Zoology Legends

BIO202

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Zoology Legends

MCQS Final Term Spring 2023

→pKa of the –COOH group in the range of 1.8 to 2.4
→pKa of the -NH3+ group in the range of 8.8 to 1 1
→purines include: **hypoxanthine and xanthine**
→Purine bases: …… **Adenine (A) and Guanine (G)**
→The deleterious effects of trans fats occur at intakes of _____**2 to 7g/Day**
→The mammalian ribosomes contains two major nucleoproteins subunits _____ **(Large 60S smaller 40S)**
→Serin +palmitate = ____ **Sphingosine**
→Higher GC base pairs increases Tm, because with three hydrogen bonds, require __**More**___heat energy
→Acid dissociation constant are designated as_**PKa**
→The bond present between the double helix ____ **hydrogen bonds.**
→Which one of the following is made up of two glucose_____ **maltose**
→Music maltose comprises two glucose molecule that join together by…… Glycoside linkage **(alpha 1 to4)**
→Hemoglobin is excessively found in _____**RED Blood cells**
→Titration curve of Glycine known as _____**Diprotic form**
→The sign of enthalpy is ____ **ΔH**
→In a double-stranded nucleic acid, cytosine typically base pairs with **Guanine (C-G**).

Zoology Legends

→ Waxes are insoluble in _____ **Water**
→ Measure of randomness system is _____**Entropy**
→ These enzymes catalyze condensation reaction joining two molecules by forming c*o c*s c*N C*C bonds _____ **ligases**.
→ Rancidity occur by ____**Oxidation**
→ Globosides are highly abundant in _____**RBCs**
→ **(very low density lipo proteins)**
→ VLDLs composed predominantly of **TAGs**
→ Ethanolamine is a primary ____ **alcohol and a primary amine.**
→ Negative charge on DNA is due to _____**Phosphate**
→ RNA refers to _____ **Ribonucleic Acid**.
→ At the 5' end of RNA, there is a free **Phosphate group**.
→ The bond between DNA and RNA is a **Phosphodiester Bond.**
→ Which one is halogen _____
→ Halogen refers to elements like **Fluorine, Chlorine, Bromine, Iodine, and Astatine.**
→ No. of carbon in steric acid is ____**18**
→ Ketokinase is involved in the metabolism of **Ketone Bodies**, not glucose.
→ A **motif** also called a **super secondary structure**
→ The smaller RNA is **tRNA (Transfer RNA).**
→ Fruits contain **Fructose**.
→ The alpha helix is present in the **Secondary Structure** of proteins.

Zoology Legends

→ Maltose ***sunflower***-shaped
→ Iodine number of cotton seed oil varies from **103 to 111**.
→ That of olive oil from **79 to 88,**
→ And that of linseed oil from **175 to 202**
→ A commercial lot of olive oil which has iodine number higher than **88** might have been adulterated with cotton seed oil
→ The enzyme for lactose to lactic acid conversion is ***Lactase***.
→ D-glucose has a **hydroxyl (OH**) group at the 5th carbon and an **aldehyde group** at the 1st carbon.
→ **phosphatidylcholine** only in that ethanolamine or serine
→ Ethanolamine has the structure **NH2-CH2-CH2-OH.**
→ The complex folding of chromosomes is referred to as **Chromatin**.
→ The complex folding of large chromosomes within eukaryotic chromatin and bacterial nucleoids is generally **considered tertiary structure**
→ acid dissociation constant ….pka
→ Weak Acids and Bases have Characteristic **Acid Dissociation** Constants
→ Acid dissociation constant is represented as **pKa**.
→ A nucleoside is formed by combining a **nitrogenous base with a sugar** molecule.
→ Nucleoside is……**guanine + ribose**
→ Double bond is present in……**Thymine and adenine**

Zoology Legends

→ pH is controlled by.....**buffer solution**

→ Standard amino acids are the **20** common amino acids found in proteins.

→ Fatty acids contain a hydrophobic **hydrocarbon tail and a carboxyl group**.

