

Bio Chemistry Interview Questions And Answers Guide.



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Bio Chemistry Job Interview Preparation Guide.

Question # 1

What does Hess law states?

Answer:-

Hess law states that the heat of reaction is same whether the reaction takes place in one or several states. Therefore $Q=Q_1+Q_2+Q_3+\dots$

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Question # 2

What is the lattice energy of NaCl?

Answer:-

-796.69kJ

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Question # 3

Which branch of science deals with the transformation of chemical energy into electrical energy and vice versa?

Answer:-

Electrochemistry

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Question # 4

In electronic conductors, what is the reason for flow of current?

Answer:-

Reason for flow of current is that movement of free electrons from higher negative potential to a lower positive potential region.

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Question # 5

How can you determine the dissociation constants of electrolyte?

Answer:-

The strength of the Electrolyte

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Question # 6

Define first law of Faraday

Answer:-

The amount of substance liberated, dissolved, or deposited at an electrode is directly proportional to the quantity of electricity passed through the electrolyte.

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Question # 7

What is Galvanic cell?

Answer:-

A Galvanic cell or voltaic cell or electrochemical cell is a system in which a spontaneous chemical oxidation- reduction occurs and generates electrical energy.

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Question # 8



Which electrode acts as reference electrode and gives its potential value?

Answer:-

Standard hydrogen electrode was taken as reference electrode whose potential is assumed zero.

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Question # 9

Nelsons equation for any cell reaction is given by.

Answer:-

$E = E_o + (2.303RT / nF) \log [\text{Oxidation form}] / [\text{reduced form}]$

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Question # 10

To calculate the e.m.f of the cell when does the Nelsons equation is use?

Answer:-

The Nernst equation is useful to calculate the e.m.f of the cell when the concentrations of solution are different from unity.

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Question # 11

Define the Phenomenon catenation. Which element has maximum Catenation ability?

Answer:-

Carbon has maximum catenation ability. The self-linkage of the atoms of elements to produce long chains is called catenation.

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Question # 12

Name the first synthetic organic compound. Who proposed it and from which compound?

Answer:-

The first synthetic organic compound is Urea.

It was prepared by Wohler from ammonium cyanate.

$\text{NH}_4\text{CNO} \rightarrow \text{NH}_2\text{-CO-NH}_2$

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Question # 13

What is function group?

Answer:-

An atom or group of atoms, which determine the characteristic properties of the Substance it, is called functional group.

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Question # 14

What is Isomerism?

Answer:-

Compounds with same molecular formula but different properties are called Isomers and the phenomenon is called Isomerism.

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Question # 15

What is optical Isomerism? Which compounds exhibit optical Isomerism?

Answer:-

Isomers, which differ in the rotation of the plane polarized light, are called Optical Isomerism.

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Question # 16

How can we calculate the number of possible optical Isomers for a given Compound?

Answer:-

2^n -Where n is the number of asymmetric carbon atoms.

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Question # 17

What is racemic mixture? Why it is optically inactive?

Answer:-

Optical Isomers of a substance that are mirror images of each other are called Enantiomers (or) Enantiomorphs. Ex: d and L " Lactic acid

Optical Isomers of a substance that are not mirror images of each other are called Diastereomers. Ex: d-Tartaric and meso " Tartaric acids



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Question # 18

What are dextrorotary compounds and Levi rotary compounds?

Answer:-

Compounds that rotate the plane polarized light to the right are called Dextro rotatory compounds and that rotate the plane polarized light to the left are called Leavo rotatory.

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Question # 19

What are enantiomorphs and diastereomers ?

Answer:-

Optical Isomers of a substance that are mirror images of each other are called Enantiomers (or) Enantimorphs. Ex: d and L " Lactic acid
Optical Isomers of a substance that are not mirror images of each other are called Diastereomers. Ex: d-Tartaric and meso " Tartaric acids

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Question # 20

Define Geometrical Isomerism.

Answer:-

Isomers, which differ in the orientation of groups around the double bounded carbon atoms, are called geometrical Isomers. It is also called as Cis-Trans Isomerism.

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Question # 21

Which form of isomers of a substance is more stable?

Answer:-

Trans -Isomer of a substance is more stable than Cis-Isomer.

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Question # 22

Why ethylene undergoes electrophilic addition reactions?

Answer:-

Ethylene is unsaturated Hydrocarbon. Due to the presence of loosely bound pi electrons between two carbon atoms ethylene $\text{CH}_2=\text{CH}_2$ is more reactive towards addition reactions.

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Question # 23

What is markownikoff's rule?

Answer:-

In addition, of hydrogen halides to the unsymmetrical alkenes, Hydrogen is added to the carbon atom containing more number of hydrogen atoms and halide is added to the carbon atoms containing lesser number of hydrogen atoms.

Ex; $\text{CH}_2=\text{CHBr} + \text{HBr} \rightarrow \text{CH}_3-\text{CH}_2-\text{Br}$

Iso Propyl Bromide

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Question # 24

What is kararch effect?

Answer:-

In the addition of the hydrogen, halide to unsaturated alkenes in the presence of peroxides the halide adds to the carbon atom linked to more number of hydrogen atoms and hydrogen adds to the carbon atom linked to lesser number of hydrogen atoms. This is called Peroxide effect (or) Kharasch effect.

$\text{CH}_3-\text{CH}_2-\text{CH}=\text{CH}_2 + \text{HBr} \xrightarrow{\text{peroxides}} \text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{Br}$

N Propyl bromide

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Question # 25

What is saytzeff's rule?

Answer:-

The formation Alkenes by the dehydration of alcohols (using concentrated H_2SO_4) the hydrogen atom will be removed (to remove as water) from the adjacent carbon atom linked to the less number of hydrogen atoms.

Example: In the dehydration of Butane " 2OI

2Butane is formed

$\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_3 + \text{H}_2\text{O} \xrightarrow{\text{concentrated H}_2\text{SO}_4} \text{CH}_3-\text{CH}=\text{CH}-\text{CH}_3$

But2-ene

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Question # 26

Which type of reactions did Acetylene undergoes?

Answer:-

Acetylene undergoes both additions as well as substitution reactions

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Question # 27

Polymers of vinyl chloride are.

Answer:-

Polymers of Vinyl chloride are called PVC and it is used as plastic.

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Question # 28

What is Hoffman degradation method?

Answer:-

Benz amide on treatment with bromide and Caustic potash produce aniline
 $C_6H_5NH_2 + 2KBr + 2H_2O + K_2CO_3 \rightarrow C_6H_5NH_2 + Br_2 + 4KOH$

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Question # 29

On what structural level of the enzyme (primary, secondary, tertiary, or quaternary) does the enzyme-substrate interaction depend?

Answer:-

The substrate binds to the enzyme in the activation centers. These are specific three-dimensional sites and thus they depend on the protein tertiary and quaternary structures. The primary and secondary structures however condition the other structures and so they are equally important.

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Question # 30

What is the activation center of an enzyme? Is it the key or the lock of the lock and key model?

Answer:-

The activation center is a region of the enzyme produced by its spatial conformation to which the substrate binds. In the lock and key model, the activation center is the lock and the substrate is the key.

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Question # 31

Why can it be said that the enzymatic action is highly specific?

Answer:-

The enzymatic action is highly specific because only specific substrates of one enzyme bind to the activation center of that enzyme. Each enzyme generally catalyzes only a specific chemical reaction.

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Question # 32

What happen to a denaturated enzyme regarding its functionality? How that result can be explained with the help of the lock and key model?

