close packing is based on the face centred cubic unit cell
Tetrahedral voids of the second layer are covered by the sphere of the third layer	Octahedral voids of the second layer are covered by the sphere of the third layer
The unit cell of hexagonal close packing has 6 spheres	The unit cell of cubic close packing has 4 spheres
This type of packing in found in metals like Mg, Zn.	This type of packing is found in metals like Cu, Ag.

11. Distinguish between Tetrahedral and Octahedral Voids

Tetrahedral Voids	Octahedral Voids
When a sphere of second layer (b) is above the void (X) of the first layer (a), tetrahedral voids is formed	When the voids (Y) in the first layer (a) are partially covered by the spheres of layers (b), (a) octahedral void is formed
If the number of the close packed spheres be 'n' then, the number of tetrahedral voids generated is equal to 2n	If the number of close packed spheres be 'n' then the number of octahedral voids generated is equal to n
This constitutes four spheres, three on the lower (a) and one on the layer (b)	This constitutes six spheres, the lower layer (a) and three in the upper layer (b)
When the centers of these four spheres are joined, a tetrahedron is formed	When the centers of these six spheres are joined, an octahedron is formed
The co-ordination number is 4	The co-ordination number is 6

12. Difference between rate and rate constant of a reaction.

Rate of a reaction	Rate constant of a reaction
It represents the speed at which the reactants are converted into products at any instant	It is a proportionality constant
It is measured as decrease in the concentration of the reactants or increase in the concentration of products	It is equal to the rate of reaction, when the concentration of each of the reactants is unity
It depends on the initial concentration of reactants.	It does not depend on the initial concentration of reactants

13. Difference between order and molecularity of a reaction. (Sep-22)

Order of a reaction	Molecularity of a reaction
It is the sum of the powers of concentration terms involved in the experimentally determined rate law	It is the total number of reactant species that are involved in an elementary step
It can be zero (or) fractional (or) integer	It is always a whole number, cannot be zero or a fractional number
It is assigned for a overall reaction	It is assigned for each elementary step of mechanism

14. Distinguish between Lewis acid and Lewis bases.

Lewis acid	Lewis bases
Electron deficient molecules such as BF_3 ,$AlCl_3$,BeF_2 etc...	Molecules with one (or) more lone pairs of electrons. NH_3 ,H_2O ,R-O-H ,R-O-R , R - NH_2
All metal ions Examples: Fe^{2+} ,Fe^{3+} ,Cr^{3+},Cu^{2+} etc...	All anions F^- ,Cl^- ,CN^- ,SCN^- ,SO_4^{2-} etc…
Molecules that contain a polar double bond Examples : SO_2 ,CO_2 ,SO_3 etc..	Molecules that contain carbon – carbon multiple bond Examples: $CH_2=CH_2$, $CH\equiv CH$ etc...
Molecules in which the central atom can expand its octet due to the availability of empty d – orbitals Example: SiF_4 ,SF_4 ,$FeCl_3$ etc…	All metal oxides CaO ,MgO ,Na_2O etc...
Carbonium ion $(CH_3)_3\,C^+$	Carbanion CH_3^-

15. **Write the difference between a sol and a gel.**

Sol	Gel
The liquid state of a colloidal solution is called sol	The solid or semi-solid (Jelly like) stage of a colloidal solution is called gel
The sol does no have a definite structure	The gel possess honeycomb like structure
The dispersion medium of the sol may be water (hydrosol) or alcohol (alcosol)	The dispersion medium of gel will be hydrated colloid particles
The sol can be converted to gel by cooling	The gel can be converted to sol by heating
The sol can be easily dehydrated	The gel cannot be dehydrated
The viscosity of the sol is very low	The viscosity of the gel is very high
Sol is categorized into lyophobic and lyophillic sols.	There is no such classification of gel

16. Differentiate Physisorption and Chemisorption.

Physisorption	Chemisorption
It is instantaneous	It is very slow
It is non-specific	It is very specific depends on nature of adsorbent and adsorbate
In Physisorption, when pressure increases the extent of adsorption increases	Chemical adsorption is fast with increase pressure, it can not alter the amount
Physisorption decreases with increase in temperature.	When temperature is raised chemisorption first increases and then decreases.
No transfer of electrons	Chemisorption involves transfer of electrons between the adsorbent and adsorbate
Heat of adsorption is low in the order of 40kJ/mole.	Heat of adsorption is high i.e., from 40- 400kJ/mole
Multilayer of the adsorbate is formed on the adsorbent	Monolayer of the adsorbate is formed
It occurs on all sides.	Adsorption occurs at fixed sites called active centers. It depends on surface area
Activation energy is insignificant	Chemisorption involves the formation of activated complex with appreciable activation energy.