→ A fatty acid consists of a **hydrophobic hydrocarbon** chain with a terminal carboxyl group that has a pKa of about **4.8**

→ Complex structures of proteins are termed **Tertiary Structures**.

→ Factors are determined by parameters like **Km, VMAX, or curve plots.**

→ tRNA constitutes about **15-20%** of the total RNA content in a cell.

→ Thymine and uracil differ by the presence of a **methyl group in thymine**.

→ DNA denaturation is often monitored at **260 nm**.

→ Water is **essential** for the living organisms.

→ Purines (adenine and guanine) have **NH2 groups**.

→ The pKa value of glutamate is around **4.07.**

→ Fumaric acid is converted to **Malic acid.**

→ The Trans form of maleic acid is called_____. **Fumaric**

→ mRNA constitutes the **coding sequence** for proteins.

→ **Uric acid** is the catabolic end product of purines in human beings.

→ Purines are converted into **uric acid.**

Zoology Legends

→In sickle cell anemias glutamate in replaced by **valine**
→VLDL test gives information about **lipid metabolism**.
→Aromatic non polar compounds_**– Phenylalanine – Tyrosine – Tryptophan**
→ types of enzymes_ **6.**
→enzymes are divided into **six** major classes
→Cytosine forms pair with **Guanine**.
→Two Bonds between **A and T**
→Three between **G and C**
→Waxes are in water_**Insoluble**
→Purines pyrimidine are **hydrophobic** in nature's
→Template strands are read in the **3' to 5' direction**.
→Competitive inhibitors resemble the **substrate** and compete for binding to the **active site** of the enzyme.
→Noncompetitive inhibitors **do not** bind at the active site
→Competitive inhibition shows a characteristic **Lineweaver-Burke plot**
→If the non-protein moiety is a metal ion such as Zn2+ or Fe2+ it is called a **cofactor**.
→**Cofactors** are inorganic ions or non-protein molecules necessary for enzyme activity.
→If it is a complex organic molecule or metallo-organic compound it is termed a **coenzyme**.
→**Coenzymes** are small organic molecules that assist enzyme function.
→Iron is a **transition metal**

Zoology Legends

→ an iron atom has a positive **two charge (ferrous ion)** instead of **three charge (ferric ion)**

→ Iron serves as a **cofactor** in heme-containing proteins.

→ The names of pyrimidines are **cytosine, thymine, and uracil**.

→ The **order of reactions** refers to the sequence of **chemical events** in a process.

→ Carbohydrates can be classified into **monosaccharides, disaccharides, and polysaccharides.**

→ Aromatic amino acids are **phenylalanine, tryptophan, and tyrosine**.

→ Halogens include fluorine, **chlorine, bromine, iodine, and astatine**.

→ An amino acid that is negatively charged at physiological pH is **Aspartate (Asp) & Serine**

→ Purines pair adenine with thymine **(A-T)** and guanine with cytosine **(G-C).**

→ The first leukotriene discovered was **Leukotriene C. (WBCs Leucocytes)**

→ Leukotrienes your name so because they were first discovered in **(white blood cells)**

→ **INTRONS** is removed during RNA maturation?

→ activators consist how many domains?_**Multiple**

→ what charge is on DNA? **NEGATIVE**

→ The mixture of DNA and proteins is called **Chromatin**.

→ The point mutation in the DNA sequence result in the replacement of; **Glutamate residue with Valine** residue