Answer:-

According to the lock and key model, the enzyme functionality depends entirely on the integrity of the activation center, a molecular region with specific spatial characteristics. After the denaturation the spatial conformation of the protein is modified, the activation center is destroyed and the enzyme loses its catalytic activity.

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Question # 33

What are the main factors that alter the speed of enzymatic reactions?

Answer:-

The main factors that change the speed of enzymatic reactions are temperature, pH and substrate concentration (quantity).

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Question # 34

How does the substrate concentration affect the speed of enzymatic reactions?

Answer:-

Initially as substrate concentration increases the speed of the reaction increases, this happens because free activation centers of the enzyme bind to free substrates. Once all activation centers of the available enzymes become bound to their substrates new increments of the substrate concentration will have no effect in the speed of the reaction.

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Question # 35



How does temperature affect the action of enzymes upon their substrates?

Answer:-

There are defined temperature ranges under which enzymes operate. There is a specific temperature-level where the enzymes have maximum efficiency. Therefore, temperature variations affect enzymatic activity and the speed of the reactions they catalyze. In addition, as proteins, enzymes can be denaturated under extreme temperatures.

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Question # 36

Concerning enzymatic reactions how different, are the graphic curve of the variation of the speed of a reaction as function of substrate concentration and the curve of variation of the speed of a reaction as function of temperature?

Answer:-

The curve of variation of speed of the enzymatic reaction as function of growing substrate concentration is a growing curves until the point where it stabilizes due to the saturation of the activation centers of the enzymes.

The curve of variation of speed of the enzymatic reaction as function of growing temperature has a crescent portion, reaches a peak (the optimum temperature) then it decreases, and reaches zero in the point of inactivity of the enzymes by denaturation.

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Question # 37

How is the cooling of organs and tissues for medical transplantations associated with the effect of temperature upon enzymatic reactions?

Answer:-

The molecular degradation during the decomposition of organs and tissues is catalyzed by enzymes. The cooling to adequate temperatures of some organs and tissues destined to transplantation reduces that enzyme activity and thus lessens the natural decomposition process. By the same rational the cooling reduces the metabolic work of cells and prevents that, they degrade their own structures to obtain energy. Elevation of temperature later revert denaturation of enzymes and the organs and tissues also preserved by other specific techniques may be grafted into the receptors.

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Question # 38

Does pH affect the enzyme activity?

Answer:-

The concentration of hydrogen ions in solution affects the enzyme activity. Each enzyme has maximal efficiency under an optimum pH.

Since pH is one of the factors for the denaturation of proteins, if an enzyme is submitted to a pH level under which, it is denaturated there will be no enzymatic activity.

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Question # 39

Do enzymes act better under acid or basic pH?

Answer:-

Most enzymes act in pH between 6 and 8, a range that corresponds to the general acidic level of cells and blood. There are enzymes however, that act only under very acid or very basic pH. Therefore, enzyme activity depends on a pH interval.

In the stomach, for example, the gastric juice has a very low pH, around 2, and there the enzyme pepsin acts intensively digesting proteins. In the duodenum, pancreatic secretions increase the pH of the enteric juice for the action of other digestive enzymes, for example, trypsin.

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Question # 40

Since pepsin is a gastric enzyme does it, has acid or basic optimum pH? What happen to pepsin when it passes to the duodenum?

Answer:-

Pepsin acts within the stomach so its optimum pH is around 2, an acid pH. When the enzyme passes to the duodenum, it meets a higher pH and its enzyme activity ends.

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Question # 41

What are enzyme cofactors?

Answer:-

Some enzymes need other associated molecules to work. These molecules are called enzyme cofactors and they can be, for example, organic ions, like mineral salts, or organic molecules.

Inactive enzymes for not being bound to their cofactors are called apoenzymes. Active enzymes bound to their cofactors are called holoenzymes.

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Question # 42

What is the relation between vitamins and enzyme cofactors?

Answer:-

Many vitamins are enzyme cofactors that cannot be synthesized by the organism and must be obtained from the diet.

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Question # 43

For the enzymatic reaction what is the effect of a substance with the same spatial conformation of an enzymatic substrate? How is this type of substance known?

Answer:-

Substances that resemble substrates can bind to the activation center of enzymes thus blocking the true substrates to bind to these enzymes and paralyzing the enzymatic reaction. Such "fake substrates" are called enzyme inhibitors.

The binding of enzyme inhibitors to enzymes can be reversible or irreversible.

Many medical drugs, for example, some antibiotics, antivirals, antineoplastics, antihypertensives and even sildenafil (trade name Viagra), are enzyme inhibitors that block enzyme activity.

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Question # 44

What is the action mechanism of the antibiotic penicillin?

Answer:-

Penicillin, discovered by the Scottish doctor Alexander Fleming, in 1928, is a drug that inhibits enzymes necessary for the synthesis of peptidoglycans, a constituent of the bacterial cell wall. With the inhibition, the bacterial population stops to grow because there is no new cell wall formation.

Fleming won the Nobel Prize in Medicine for the discovery of penicillin.

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Question # 45

What is the action mechanism of the antiretroviral drugs called protease inhibitors and used against HIV infection?

Answer:-

Protease inhibitors are some of the antiretroviral drugs used to treat HIV infection. Protease is an enzyme necessary for the assembling of the HIV after the synthesis of its proteins within the host cell. The protease inhibitor binds to the activation center of the enzyme blocking the formation of the enzyme-substrate complex and the enzyme activity thus impairing the viral replication.

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Question # 46

What are allosteric enzymes?

Answer:-

Allosteric enzymes are those that have more activation center and to which other substances called allosteric regulators bind.

Allosteric regulators can be allosteric inhibitors or allosteric activators. The interaction between an allosteric enzyme and the allosteric inhibitor disallows the binding of the substrate to the enzyme. The interaction between the allosteric enzyme and the allosteric activator allows the binding of the substrate to the enzyme and sometimes increases the affinity of the enzyme for the substrate. This regulatory phenomenon of the enzyme activity is called allosterism.

Enzyme Activity: allosteric enzymes

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Question # 47

What are zymogens?

Answer:-

Zymogens, or proenzymes, are enzymes secreted in inactive form. Under certain conditions, a zymogen shifts to the active form of the enzyme. Zymogen secretions in general happen because the enzyme activity can harm the secretory tissue.

For example, the pepsinogen secreted by the stomach becomes active under acid pH turning into the enzyme pepsin. Other well-known zymogens are trypsinogen and chymotrypsinogen. Enzymes are secreted by the exocrine pancreas and respectively trypsin and chymotrypsin.

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Question # 48

What are nucleic acids? What is the historic origin of this name?

Answer:-

DNA and RNA, the nucleic acids, are the molecules responsible for the hereditary information that commands the protein synthesis in the living beings. The name "nucleic" derives from the fact that they were discovered (by the Swiss biochemist Friedrich Miescher, in 1869) within the cell nucleus. In that time, it was not known that those substances contained the hereditary information.

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Question # 49

Of what units are, nucleic acids constituted. What are the chemical entities that compose that unit?

Answer:-

Nucleic acids are formed by sequences of nucleotides.

Nucleotides are constituted by one molecule of sugar (ribose in DNA and deoxyribose in RNA) bound to one molecule of phosphate and to one nitrogen-containing base (adenine, uracil, cytosine, or guanine, in RNA, and adenine, thymine, cytosine, and guanine, in DNA).

Nucleic Acid Review - Image Diversity: nucleotide structure nitrogen-containing bases

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Question # 50

What are pentoses? To what organic group do pentoses belong? Are nucleotides formed of only one type of pentose?