17. **Give any five chemical difference between aromatic and aliphatic ether.**

Aromatic Ether	Aliphatic Ether
Comparatively high boiling point	Volatile liquid
Used in perfumery	Used as anesthetic
Not used as solvent	Used as solvent
Cannot be used as a substitute for petrol	Mixed with alcohol, used as a substitute for petrol
On heating with HI form phenol and CH_3I only	It forms C_2H_5OH and C_2H_5I
With nitrating mixture forms nitro anisols	Nitration does not take place
Does not form peroxide easily	Forms peroxide in air

18. **Distinguish between Nitro form and Aci Form**

Nitro Form	Aci Form
Less acidic	More acidic
Dissolves in NaOH slowly	Dissolves in NaOH instantly
Decolourises $FeCL_3$ solution	With $FeCl_3$ gives reddish brow colour
Electrical conductivity is low	Electrical conductivity is high

19. **Give any five difference between DNA and RNA.**

DNA	RNA
It is mainly present in nucleus, mitochondria and chloroplast	It is mainly present in cytoplasm, nucleolus and ribosomes
It contains deoxyribose sugar	It contains ribose sugar
Base pair A = T , G ≡ C	Base pair A = U , C ≡ G
Double stranded molecules	Single stranded molecules
It's life time is high	It is Short lived
It is stable and not hydrolyzed easily by alkalis	It is unstable and hydrolyzed easily by alkalis
It can replicate itself	It cannot replicate itself. It is formed from DNA.

20. How do you distinguish formic acid and acetic acid.

Formic Acid	Acetic Acid
It reduces Tollen's reagent and Fehling's solution	It does not reduce Tollen's reagent and Fehling's solution
When it is heated above 433K under pressure it gives CO_2 and H_2	It is stable to heat
When it is heated with Conc.H_2SO_4 , it gives CO and H_2O	It does not react with Conc.H_2SO_4
It does not react with Cl_2 in the pressure of P/I_2	It reacts with Cl_2 in the presence of P/I_2 to form mono, di and tri chloro acetic acid
It undergoes intramolecular dehydration when treated with P_2O_5 to give CO and H_2O	It undergoes intramolecular dehydration when treated with P_2O_5 to give acetic anhydride
Calcium salt of formic acid on dry distillation gives formaldehyde	Calcium acetate on dry distillation gives acetone
It contains both Aldehyde group and Carboxylic acid group	It contains only carboxylic acid group

21. How will you distinguish between primary, secondary and tertiary aliphatic amines?

Reaction	Primary amine RNH_2	Secondary amine R_2NH	Tertiary amine R_3N
HNO_2	Forms alcohol	Forms N-nitroso amine	Forms salt
$CHCl_3$/KOH	Forms carbylamines	No reaction	No reaction
CS_2 / $HgCl_2$	Forms alkyl isothiocyanate	No reaction	No reaction
Acetyl Chloride	Forms N-alkyl acetamide	Forms N,N-dialkylacetamide	No reaction
Diethyloxalate	Forms solid dialkyloxamide	Forms liquid N,N-di-alkyl oxamic acid	No reaction

22. Give the difference between primary and secondary structure of protein.

Primary Structure	Secondary Structure
Relative arrangements (Sequence) of amino acids	The amino acids in the poly-peptide chain form highly regular shapes through the hydrogen bond between carbonyl oxygen and amine hydrogen
It is essential as even small changes can alter the overall structure and function of a protein	α-helix and β-strands or sheets are two most common sub-structures formed by the proteins

23. What are reducing and non-reducing sugars ?

Reducing Sugars	Non-Reducing Sugars
A reducing sugar is a sugar has a free aldehyde or ketone that can act as a reducing agent	A non-reducing sugar does not have a free aldehyde or ketone, so it cannot act as a reducing agent
It reduces Tollen's reagent to metallic silver and Fehling's solution to red cuprous oxide	But a non-reducing sugar does not reduce Tollen's reagent or Fehling's solution
Ex: Glucose	Ex: Sucrose

24. Distinguish between nucleoside and nucleotides.

Nucleosides	Nucleotides
The molecule without the phosphate group is called a nucleoside	A nucleotide is derived form a nucleoside by the addition of a molecule of phosphoric acid
Sugar + Base $\longrightarrow$ Nucleoside	Nucleoside + Phosphate $\longrightarrow$ Nucleotide