Zoology Legends

→Protein mutation **involves changes** in base pairs.
→RAN refers to **Ribonuleic Acid**
→The pH of pepsin is around **2**
→Water is the most abundant substance in living systems, making up **70%** or more of the weight of most organisms
→**Enzyme inhibitors** are molecular agents that interfere with catalysis, slowing or halting enzymatic reactions.
→Any substance that can diminish the velocity of an enzyme-catalyzed reaction is called an **inhibitor**.
→which of the following enzyme inhibitors__ **aspirin**
→The pKa value of lactic acid is around **3.9.**
→Substrate binds to the **active site** of the enzyme.
→TAGs containing saturated fatty acids are **solid at room temperature** such as **butter** whereas
→• TAGs containing unsaturated fatty acids are **liquid at room temperature** such as olive oil.(Olic acid, 18:1,9)
→Fats rich in ***saturated*** fatty acids have **low iodine numbers**,
→while fats rich in ***unsaturated*** fatty acids have **high iodine numbers**
→ Saturated fatty acids contain **no** double bonds.
→**Double bonds** in unsaturated fatty acids 8 the mammalian ribosomes contain which two major nucleoprotein subunit.
→**tRNA** is the smallest of the three major species of RNA (**4S**).

Zoology Legends

→The higher the content of GC base pairs, the **higher the melting point** of the DNA.

→which of the following only present in RNA__**Uracil**

→Both 5'-end and 3'-end are free. at 5'-end there is a **free phosphate**. at 3'-end there is a free OH

→The backbones of both DNA and RNA are **hydrophilic**.

→The ribosyl moieties are attached to the **nucleobases** by N-glycosidic bonds

→N-glycosidic bonds, have **Nitrogen atom instead of oxygen** linking the two residues.

→Sugars are linked to the **heterocycle** by a β -N-glycosidic bond, almost always to the **N-1 of a pyrimidine & N-9 of a purine 15**

→**Simple triglycerides**: Fatty acids connected to **glycerol** are of the same type e.g., **tripalmitin**.

→The Mediterranean diet is associated with **decreased serum** total cholesterol

→The deleterious effects of trans fats occur at intakes of **2 to 7 g/day**

→waxes are insoluble in____**Water**

→Glycerol is synthesized from **Dihydroxyacetone Phosphate** (an intermediate of the glycolytic pathway)

→Glycerol can form **dihydroxyacetone phosphate** which can convert into glucose or glyceraldehyde phosphate to enter into gluconeogenic pathway.

Zoology Legends

→ The **hsp70** family of chaperones binds short sequences of hydrophobic amino acids in newly synthesized polypeptides.

→ Reducing disaccharides also give osazones **Maltose** sunflower-shaped

→ Sunflower osazones are **Maltose** in nature.

→ Pepsin is active at **pH 2**.

→ The pka value of acetic acid is **4.76**.

→ The beets sheets form the core of **globular proteins** .

→ Leukotrienes are named because they was first identified in **white blood cells .**

→ About **78%** of the amino acid residues in the **myoglobin** are found in **α helices** with bends in between.

→ Ethanolamine is a **primary alcohol and a primary amine.**

→ Galactolipids constitute about **70% to 80 %** of plant membrane lipids.

→ mRNA makes **2-5%** of cell.

→ RNA referred as___**Ribonucleic Acid**

→ Galactose joined to glucose by **beta(1-4**).

→ Keratin is found **in hair, nail, hoofs**.

→ Guanosine binds to **cytosine**.

→ The pH is maintained by **buffer solution**

→ Reversible inhibitor **decrease** the value of **Vmax**.

→ Reversible inhibitors typically bind to enzymes through **noncovalent bond**.

Zoology Legends

→The difference between the energy levels of the ground state and the transition state is the **activation energy.**

→What is wrong about Michaelis Menten equation__**The rate of the reaction is inversely proportional to the enzyme concentration.**

→Saturated fatty acids have double bonds.__**Zero**

→The common name of omega-6 is ***lenoleic acid***.