Answer:-



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Pentoses are carbohydrates made of five carbons. Deoxyribose is the pentose that constitutes DNA nucleotides and ribose is the pentose that is part of RNA nucleotides.

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Question # 51

Into which two groups can the nitrogen-containing bases that form DNA and RNA be classified? What is the criterion used in that classification?

Answer:-

The nitrogen-containing bases that form DNA and RNA are classified as pyrimidine and purine bases.

By the analysis of the structural formulas of those nitrogen-containing bases, it is possible to realize that three of them, cytosine, thymine and uracil, have only one nitrogenized carbon ring. The others, adenine and guanine, have two nitrogenized associated carbon rings.

Nucleic Acid Review - Image Diversity: pyrimidine bases purine bases

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Question # 52

Which are the nucleotides that bind in the formation of nucleic acids? What is meant by the 5' and 3' extremities of nucleic acids?

Answer:-

The phosphate group of one nucleotide binds to the pentose of the other nucleotide and so on to make the polynucleotide chain.

Each extremity of a DNA or RNA chain can be distinguished from the other extremity according to their terminal chemical entity. The phosphate-ended extremity is called 5'-extremity and the pentose-ended extremity is called 3'-extremity. So DNA or RNA chains can be run along the 5'-3' way or along the 3'-5' way. These ways are important in several biological functions of DNA and RNA since some reactions specifically occur following one way or the other way.

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Question # 53

Bacteria are prokaryotic cells, i.e., they do not have membrane-delimited nucleus. Eukaryotes have cells with delimited nucleus. Where in these types of cells can DNA are found?

Answer:-

In eukaryotic cells, DNA is found within the cell nucleus. In prokaryotic cells, DNA is found dispersed in the cytosol, the fluid space inside the cell. Other DNA molecules can also be found within mitochondria and chloroplasts, specialized organelles of eukaryotic cells.

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Question # 54

Who were James Watson, Francis Crick and Maurice Wilkins?

Answer:-

Watson (North American), Crick (British) and Wilkins (New Zealander) were the discoverers of the molecular structure of DNA, the double helix made of two polynucleotide chains paired by their nitrogen-containing bases. They won the Nobel Prize of Medicine in 1962 for the discovery.

Nucleic Acid Review - Image Diversity: Watson and Crick

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Question # 55

According to the Watson - Crick Model how many polynucleotide chains does a DNA molecule has?

Answer:-

The DNA molecule is formed by two polynucleotide chains bound in antiparallel mode (5'-3' to 3'-5') and forming a helical structure.

Nucleic Acid Review - Image Diversity: DNA double helix

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Question # 56

What is the rule for the pairing of nitrogen-containing bases in the DNA molecule and in the RNA? Is this last question appropriate?

Answer:-

The rule for the pairing of nitrogen-containing bases of the polynucleotide chains that form the DNA molecule is pyrimidine base binds to purine base, under the condition that thymine (T) binds to adenine (A), and cytosine (C) binds to guanine (G).

In RNA, there is no binding between nitrogen-containing bases. That is because RNA is formed of only one polynucleotide chain; differently, DNA is formed of two chains. It is not correct so to question about base pairing in RNA.

Nucleic Acid Review - Image Diversity: DNA base pairing

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Question # 57

What is the numeric relation between pyrimidine and purine bases in the DNA molecule? Is that relation valid in RNA molecules?

Answer:-

The DNA molecule is made of two bound polynucleotide chains that form a helical structure (the double helix). The binding of the two chains is between their nitrogen-containing bases and it always obey the following rules: adenine (A), a purine base, binds with thymine (T), a pyrimidine base, and guanine (G), a purine base, binds to cytosine (C), a pyrimidine base. Therefore in one molecule of DNA there will be same number of adenine (A) and thymine (T) and same number of cytosine (C) and guanine (G). The quantities of purine and of pyrimidine bases so will also be the same in a 50% proportion for each type. The relation $A = T$ and $C = G$, or $A/T = C/G = 1$, is called Chargaff's relation and the pairing rules described above are known as Chargaff's rules.

In RNA, there are not two nucleotide chains. RNA is a simple chain molecule and there is no necessary proportionality of nitrogen-containing bases to form it.

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Question # 58

Which type of chemical bond maintains the pairing of each chain in the DNA molecule?

Answer:-

To form the DNA molecule, purine bases bind to pyrimidine bases by intermolecular bonds called hydrogen bonds. Hydrogen bonds occur when there is hydrogen near one of these electronegative elements: fluorine, oxygen, or nitrogen.

In such conditions hydrogen looks like having, lost electron for those elements and a very strong polarization is created. The highly positive hydrogen attracts pairs of electrons of other molecules making a hydrogen bond.

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Question # 59

What is the name of the DNA duplication process? What is the main enzyme that participates in it?

Answer:-

The process of copying, or duplication, of the DNA molecule is called replication. The enzyme that participates in the formation of a new DNA chain is the DNA polymerase. There are also other important enzymes in the replication process, the helicase, the gyrase and the ligase.

Nucleic Acid Review - Image Diversity: DNA replication

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Question # 60

Why is not it correct to assert that DNA self-replicates?

Answer:-

DNA is not completely autonomous in its duplication process because the replication does not occur without enzymatic activity. Therefore, it is not entirely correct to assert that DNA self-replicates.

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Question # 61

How do the two complementary nucleotide chains of the DNA facilitate the replication process of the molecule?

Answer:-

The fact that the DNA molecule is made of two polynucleotide chains whose nitrogen-containing bases form hydrogen bonds facilitates the duplication of the molecule. During the DNA replication, the binding of the two chains is broken and each of them serves as template for the formation of a new nucleotide sequence along it, with the help of the enzyme DNA polymerase and obeying the pairing rule A-T, C-G. At the end of the process two double helix of DNA are produced, each made of an original template chain and of a new synthesized polynucleotide chain.

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Question # 62

What are the chemical bonds of the DNA molecule that are broken for the replication process to occur?

Answer:-

During the DNA replication, process hydrogen bonds between nitrogen-containing bases of the polynucleotide chains are broken.

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Question # 63

Because of DNA replication, two DNA molecules come to existence. Why is not it correct to assert that two "new" DNA molecules are created? What is the name given to the process concerning that fact?

Answer:-

During replication each chain of the DNA molecule act pairing new nucleotides and after the process, two newly formed chains made with the union of these nucleotides appear. Then two DNA molecules are created, each with one chain from the original molecule and one newly chain formed by new nucleotides. Thus, it is not entirely correct to assert that the replication produces two new molecules of DNA. It is better to affirm that two new half-molecules are created.

For this phenomenon DNA, replication is called semi conservative replication.

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Question # 64

Does DNA replication occur in cell division?

Answer:-

Yes. DNA replication occurs in mitosis as well in meiosis.

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Question # 65

One characteristic of the DNA molecule is its replication capability. What are the consequences of failures during DNA replication?

Answer:-

Ideally, a DNA molecule should replicate in a perfect way. Sometimes however failures in the duplication occur, with alteration (deletion, addition, or substitution) of one or more nucleotides in the molecule.

Those mistakes, or mutations, therefore make changes in the protein synthesis process too. For example, the production of an important protein for cells or tissues may be suppressed new utile or inutile proteins can be created, etc. The mistake in the DNA duplication and the resulting production of altered genetic material are some of the main creative forces for the biological evolution and the diversity of species.

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Question # 66

Where can RNA are found within cells?