25. Give any three difference between Hormones and Vitamins.

Hormones	Vitamins
Hormone is an organic substance secreted by one tissue into the blood stream and induces a physiological response in other tissues	Vitamins are small organic compounds that cannot be synthesized bu our body but are essential for certain function
They are produced in the ductless glands. Ex: Testes of male and Ovaries of female	They are not produced in the body but have to be supplied through diet
Hormone have no catalytic action	Vitamins have catalytic action
Deficiency causes metabolic disorders	Their deficiency or excess cause diseases
Ex: Insulin	Ex: Vitamin (A, B, C, D, E, & K)

26. **Distinguish between Fibrous and Globular Protein.**

Fibrous Protein	Globular Protein
Linear Structure	Spherical shape
Insoluble in water	Soluble in water
Used as structural protein	Possess many functions including catalysis
Ex: Keratin, Collagen	Ex: Myoglobin, Insulin

27. How do antiseptic differ from disinfectants ?

Antiseptics	Disinfectants
Stop or slow down the growth of microorganisms	Stop or slow down the growth of microorganisms
Applied to living tissue, such as wound, cuts, etc..,	Generally used on inanimate objects such as floors, drainage etc..,
Examples: Hydrogen Peroxide (H_2O_2), Povidene - iodine, benzalkonium chloride	Example: Chlorine compounds, alcohol, hydrogen peroxide

28. Name the two compounds starch is made up, how do they differ form each other ?

Amylose	Amylopectin
It is linear condensation polymer	It is a highly branched polymer
It is composed of unbranched chains of up-to 4000 α-D Glucose molecules	It contains chain up-to 10000 α-D Glucose molecules
Water soluble	Insoluble in water
With iodine, it gives blue colour	With iodine, it gives a purple colour

29. Differentiate between molecular structure and behaviour of thermoplastic and thermosettingplastic. Give one example of each type.

Thermoplastic	Thermosetting Plastic
Linear Polymer	Cross Linked Polymer
They become soft on heating and hard on cooling	They don't become soft on heating but set to an in-fusible mass upon heating
They can be re-moulded	They cannot be re-moulded
Ex: Polythene, PVC, polystyrene	Ex: Bakelite, melemine, Formaldehyde

30. **Distinguish Glucose and Fructose.**

Glucose	Fructose
It contains 4 asymmetric carbon atoms	It contains 3 asymmetric carbon atoms
Dextro rotatory	Levo rotatory
Glucose reduces Tollen's reagent and Fehling's solution. This indicated the presence of aldehyde group	Fructose does not reduce Tollen's reagent and Fehling's solution. This indicates the absence of aldehyde group. It contains ketone group.
Glucose is aldohexose	Fructose is keto hexose
Mild oxidation of glucose with bromine water gives gluconic acid	Fructose is not oxidized by bromine water
Further oxidation of glucose with Conc. Gives saccharic acid. This indicates the presence of primary alcoholic group	Further oxidation of fructose with gives a mixture of glycollic and tartaric acid since oxidation occurs with rupture of the carbon chain, the carbonyl must be present as a ketone group.

31. **Write the difference between nitro-methane and nitro-benzene**

Nitro-Methane	Nitro-Benzene
It is colourless	It is yellow coloured
It is soluble in water	Insoluble in water
Has pleasant smell	Has smell like bitter almonds
Exhibits tautomerism	Does not exhibits tautomerism
Used as good solvent	Used to prepare explosive Ex: TNT
Undergoes reduction in acidic and neutral medium	Undergoes reduction in acidic , basic, and neutral medium

32. **Differentiate Soap and Detergents.**

Soap	Detergents
Sodium or potassium salt of higher fatty acids	Sodium salt of alkyl hydrogen sulphate or alkyl benzene sulphonic acids
It cannot be used even in hard water and in acidic conditions	It can be used even in hard water and in acidic conditions

33. Distinguish between fat soluble and water soluble vitamins

Fat Soluble Vitamins	Water Soluble Vitamins
Do not dissolve in water	Readily soluble in water
They are stored in fatty tissues and liver	These can't be stored
Ex: Vitamin A, D, E and K	Ex: Vitamin B and C

34. **What is the difference between homogeneous and heterogeneous catalysis ?**

Homogeneous Catalysis	Heterogeneous Catalysis
In a catalyzed reaction, the reactants, products and catalyst are present in the same phase	In a reaction, the reactants and catalyst are present in a different phase
Example: $2SO_2 + O_2 \xrightarrow{NO} 2SO_2$ In this reaction the catalyst NO, reactants SO2 and O2 and the products, SO3 are present in the gaseous state	Example: $2SO_2 + O_2 \xrightarrow{Pt} 2SO_2$ In the manufacture of sulphuric acid by contact process SO3 is prepared by the action of SO2 and O2 in the presence of Pt as a catalyst

WITH REGARDS,
SS PRITHVI,
PRIT-EDUCATION.