• The most important exceptions to Michaelis-Menten kinetics are the **regulatory enzymes.**

→In contrast to keratin, **myoglobin**, whose structure is also highly α-helical, is a globular, flexible molecule

→glutamate has a pI of **3.22**

→In Sickle cell anemia a Glutamate residue is replaced by **Valine** at position **6 of beta** chain of Hemoglobin

→ The R group of valine is neutral, whereas glutamate has a negative charge at **pH 7.4**

→pH of glutamate?_ **pH 7.4**

→Seminal fluid is rich in **fructose** and sperm utilize fructose for energy

→Single stranded DNA has a…… Relative absorbance at **260nm** wavelength then double stranded DNA **(high)**

→which is the structural protein in following? **All of These (Collagen, Elastin, Keratin)**

→leukotriens are present in ? **Leucocytes** (**WBCs)**

→Value of palmitic acid? **16:0**

→The 16-carbon saturated palmitic acid is abbreviated_ (**16:0)**

Zoology Legends

→ Stearic Acid **(18:0)**
→ Oleic acid **(18:1)**
→ PI value of glycine?__**5.7**
→ At any pH **below** its pI, glycine has a net **positive** charge and will move toward the *negative electrode (cathode)*
→ At any pH **above** its pI, glycine will have a net **negative** charge and thus will move towards **the positive electrode (anode)**
→ Which is formed when carbohydrates and proteins are together?_**Glycoprotein**
→ which is the table sugar in following?_ **Sucrose**
→ Which one is present only in RNA…**Uracil**.
→ waxes are insoluble in ….**water** .
→ Which bases have triple bond …. **guanine and cytosine**.
→ Instead of thymine which is present in RNA …**Uracil**.
→ The deleterious effect of trans fats occur at intake .. …**2-7g/per day**
→ Leukotrienes they were first discovered in …. **White blood cell**
→ In protein there is "**peptide bond**:
→ Atomic number of oxygen is '**8**"
→ Chargaff rule: **A + G = T+ C.**
→ Phosphotidal choline is formed by "**sphingosine and choline**"
→ Glycerophospholipids the alcohol is **glycerol**.
→ Sphingophospholipids the alcohol is **sphingosine**.
→ Histidine is **polar Amino acid**

Zoology Legends

→– Histidine, which has an **aromatic imidazole** group
→Arginine and Histidine side chains from the **hemoglobin**.
→Only histidine has an R group **(pKa = 6.0)**
→The pI of Histidine, with two groups that are positively charged when protonated, is **7.59.**
→Lysine is **hydrophillic**
→Furfural compounds are **RED** in Color
→Pentoses yield a cyclic aldehyde furfural with **12%** HCL
→Cholesterol is produced in "**liver**"
→When pH becomes equal to pka value
→the pI is simply the **arithmetic mean** of the two pKa values
→In water "**hydrogen bonding**" is significant character
→pH of pepsin **_2**
→Symbol of aspartate __
→A--- is a bio catalyst that increase the rate__ **Enzymes**
→In the systematic naming system, enzymes are divided into **six major** classes each with numerous subgroups
→Molecular weight of water ----**18**
→The coordinated nitrogen atoms (which have an electron-donating character) help in preventing the conversion of the h**eme iron to the ferric (Fe3+)** state
→Some small molecules, such as carbon monoxide (CO) and nitric oxide (NO), coordinate to heme iron with greater affinity than **does O2.**
→The proximal **histidine F8**, binds directly to the **iron of heme**

→ because of **covalent bond** this histidine is closer to heme iron and named as **proximal histidine** (closer histidine),
→ Myoglobin can bind **only one** molecule of oxygen.
→ The oxygen dissociation curve for myoglobin has a **hyperbolic shape**
→ Rinosaurs horns made up of? **Protein (Keratin)**
→ Purines include?_**Adenine & Guanine**
→ 1 torr= **1mmHg**
→ Simple triglyceride?_ **tripalmitin**
→ Name of omega 6?_**Linoliec Acid**
→ VLDLs composed of? **TAGs**
→ A much stronger correlation exists between the levels of blood **LDL cholesterol** and heart disease.
→ Waxes are not soluble in…….**Water**
→ Carbon number of palmitic acid…..**16:0**
→ Platelet aggregation is the culminating step in the cardiovascular diseases due to **atherosclerosis**.
→ There is a strong evidence that dietary intake of trans fatty acids (often referred to as "**trans fats**") leads to a higher incidence of cardio-vascular disease,
→ cardiovascular disease and also to some extent for **– Alzheimer's disease**
→ The enzyme condensation reaction joining two molecules C-O, C- S is called…..**Ligases**
→ Iron is a transition…..**Metal**