Answer:-

In the eukaryote cell nucleus, RNA can be found dispersed in the nuclear fluid, along with DNA, and as the main constituent of the nucleolus. In cytosol (in eukaryotes or in bacteria) RNA molecules can be found free, as structural constituent of ribosomes (organelles specialized in protein synthesis) or even associated to them in the process of making proteins. Mitochondria and chloroplasts also have their own DNA and RNA.

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Question # 67

Does RNA molecule have two polynucleotide chains likewise DNA?

Answer:-

Only DNA has two polynucleotide chains. RNA is formed just by one polynucleotide chain.
Nucleic Acid Review - Image Diversity: RNA molecule

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Question # 68

How the production of RNA called? What is the enzyme that catalyzes the process?

Answer:-

The making of RNA from information contained in DNA is called transcription. The enzyme that catalyzes the process is the RNA polymerase.

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Question # 69

What are similarities and differences between the transcription process and the replication processes?

Answer:-

A DNA polynucleotide chain serves as template in replication (DNA duplication) as well in transcription (RNA formation). In both processes, the pairing of the two-polynucleotide chains of the original DNA molecule is broken by the breaking of hydrogen bonds for the chains to be exposed as templates. The reaction is catalyzed by specific enzymes in transcription and in replication.

In replication, the enzyme DNA polymerase catalyzes the formation of a new polynucleotide chain using free nucleotides in solution and putting them in the new chain according to the DNA template exposed and to the rule A-T, C-G. In transcription, the enzyme RNAPolymerase makes a new polynucleotide chain according to the DNA template exposed obeying, however, the rule A-U, C-G.

In replication, the original template DNA chain is kept bound by hydrogen bonds to the newly formed DNA chain and a new DNA molecule is then created. In transcription the association between the template DNA chain and the newly formed RNA is undid and RNA constituted of only one polynucleotide chain is liberated.

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Question # 70

What are the three main types of RNA? What is meant by heterogeneous RNA?

Answer:-

Messenger RNA, or mRNA, transfer RNA, or tRNA, and ribosomal RNA, or rRNA, are the three main types of RNA.

The newly formed RNA molecule, a precursor of mRNA, is called heterogeneous RNA (hnRNA). The heterogeneous RNA bears portions called introns and portions called exons. The hnRNA is processed in many chemical steps, introns are removed, and mRNA is created formed only of exons, the biologically active nucleotide sequences.

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Question # 71

Concerning their biological function what is the difference between DNA and RNA?

Answer:-

DNA is the source of information for RNA production (transcription) and thus for protein synthesis. DNA is still the basis of heredity due to its replication capability. The messenger RNA is the template for protein synthesis (translation). In this process, tRNA and rRNA also participate since the first carries amino acids for the polypeptide chain formation and the second is a structural constituent of ribosomes (the organelles where proteins are made).

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Question # 72

Is there any situation in which DNA is made based on a RNA template? What is the enzyme involved?

Answer:-

The process in which DNA is synthesized having as template a RNA chain is called reverse transcription. In cells infected by retroviruses (RNA viruses, like the AIDS or SARS viruses) reverse transcription occurs and DNA is made from information contained in the viral RNA.

Viral RNA within the host cell produces DNA with the help of an enzyme called reverse transcriptase. Based on that DNA the host cell then make viral proteins, new virus are assembled and viral replication occurs.

Nucleic Acid Review - Image Diversity: reverse transcription

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Question # 73

What is the primary structure of a protein? What is the importance of the primary structure?

Answer:-



The primary protein structure is the linear sequence of amino acids that form the molecule.

The primary structure is the basis of the protein identity. Modification of only one amino acid of the primary structure creates a different protein. This different protein can be inactive or even can have other biological function.

Protein Structure Review - Image Diversity: protein primary structure

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Question # 74

What is the secondary structure of a protein?

Answer:-

The secondary protein structure is generated by the manner its amino acids interact through intermolecular bond. These interactions create a spatial conformation of the polypeptide filament. The two most studied secondary conformations of proteins are the alpha helix and the beta-sheet.

Protein Structure Review - Image Diversity: protein secondary structure

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Question # 75

What is the difference between the alpha helix and the beta-sheet protein conformations?

Answer:-

Alpha helix and beta-sheet conformations are the two main types of secondary structure of a protein molecule. According to the primary protein structure, its secondary structure can be of one type or other.

In the alpha-helix structure, the polypeptide curls longitudinally by the action of hydrogen bonds forming a spiral, or helix. In the beta-sheet conformation, the protein is more distended and the hydrogen bonds form a zig-zag-shaped protein structure called B-strand. Many assembled beta-strands make a beta-sheet.

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Question # 76

What is the tertiary structure of a protein? What are the main types of tertiary structure?

Answer:-

The tertiary protein structure is a spatial conformation additional to the secondary structure in which the alpha helix or the beta-sheet folds up itself. The forces that keep the tertiary structure generally are interactions between the α -R groups of the amino acids and between other parts of the protein and water molecules of the solution.

The main types of tertiary structure of proteins are the globular proteins and the fibrous proteins.

Protein Structure Review - Image Diversity: protein tertiary structure

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Question # 77

What is the quaternary structure of a protein? Do all proteins have quaternary structure?

Answer:-

The quaternary protein structure is the spatial conformation due to interactions among polypeptide chains that form the protein.

Only those proteins made of two or more polypeptide chains have quaternary structure. Insulin (two chains), hemoglobin (four chains), and the immunoglobulins (antibodies, four chains) are some examples of protein having quaternary structure.

Protein Structure Review - Image Diversity: protein quaternary structure

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Question # 78

What is protein denaturizing? Is there any change in the primary structure when a protein is denaturized?

Answer:-

Secondary, tertiary, and quaternary structures of proteins are spatial structures. Denaturizing is modification in any of these spatial structures that makes the protein deficient or biologically inactive.

After denaturizing, the primary protein structure is not affected.

Protein Structure Review - Image Diversity: denaturized protein

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Question # 79

How can denaturizing be classified regarding its reversibility?

Answer:-

Protein denaturizing can be a reversible or an irreversible process, i.e., it can be possible or impossible to make the protein regain its original spatial conformation.

[Read More Answers.](#)

Question # 80

What are some factors that can lead to protein denaturizing?

Answer:-

Protein denaturizing can be caused by temperature variation, pH change, and changes in the concentration of surrounding solutes and by other processes. Most proteins are denatured after certain elevation of temperature or when in very acid or very basic solutions. This is one of the main reasons, why it is necessary for the organisms to keep adequate temperature and stable pH.

[Read More Answers.](#)



Question # 81

Is it expected a change in the primary, in the secondary or in the tertiary structure of a protein to produce more functional consequences?

Answer:-

Any change of the protein structure is relevant if it alters its biological activity. Changes in the primary protein structure are more important because they are modifications in the composition of the molecule and such composition determines all other structures of the protein.

[Read More Answers.](#)

Question # 82

In sickle cell anemia, a hereditary disease, there is substitution of one amino acid by other in one of the four-polypeptide chains of hemoglobin. In this case, are all of the structural levels of the protein modified?

Answer:-

In sickle cell disease, there is change in the primary protein structure of one of the polypeptide chains that form hemoglobin: the amino acid glutamic acid is substituted by the amino acid valine in the α chain. The spatial conformation of the molecule in addition is also affected and modified by this primary modification and the modification creates a different (sickle) shape of the red blood cells.

Modified, sickled, red blood cells sometimes aggregate and obstruct the peripheral circulation causing tissue hypoxia and the pain crisis typical of sickle cell anemia.

