

Biochemistry Job Interview Questions And Answers



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Biochemistry Interview Questions And Answers Guide.

Question - 1:

Explain Who proposed law of mass action? What does it states?

Ans:

Laws of mass action were proposed by Gulberg 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)

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Question - 2:

Explain Threshold energy?

Ans:

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

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Question - 3:

Explain What are the raw materials used for the precipitation of Na_2CO_3 by Solvay ammonium Process?

Ans:

Sodium Chloride, limestone and ammonia

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Question - 4:

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

Ans:

Electrochemistry

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Question - 5:

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

Ans:

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 - 6:

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

Ans:

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 - 7:

Explain activation energy?

Ans:

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

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Question - 8:

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

Ans:

The difference of Enthalpies of products and reactants $H=H_p-H_r$

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Question - 9:

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

Ans:

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.

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Question - 10:

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

Ans:

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 - 11:

Explain Why nitrogen cannot form penta halides?

Ans:

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

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Question - 12:

What is lattice energy?

Ans:

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.

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Question - 13:

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

Ans:

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 - 14:

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

Ans:

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 - 15:

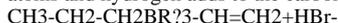
Explain kararch effect?

Ans:

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.



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Question - 16:

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

Ans:

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 - 17:

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

Ans:

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 - 18:

What is chemical formula for Borax?

Ans:



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Question - 19:

Explain and Define standard heat of formation

Ans:

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 (ΔH_f°)

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Question - 20:

Explain What does Thermodynamics helps in predicting?

Ans:

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

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Question - 21:

Explain heat of Combustion?

Ans:

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

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Question - 22:

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

Ans:

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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