Zoology Legends

→ Iron is a **transition metal** & because its orbitals are so close energy wise they tend to give up either **2 or 3** electrons at time

→ Super secondary structure of protein….**Motif**

→ The genetic **master plan** is contained in the nucleotide sequence of ***DNA.***

→ It is through the ribonucleic acid (RNA)—the "**working copies**" of the (DNA) — that the master plan is expressed

→ Sugar present in fruits (**fructose**)

→ VLDL is predominantly composed of (**TAGs**)

→ No of carbon in stearic acid (**18**)

→ Michaelis-Menten equation, the rate equation proposed by **Leonor Michaelis and Maud Menten in 1913**

→ The Michaelis-Menten equation is therefore consistent with the observed dependence of **V0 on [S],** and the shape of the curve is defined by the terms; Vmax/Km at low [S] and
Vmax at high [S].

→ When [S] is much greater than Km the velocity is **constant** and equal to Vmax.

→ The Michaelis-Menten equation can be algebraically transformed into **Lineweaver Burke plot,** a Double Reciprocal Plot, that is useful in the practical determination of **Km and Vmax**

→ Which can only be approximated from a simple plot of $\mathbf{V_0}$ **versus [S]**.

→ Table Sugar is?_ **Sucrose**

Zoology Legends

→ Amino acids most commonly found in **alpha helices** are non-polar with aliphatic side chains

→ Fatty acids are aliphatic carboxylic acids with **hydrocarbon chains**.

→ A Nonpolar, Aliphatic R Groups are **hydrophobic**

→ Entropy is a measure of the **randomness or disorder** in a system.

→ Entropy of a system always **tend to increase** to a maximum value.

→ P50 is approximately **1 mm Hg** for myoglobin and **26.6mm Hg** for hemoglobin

→ ***Eicosa-tri-enoic acid (ETA)*** have **3 double bonds**

→ ***Arachidonic*** acid have **4 double bonds**

→ ***Eicosa-pentaenoic acid (EPA)*** have **5 double bonds**

→ The base pairs are held together by **hydrogen bonds**

Two Bonds between **A and T**

Three Bonds between **G and C**

→ **Nucleotides / Nucleosides** are composed of

- A **nitrogenous base** (purine or pyrimidine)
- A **pentose monosaccharide**
- One, two, or three **phosphate groups**

→ *simple triglycerides is? **tripalmitin**

→ *No. Of carbon atom in chain fatty acids?

→ Short Chain Fatty Acids **(2-4 C)**

→ Medium Chain Fatty Acids **(6-12 C)**

→ Long Chain Fatty Acids **(14-18 C**)

→ Very Long Chain Fatty Acids **(18 and more C)**

Zoology Legends

→ **Arachidonic** acid is synthesized from both **Linoleic acid** and **alpha-Linolenic** acid.
→ cholesterol is?_**Esters**
→ RNA have which base? ***Uracil***
→ Ribosome ***60S and 40S***
→ No. Of carbon atom is stearic acid? (**18:0)**
→ tRNAs compose roughly **20%** of total cellular RNA
→ Backbone of DNA is .. **hydrophilic**
→ Which of the following is purine_ **Adenine (A), Guanine (G)**
→ The free group attached at the 3' end of nucleotides is the 3' **Hydroxyl (OH) group**
→ Nitrogenous bases are paired with **hydrogen bond**
→ The difference in energy levels between the transition and ground states is **Activation Energy**.
→ **Hexokinase catalyses** the first step in glucose metabolism in most cells, the transfer of a phosphate from ATP to glucose to form **glucose 6-phosp**hate.
→ Plot between initial velocity and substrate concentration is …**hyperbola**
→ An example of a tetrose is **Erythrose**.
→ The protein concentration in HDL (High-Density Lipoprotein) is around **55%.**
→ In sickle cell anemia, **Glutamic Acid** is replaced by Valine.
→ The composition of tRNA includes a **D-arm, T-arm, and Anticodon Loop**.