[Read More Answers.](#)

Question # 83

What is the difference between essential and natural amino acids?

Answer:-

Essential amino acids are those that the organism is not able to synthesize and that need to be ingested by the individual. Natural amino acids are those that are produced by the organism.

There are living species that produce every amino acid they need, for example, the bacteria *Escherichia coli* that does not have essential amino acids. Other species, like humans, need to obtain essential amino acids from the diet. Among the twenty different known amino acids that form proteins, humans can make twelve of them and the remaining eight needs to be taken from the proteins they ingest with food.

The essential amino acids for humans are phenylalanine, histidine, isoleucine, lysine, methionine, threonine, tryptophane and valine.

[Read More Answers.](#)

Question # 84

What are respectively some remarkable functions of myosin, CD4, albumin, keratin, immunoglobulin, reverse transcriptase, hemoglobin, and insulin?

Answer:-

Myosin is a protein that associated to actin produces the muscular contraction. CD4 is a membrane protein of some lymphocytes, the cells that are infected by HIV. Albumin is an energy storage protein and an important regulator of the blood osmolarity. Keratin is a protein with structural function present in the epidermis and skin appendages of vertebrates. Immunoglobulins are the antibodies, specific proteins that attack and inactivate strange agents that enter the body. Reverse transcriptase is the enzyme responsible for the transcription of RNA and formation of DNA in the life cycle of retroviruses. Hemoglobin is the protein that carries oxygen from the lungs to the cells. Insulin is a hormone secreted by the pancreas that participates in the metabolism of glucose.

[Read More Answers.](#)

Question # 85

What are catalysts?

Answer:-

Catalysts are substances that reduce the activation energy of a chemical reaction, facilitating it or making it energetically viable. The catalyst increases the speed of the chemical reaction.

[Read More Answers.](#)

Question # 86

What amount of catalyst is consumed in the reaction it catalyzes?

Answer:-

Catalysts are not consumed in the reactions they catalyze.

[Read More Answers.](#)

Question # 87

What are enzymes? What is the importance of enzymes for the living beings?

Answer:-

Enzymes are proteins that are catalysts of chemical reactions. From Chemistry, it is known that catalysts are non-consumable substances that reduce the activation energy necessary for a chemical reaction to occur.

Enzymes are highly specific to the reactions they catalyze. They are of vital importance for life because most part of chemical reaction of the cells and tissues are catalyzed by enzymes. Without enzymatic action, those reactions would not occur or would not happen in the required speed for the biological processes in which they participate.

[Read More Answers.](#)

Question # 88

What is meant by substrates of enzymatic reactions?

Answer:-

Substrates are reagent molecules upon which enzymes act.



The enzyme has spatial binding sites for the attachment of its substrate. These sites are called activation centers of the enzyme. Substrates bind to these centers forming the enzyme-substrate complex.

Enzyme Activity: enzyme-substrate complex

[Read More Answers.](#)

Question # 89

What are the main theoretical models that try to explain the formation of the enzyme-substrate complex?

Answer:-

There are two main models that explain the formation of the enzyme-substrate complex the lock and key model and the induced fit model.

In the lock and key model, the enzyme has a region with specific spatial conformation for the binding of the substrate. In the induced fit model, the binding of the substrate induces a change in the spatial configuration of the enzyme for the substrate to fit.

Enzyme Activity: lock and key model induced fit model

[Read More Answers.](#)

Question # 90

How does the formation of the enzyme-substrate complex explain the reduction of the activation energy of chemical reactions?

Answer:-

The enzyme possibly works as a test tube within which reagents meet to form products. With the facilitation of the meeting provided by enzymes it is easier for collisions between reagents to occur and thus the activation energy of the chemical reaction is reduced. This is one of the explanatory hypotheses.

[Read More Answers.](#)

Question # 91

Which equation gives the relation between specific rate (k) and Temperature?

Answer:-

Arrhenius equation $K = Ae^{-E_a / RT}$

[Read More Answers.](#)

Question # 92

In some reactions, Rate of reaction is directly proportional to.

Answer:-

Concentration of catalyst

[Read More Answers.](#)

Question # 93

Catalyst used in Bio-Chemical reactions is called.

Answer:-

Enzymes

[Read More Answers.](#)

Question # 94

Reactions catalyzed by light are called as.

Answer:-

Photo catalyzed or Photosensitised reactions

[Read More Answers.](#)

Question # 95

Define order of reaction

Answer:-

The order of reaction is the number of moles whose concentrations determine the rate of a reaction at a given temperature

[Read More Answers.](#)

Question # 96

Give the integrated equation for first order reaction.

Answer:-

$K = (2.303 / t) * \log (a / a-x)$

[Read More Answers.](#)

Question # 97

Rate equation of first order reaction is.

Answer:-

$dx/dt = K * (a-x)$

where a is the initial concentration of reactants



Δx is the amount reacted in time t seconds

[Read More Answers.](#)

Question # 98

What is Threshold energy?

Answer:-

The minimum amount of energy required for the reaction to take place is called threshold energy.

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Question # 99

What is activation energy?

Answer:-

The difference between Threshold energy and average energy of the molecules is called activation energy.

[Read More Answers.](#)

Question # 100

In a chemical reaction, the rate of reaction the greater will be.

Answer:-

The activation energy

[Read More Answers.](#)

Question # 101

How do you define the molecularity of a reaction?

Answer:-

The number of species participating in the slowest step of the reaction is called molecularity of the reaction.

[Read More Answers.](#)

Question # 102

Define Equilibrium state

Answer:-

The chemical reaction at one time the rate of forward and backward reaction becomes equal that state is called Equilibrium state.

[Read More Answers.](#)

Question # 103

Who proposed law of mass action? What does it state?

Answer:-

Laws of mass action were proposed by Guldberg and Waage. The rate of chemical reaction is directly proportional to the product of the active masses of the reactants (molar concentrations of the reactants)

[Read More Answers.](#)

Question # 104

What is K_c ?

Answer:-

K_c is the equilibrium constant when the concentrations are expressed in moles/litre

$K_c = \frac{\text{product of concentration ions of products}}{\text{product of concentration ions of reactants}}$

[Read More Answers.](#)

Question # 105

The expression $q = \Delta(E) - W$ is? What does it state?

Answer:-

1st law of thermodynamics may be represented as $q = \Delta E - W$

According to this law, the energy can neither be created nor destroyed, but can be converted into one form to another.

[Read More Answers.](#)

Question # 106

What is Internal energy?

Answer:-

Every substance possesses a definite amount of energy called internal energy or intrinsic energy (E).

[Read More Answers.](#)

Question # 107



How can you determine the reaction, taking place at constant pressure ΔH ?

Answer:-

The difference of Enthalpy's of products and reactants $H = H_p - H_r$

[Read More Answers.](#)

Question # 108

Define heat of Combustion

Answer:-

The amount of heat liberated when one mole of any substance is completely burnt in oxygen is called heat of combustion H is negative for heat of combustion.

[Read More Answers.](#)

Question # 109

Define standard heat of formation

Answer:-

The amount of heat liberated or absorbed when one mole of compound is formed in its standard state from its elements in their standard state is called standard heat of formation (H_f°)

[Read More Answers.](#)

Question # 110

What are the favorable conditions for formation of cations?

Answer:-

- * Low Ionisational potential
- * Lesser Charge
- * More atomic size of atoms forms cations easily
- * Ions having Inert gases configuration formed easily

[Read More Answers.](#)

Question # 111

What is electrophilic addition reaction?