Zoology Legends

→ The Line-Weaver Burk plot is derived for the **Michaelis-Menten reaction.**

→ An example of a disaccharide is **Sucrose**.

→ Alanine is in its isoelectric form at a pH **of 6.**

→ Two sulfur-containing amino acids are **Methionine and Cysteine.**

→ **Arginine** has a positively charged guanidinium group.

→ The secondary structure of a protein is defined by the arrangement of its amino acid residues in local segments like **alpha helices and beta sheets**.

→ Hemoglobin is a...**tetramer**

→ Sialic acid gives gangliosides a negative charge at **pH around 7**.

→ Base pairs are held together by **Hydrogen Bonds.**

→ In Bohr's effect, the binding of H+ and CO2 is inversely related to the binding of **Oxygen (O2).**

→ The standard amino acid that, upon decarboxylation, produces Ethanolamine is **Serine**.

→ Enzymes are divided into **Six classes** in a systematic naming system.

→ Enzyme activity can also be characterized through **pH and temperature**.

→ kw value of water at 25C__? **1 x 10^-14 M^2**

→ **Homopolysaccharides (homoglycans)**: Polymers of same monosaccharide units e.g. **starch, glycogen, inulin, cellulose, dextrins, dextrans**

Zoology Legends

→ **Heteropolysaccharides (heteroglycans)**: Polymer of different monosaccharide units or their derivatives e.g. **Mucopolysaccharides**, (**glycosaminoglycans**)

→ Glucoronic acid is formed by the oxydation of glucose at__? **C-1**

→ pk2 value for alanine __? **2.34**

→ which of the following shows the greatest tendency to form @halix in most EMS__? **Tryptophan**

→ Hemoglobin consist of __Subunits? **Four**

→ **Purines** have a **double-ring structure**.

→ Glycerol is converted to L-glycerol-3-phosphate by **Glycerol Kinase.**

→ saturated lipids increase __level in blood? **Increase**

→ The curve obtained when plotting initial velocity (v°) against substrate concentration is called the **Michaelis-Menten curve**.

→ **Irreversible inhibitors** bind to enzymes through **covalent bonds.**

→ **Reversible inhibitors** typically bind to enzymes through **noncovalent bonds**

→ Glucose and Mannose are epimers with respect to the **Carbon-2 position**.

→ atomic number of oxygen --------?? **8**

→ the pk2 of glycine is -------?? **2.34**

→ **Peptide bond** is linkage between two amino acid .

Zoology Legends

→ Misfolding of proteins may occur **spontaneously** or caused by a mutation in a particular gene, producing an altered protein.

→ the chief constituents of bees waxes is ------ **Triacontanol** ,also knwon as melissyl alcohol or myricyl alcohol.

→ ADP contain ---------- phosphate group ? **Two**

→ Hb has a hybrid **S-shaped, or sigmoid,** binding curve for O2

→ In nature, DNA exists as a **double-stranded helix.**

→ Rancidity is caused by **oxidative reactions.**

→ One letter symbol of glycine__**G**

→ Heamoglubin is a **tetramer**

→ Omega-6 fatty acids are present in **sunflower oil**.

→ Symbol of aspartate...**D**

→ The difference between thymine and uracil is the presence of **a methyl group in thymine.**

→ Pyrimidine bases are **cytosine, thymine, and uracil.**

→ Measure of randomness system is..**Entropy**

→ The optimum temperature of pepsin is around **37°C (body temperature**).

→ RAN refers to **Ribonucleic Acid**.

→ The pH of Pepsin is around **2**.

→ water making up__ weigh of most organisms_**70%**

→ which of the following enzyme inhibitors__ **aspirin**

→ pka of lactic acid is **3.9**

Zoology Legends

→ The mammalian ribosomes contain the **large and small** nucleoprotein subunits.