Answer:-

When the attacking species during the addition reaction is Electrophile, it is called electrophilic addition reaction. Ex; $(+)(-)(+)(-)(+)(-)$
 $CH_2Br-CH_2Br + H_2C=CH_2 \rightarrow CH_2Br-CH_2Br + H_2C=CH_2$

[Read More Answers.](#)

Question # 112

What is nucleophilic addition reaction?

Answer:-

When the attacking species during the addition reaction is Nucleophilic, it is nucleophilic addition reaction. Ex; Acetaldehyde cyanohydrin

[Read More Answers.](#)

Question # 113

How do you define free radical addition reaction? Give an example.

Answer:-

When unsaturated compounds undergo addition reactions with free radicals, it is called free radical addition reaction.

Ex; $CH_3-CH=CH_2 + HBr \rightarrow CH_3-CH_2-CH_2Br$

[Read More Answers.](#)

Question # 114

What is addition reaction?

Answer:-

When atoms (or) group of atoms are added, to form more saturated compound it is called addition reaction.

[Read More Answers.](#)

Question # 115

Give the example for electrophilic substitution reaction.

Answer:-

The species, which accepts the electrons, are called Electrophiles (or) Electrophilic reagents.

When the atom (or) group of atoms present in the organic compound is replaced by another atom (or) group of atoms (electrophilic) is called electrophilic substitution reaction.

[Read More Answers.](#)

**Question # 116**

What are the favorable conditions for formation of Anions?

Answer:-

- * High Electron affinity
- * Small size
- Less charge of an atoms form anion more easily

[Read More Answers.](#)

Question # 117

Define lattice energy.

Answer:-

The energy released when one mole of ionic crystal is formed by the combination of the corresponding gaseous (+ve) and (-ve) ions brought from infinite distance is called lattice energy.

[Read More Answers.](#)

Question # 118

What happens if Lattice energy increases?

Answer:-

- * The Strength of ionic bond
- * Stability of the Ionic compound
- * Ease of formation of the Ionic bond Increases

[Read More Answers.](#)

Question # 119

What is Sublimation energy?

Answer:-

The amount of energy required to convert one mole of solid substance to vapor state is called Sublimation energy

[Read More Answers.](#)

Question # 120

What can you calculate by selecting Born-Haber cycle?

Answer:-

Born-Haber cycle is useful for calculation of lattice energy, heat of reaction and electron affinity.

[Read More Answers.](#)

Question # 121

How can energy change in the formation of NaCl be determined?

Answer:-

With the help of Born Haber's cycle

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Question # 122

What is the relation between reaction taking place in one of the several stages and the total amount of energy liberated in the reaction?

Answer:-

The relation between reaction taking place in one of the several stages and the total amount of energy liberated in the reaction is same.

[Read More Answers.](#)

Question # 123

Define limiting radius.

Answer:-

The ratio between the radius of cation and the radius of anion is called Limiting radius.

[Read More Answers.](#)

Question # 124

What is Co-ordination number?

Answer:-

The number of appositively charged ions surrounded a particular ion in an ionic crystal lattice is called co- ordination number

[Read More Answers.](#)

Question # 125

What is structure of NaCl and give the co-ordination number of NaCl?

**Answer:-**

The structure of NaCl is face centered Cubic and Co- ordination number of NaCl is 6

[Read More Answers.](#)

Question # 126

What is the structure of CsCl and give the co-ordination number of CsCl?

Answer:-

The structure of CsCl is Body Centered Cubic and the Co- ordination number of CsCl is 8

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Question # 127

Ionic compound does not show the property of space isomerism, Give the reason?

Answer:-

Ionic bond is Electrostatic. It is non directional, so Ionic compounds does not show the property of Space Isomerism

[Read More Answers.](#)

Question # 128

In double bond, how many sigma and Pi bonds are present in it?

Answer:-

Double bond = 1 Sigma bond and one Pi bond

[Read More Answers.](#)

Question # 129

Among sigma and Pi bonds which is the stronger one

Answer:-

Sigma bond is Stronger than pi bond

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Question # 130

Define polar covalent bond

Answer:-

The covalent bond formed by the unequal sharing of electrons between the two atoms is called polar covalent bond.

[Read More Answers.](#)

Question # 131

What is dipole?

Answer:-

In polar covalent molecule, one atom gets positive charge and the other one gets negative charge hence called dipole.

[Read More Answers.](#)

Question # 132

Covalent bond is directional therefore which covalent property is shown?

Answer:-

Space Isomerism

[Read More Answers.](#)

Question # 133

Which theory explains the paramagnetic nature of oxygen? Who proposed it?

Answer:-

Molecular orbital theory, proposed by Hunds and Mulliken

[Read More Answers.](#)

Question # 134

Define co-ordination covalent bond.

Answer:-

Co-ordination covalent bond is formed by the mutual sharing of pair of electrons between two atoms contributed by only one of the combining atoms.

[Read More Answers.](#)

Question # 135

What does one Debye equals?



Answer:-

10-18 e.s.u $\hat{=}$ " Cm

[Read More Answers.](#)

Question # 136

If a polar molecule has a charge of 4.8×10^{-10} and internuclear distance is 1A then what is its dipole moment?

Answer:-

4.8×10^{-10} e.s.u \times 1A0

$4.8 \times 10^{-10} \times 10^{-8}$

4.8×10^{-18} e.s.u $\hat{=}$ " Cm

= 4.8 Debye

[Read More Answers.](#)

Question # 137

Give the mathematical expression to calculate or measure the percentage of ionic Character.

Answer:-

% of Ionic Character = (Observed dipole moment / Dipole moment of 100% ionic bond)*100

[Read More Answers.](#)

Question # 138

Who proposed VSEPR theory? What does it explain?

Answer:-

VSEPR theory was proposed by Sedgwick and Powell. It explains the shapes of polyatomic molecules.

[Read More Answers.](#)

Question # 139

In water molecule the bond angle decreases from 109.28 to 104.5, why this does happens?

Answer:-

The repulsion between lone pair and lone pair electrons

[Read More Answers.](#)

Question # 140

In NH₃ molecule, the bond angle decreases from 109.28 to 107.3 why does it happen.

Answer:-

The more repulsion between lone pair and bond pair

[Read More Answers.](#)

Question # 141

Define Hybridization.

Answer:-

The distribution of electrons into Hybrid orbitals is as per the Paulis Exclusion principle and the Hunds rule of Maximum Multiplicity.

[Read More Answers.](#)

Question # 142

According to which rule the distribution of electrons into hybrid orbital takes place.

Answer:-

The distribution of electrons into Hybrid orbitals is as per the Paulis Exclusion principle and the Hunds rule of Maximum Multiplicity.

[Read More Answers.](#)

Question # 143

What is the shape of molecules SF₆ and IF₇?

Answer:-

SF₆ is Octahedral

IF₇ is pentagonal Bipyramidal

[Read More Answers.](#)

Question # 144

Give the reason why the water molecule has high Boiling point and melting points.

Answer:-

Due to the presence of Hydrogen bond in water molecule

[Read More Answers.](#)

**Question # 145**

What are the units of bond length?

Answer:-

The intermolecular distance between the bonded atoms in a molecule is called bond length and the units are Angstrom units (Å)

[Read More Answers.](#)

Question # 146

What is the order of C-H bond length in C₂H₆ and C₂H₄ and C₂H₂?

Answer:-

c₂h₆ > c₂h₄ > c₂h₂

[Read More Answers.](#)

Question # 147

Define bond angle.

Answer:-

The angle between the lines joining the nuclei of the bonded atom with a central atom is called bond angle.

[Read More Answers.](#)

Question # 148

IN XeF₄, the bond angle between F-Xe-F is _____.

Answer:-

90 degrees

[Read More Answers.](#)

Question # 149

Define bond energy?

Answer:-

The amount of energy released when one mole of bonds are formed between the corresponding gaseous atoms is called Bond energy.

[Read More Answers.](#)

Question # 150

Define the phenomenon resonance?

Answer:-

When a molecule is represented by two or more nearly equal structures, which differ in the arrangement of electrons, then the molecule is said to exhibit resonance.

[Read More Answers.](#)

Question # 151

Which group of elements is called alkaline earth metals?

Answer:-

1st A group because the oxides and hydrides are alkaline in nature

[Read More Answers.](#)

Question # 152

Among 1A group elements why the element lithium is the most powerful, reducing agent in equivalent state

Answer:-

Due to its low sublimation and hydration energy

[Read More Answers.](#)

Question # 153

Among 1A group metals the lightest metal is _____.

Answer:-

Lithium

[Read More Answers.](#)

Question # 154

Which metal is more metallic in nature among 1A group elements?

Answer:-

Francium

[Read More Answers.](#)

**Question # 155**

Which element in 1A group does not form peroxides?

Answer:-

Lithium

[Read More Answers.](#)

Question # 156

Which property among the following generally increases from top to bottom in a group 1A? 1. Electropositive, Density, Basic nature, classical reactivity

Answer:-

Electropositive, Density, Basic nature, classical reactivity, and solubility generally increase from top to bottom from lithium to caesium.

[Read More Answers.](#)

Question # 157

Which property among the following generally decreases from top to bottom in a group 1A? 1. Electropositive, Density, Basic nature, classical reactivity

Answer:-

Electro affinity, electro negativity, Ionisational potential, melting and boiling points decreases from top to bottom in a group 1A from lithium to caesium

[Read More Answers.](#)

Question # 158

Alkaline metals when dissolved in ammonium (NH₃) act as better conductor and better reducing agent what is the reason behind it?

Answer:-

Due to formation of solvated or Ammoniated electrons

[Read More Answers.](#)

Question # 159

Which element in 1A group is lighter than water?

Answer:-

Lithium, Sodium, and potassium

[Read More Answers.](#)

Question # 160

In the extraction of sodium by carners process the by-products formed are.

Answer:-

Hydrogen and Oxygen

[Read More Answers.](#)

Question # 161

In downs process sodium metal is extracted by the electrolysis of? In nelsons cell NaOH is prepared by electrolysis of.

Answer:-

Electrolysis of Brime solution

[Read More Answers.](#)

Question # 162

What are the raw materials used for the precipitation of Na₂CO₃ by Solvay ammonium Process?

Answer:-

Sodium Chloride, limestone and ammonia

[Read More Answers.](#)

Question # 163

Give the chemical formula for Borax.

Answer:-

(Na₂) B₄ (O₇) .10(H₂) O

[Read More Answers.](#)

Question # 164

Give the formula for Peral Ash.

Answer:-

The formula for Peral Ash is K₂CO₃.

[Read More Answers.](#)

**Question # 165**

What are the compounds used for extraction of Gold and Silver?

Answer:-

NaCN and KCN

[Read More Answers.](#)

Question # 166

Which is the most Abundant Alkaline earth element?

Answer:-

Calcium

[Read More Answers.](#)

Question # 167

Which is the least abundant Alkaline earth element?

Answer:-

Radium

[Read More Answers.](#)

Question # 168

What is the Chemical formula for Epsom salt?

Answer:-

MgSO₄. 7H₂O

[Read More Answers.](#)

Question # 169

Why the 2A group elements are called Alkaline earth elements?

Answer:-

The elements occur in earth and the oxides of these metals are basic in nature hence the name alkaline earth metals.

[Read More Answers.](#)

Question # 170

Give the formula for baking soda.

Answer:-

The formula for baking soda is NaHCO₃.

[Read More Answers.](#)

Question # 171

Dolomite is the ore of which element

Answer:-

Dolomite is an ore of element magnesium (Mg)

Formula (MgCO₃ CaCO₃)

[Read More Answers.](#)

Question # 172

What is the name for magnesium perchlorate and what is its formula?

Answer:-

Magnesium perchlorate is called Anhydron {Mg (ClO₄)₂}

[Read More Answers.](#)

Question # 173

Bleaching powder is obtained when Cl₂ is passed through.

Answer:-

Dry Slake lime

CaOCl₂+H₂O → Ca (OH)₂+Cl₂

[Read More Answers.](#)

Question # 174

What is the ratio of slaked lime and sand in mortar?

Answer:-

Ratio is 1:3



[Read More Answers.](#)

Question # 175

Which elements are present in Electron?

Answer:-

Electron consist of 95 % mg, 5% Zn

[Read More Answers.](#)

Question # 176

Which are the most abundant metal and third abundant element in the earth crust?

Answer:-

Aluminium (Al) (7.28%)

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Question # 177

What is inert pair effect?

Answer:-

The reluctances of ns electrons in the participation of bond formation is called inert pair effect

[Read More Answers.](#)

Question # 178

Name the family of third $\hat{\infty}$ A' group elements

Answer:-

Boron family

[Read More Answers.](#)

Question # 179

In 3rd, name $\hat{\infty}$ A' group elements which is the Non metal

Answer:-

Boron

[Read More Answers.](#)

Question # 180

Among third A group elements which element is best conductor?

Answer:-

Aluminium (Al)

[Read More Answers.](#)

Question # 181

Name the elements for which Cryolite and Pelspar are the ores.

Answer:-

$\text{Na}_3 \text{AlF}_6$ Cryolite

$\text{K}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{SiO}_2$ (or) $\text{K Al Si}_3 \text{O}_8$ Felspar

Both are ores of Aluminium

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Question # 182

What is the process, by which Aluminium is refined?

Answer:-

By Hoopes process

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Question # 183

Which process is used in welding the gaps in railway tracks?

Answer:-

Gold Schmidt's aluminothermic process

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Question # 184

What does Ammonal contain? For what purpose it is used.

**Answer:-**

It is a mixture of ammonium nitrate and aluminium powder is called ammonal, which is used as an explosive in Bombs.

[Read More Answers.](#)

Question # 185

What is Thermite mixture?

Answer:-

A mixture of Fe_2O_3 and ammonium powder in 3:1 ratio is called Thermite mixture.

[Read More Answers.](#)

Question # 186

What are hydrides of boron called?

Answer:-

Boranes

[Read More Answers.](#)

Question # 187

Which Univalent element cannot form Alums and why?

Answer:-

Lithium (Li^+) does not produce alums because of its very small size.

[Read More Answers.](#)

Question # 188

How do we prepare Diborane?

Answer:-

The Diborane (B_2H_6) is prepared by the reduction of BCl_3 with aluminium hydride
 $\text{B}_2\text{H}_6 + 3\text{AlCl}_3 + 3\text{LiAlH}_4 \rightarrow 4\text{BCl}_3 + 3\text{LiAlH}_4$

[Read More Answers.](#)

Question # 189

What is Banana bond? Diborane contains how many banana bonds

Answer:-

In Diborane B-H-B, bridge, which is formed by the sharing of two electrons, is called banana bond or Tau bond. Diborane contains two banana bonds.

[Read More Answers.](#)

Question # 190

Give the formula of Borax. Borax is chemically called as.

Answer:-

Borax $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ is chemically called as hydrated sodium tetra borate

[Read More Answers.](#)

Question # 191

Garnet is the ore of which element. Give its chemical formula.

Answer:-

Garnet is Silicate ore of Aluminium
 $(\text{MgFe})_3\text{Al}_2\text{Si}_2\text{O}_{12}$

[Read More Answers.](#)

Question # 192

How do you call fifth, d^5s^1 group elements collectively?

Answer:-

Pnictogens

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Question # 193

Name the family of fifth d^5s^1 group elements.

Answer:-

Nitrogen Family

[Read More Answers.](#)



Question # 194

Which is the most reactive element in Nitrogen family?

Answer:-

Phosphorous

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Question # 195

How much amount of energy is required to break the Triple bond in nitrogen molecule?

Answer:-

225 Kcal/mole or 945.4 KJ/mole

[Read More Answers.](#)

Question # 196

How many sigma and pi bonds are present in nitrogen formula?

Answer:-

Each nitrogen molecule contain one sigma and 2 Pi bonds

[Read More Answers.](#)

Question # 197

What are the important sources of Phosphorus?

Answer:-

Sources of Phosphorous are Phosphate rocks

* Flourapatite { $2\text{Ca}_3(\text{PO}_4)_2 \text{CaF}_2$ }

* Phosphorite { $\text{Ca}_3(\text{PO}_4)_2$ }

[Read More Answers.](#)

Question # 198

Name two elements, which are Non-metallic in nature in 5th A group?

Answer:-

Nitrogen and Phosphorous

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Question # 199

What is Allotropy?

Answer:-

Allotropy is Nitric acid

[Read More Answers.](#)

Question # 200

Negative oxidation states of nitrogen are because.

Answer:-

Higher Electro negativity

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Question # 201

What is the molecular formula, Structure, and bond angle of Phosphorous?

Answer:-

P₄- Phosphorous molecule (Tetra atomic)

Structure- Tetrahedral

Bond angle $\hat{\text{A}}^\circ$ (60 degrees)

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Question # 202

Allotrope form of phosphorous that conducts electricity is.

Answer:-

Black Phosphorous

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Question # 203

More volatile and least volatile hydrides in 5thA group are.

Answer:-



PH₃-more volatile
NH₃-less volatile

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Question # 204

What is the Anhydride of N₂O₅?

Answer:-

Nitric acid

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Question # 205

Why nitrogen cannot form penta halides?

Answer:-

Because of the absence of d-orbital in its valency shells

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Question # 206

Ortho Phosphoric acid is. Give oxidation no of phosphorous in it.

Answer:-

H₃PO₄-ortho phosphoric acid

Oxidation state of phosphorous is +5

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Question # 207

What is the Super phosphate of lime?

Answer:-

Ca (H₂PO₄)₂ . 2H₂O. Super phosphate of lime is also called as Calcium super Phosphate

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Question # 208

Sixth group elements are called as.

Answer:-

Chalcogens (ore forming elements)

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Question # 209

What is the other name of sulphur?

Answer:-

Brimstone

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Question # 210

Sulphur molecule exists as.

Answer:-

S₈ molecule (octa atomic)

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Question # 211

Which is element exhibit allotrope in the 6thA group?

Answer:-

Sulphur

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Question # 212

Which is the most stable sulphur at room temperature?

Answer:-

Rhombic Sulphur

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Question # 213



Which oxo acids of sulphur contain S-S bonds?

Answer:-

Thio acids

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Question # 214

Thio sulphuric acid is. What are the nature of acid and how many OH? Groups are present in it.

Answer:-

Thio Sulphuric acid is $\text{H}_2\text{S}_2\text{O}_3$

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Question # 215

$\text{H}_2\text{S}_2\text{O}_7$ is. Oxidation state of sulphur in it is.

Answer:-

$\text{H}_2\text{S}_2\text{O}_7$ is Di (or) pyro Sulphuric acid and oxidation state of Sulphur is +6

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Question # 216

Oil of Vitriol and king of chemicals is called.

Answer:-

H_2SO_4 Sulphuric acid

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Question # 217

What is the formula of Hypo in Oxidation state of sulphur?

Answer:-

The formula of Sodium Thio Sulphate is $\text{Na}_2\text{S}_2\text{O}_3$. H_2O is called as hypo Oxidation state of Sulphur in it is +6 Or -2

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Question # 218

How many elements are there in 3d-series of first transition series?

Answer:-

Ten elements from Sc ($Z=21$) to Zn ($Z=30$) or {Sc to Zn (zinc)}

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Question # 219

In 3d-series, which two elements exhibit an anomalous configuration?

Answer:-

Chromium Cr($Z=24$) = [Ar] $4s^1 3d^5$

Copper(Cu)($Z=29$) = [Ar] $4s^1 3d^{10}$

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Question # 220

In transition series the element with maximum Ionization energy is.

Answer:-

Zinc due to stable electronic configuration

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Question # 221

What is the element in third series the element with maximum oxidation state?

Answer:-

Mn manganese +7-oxidation state

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Question # 222

Why Fe^{3+} ion is more stable than Fe^{2+} ion is?

Answer:-

Because of stable, half filled 3 d5 electronic configurations in Fe^{3+}

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**Question # 223**

Magnetic property exhibited by which of the following element? Fe, Co, Ni

Answer:-

Ferro magnetic

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Question # 224

Why the transition metal ions or compounds exhibit color?

Answer:-

Due to incomplete partially filled d- orbitals

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Question # 225

In which oxidation state chromium exhibit different color?

Answer:-

Chromium is Blue in +2 states, Green in +3 states and Yellow in +6 state.

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Question # 226

The bond formed between the transition metal ion and ligand is?

Answer:-

Co-ordination covalent bond

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Question # 227

Transitional metal Ions can form complex compounds by.

Answer:-

By accepting the lone pair of electrons from ligand

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Question # 228

What is the oxidation number of transitional metals in carbonyl Compounds is?

Answer:-

Zero

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Question # 229

Define Raoult's law

Answer:-

The relative lowering of vapor pressure of a dilute solution of a non volatile solute is equal to the mole fraction of the solute

$-P / = n / n+N$

n = number of moles of solute

N= number of moles of solvent

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Question # 230

Define Ionic product of water. What is its value?

Answer:-

The product concentrations H^+ and OH^- in pure water in aqueous solutions at a given temperature is known as Ionic Product of water. Its value is 1.0×10^{-14} moles² / litre².

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Question # 231

What is PH? What are the units of PH?

Answer:-

PH is the negative logarithm of the hydrogen Ion Concentration expressed in moles/liter of aqueous solution.

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Question # 232

PH of buffer solution is calculated by.

Answer:-



Henderson's equation

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Question # 233

Name the best indicator

Answer:-

Phenolphthalein, PH range 8.3 to 10.0

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Question # 234

Chemical kinetics deals with study of.

Answer:-

Rates and mechanisms of chemical and Biochemical reactions

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Question # 235

What does Thermodynamics helps in predicting?

Answer:-

Predicting the feasibility of reaction and does not indicate the rate of chemical reaction

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Question # 236

What does the expression $-dc/dt$ indicates?

Answer:-

Rate of reaction can be expressed as $-dc/dt$ where dc is small decreasing concentration in time dt seconds, (-) sign indicates that the concentration decreases with time.

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Question # 237

For every 10 degrees rise of temperature, the rate of reaction is generally.

Answer:-

Doubled

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