→ A higher GC content leads to a **higher melting** point of DNA.

→ The backbone of both DNA and RNA is composed of **sugar-phosphate units and is hydrophilic.**

→ N-glycosidic bond refers to the bond between the **nitrogenous base and the sugar molecule** in nucleotides.

→ Two molecule sugar present in **(Maltose)**

→ Bonds between cytosine and guanine(**three Hydrogen bonds)**

→ Cholesterol is primarily produced by the **liver**.

→ Sunflower seeds contain high levels of **Omega-6 fatty acids**.

→ An example of a polysaccharide is **Starch or Cellulose.**

→ A molecule with only one chiral carbon can have **two stereoisomers**

Zoology Legends

→ Myoglobin boound **one** molecule of O2.

→ Atomic number of nitrogen? **7**

→ the addition of reduced glutathione to carbon **6 forms LTC4**

→ ***LDL (Low-Density Lipoprotein***) cholesterol levels have been associated with a decreased heart rate.

→ Triacylglycerol are soluble in……**ether, benzene,**

→ VLDLs composed predominantly of **TAGs**

→ These enzymes catalyze condensation reactions joining two molecules by forming C-O, C-S, C-N and C-C bonds……**ligases**

→ Waxes show **nagative test.**

→ Example of purines… **Guanine**.

→ D -glucosamine, a constituent of **hyaluronic acid**

→ D -galactosamine (also known as chondrosamine), a constituent of chondroitin – **D –mannosamine**

→ **Rancidity:** The chemical deterioration of **fats**.

→ **Effect on Vmax**: The effect of a competitive inhibitor is **reversed by increasing [S]**

→ Double bonds are present in **unsaturated fatty acids**.

→ The mammalian ribosome consists of a **large subunit (60S) and a small subunit (40S)**.

→ If it is a complex organic molecule or metallo-organic compound it is termed a **coenzyme**.

→ Sugar present in DNA? **deoxyribose**

Zoology Legends

→The pKa value of acetic acid is? **4.76**
→Example of purine is **guanine**
→The secondary structure found in proteins is the **alpha helix and beta sheet**.
→The constituent of chondroitin is **D-mannosamine**
→The arrangement of these protein subunits in three-dimensional complexes constitutes **quaternary structure.**
→The interaction of enzymes with each other forms the **quaternary structure**
→Triglycerides (tryglycerides) are insoluble **in water**.
→The Michaelis-Menten equation describes the relationship between **substrate concentration and enzyme activity.**
→Hemoglobin is found in **red blood cells (RBCs).**
→*Halogens are found in* **Group 17 (VIIA)** *of the periodic table.*
→The amino acid that is negatively charged at physiological pH is **aspartate**.
→Serine + palmitate= **sphingolipids**
→DNA contains four bases: **adenine (A), thymine (T), cytosine (C), and guanine (G).**
→**lactose** powder puff shaped
→ DNA Denaturation can be monitored by measuring its absorbance at **260 nm**
→Weak Acids and Bases have Characteristic **Acid Dissociation Constants**

Zoology Legends

→ Equilibrium constants for ionization reactions are usually called **ionization constants** or acid dissociation constants, often **designated pKa**

→ pH is controlled by.....**buffer solution**

→ **Serine** is a standard amino acid

→ A fatty acid consists of a **hydrophobic hydrocarbon** chain with a terminal carboxyl group that has a pKa of about 4.8

→ Complex structures....**tertiary**

→ Thymine and uracil differ in ....**methyl group**

→ In sickle cell anaemia, Glutamate is replaced with __. **valine**

→ Acid dissociation constants are designated as ___. **PKa**

→ Glucose residues in amylose are linked by __. **α (1,4) linkage**

→ light produced by fireflies this reaction is catalyzed by..... **luciferase**

→ Negative R groups in amino acids include those **containing acidic** functional groups.

→ Halogens are a group of elements that include **fluorine, chlorine, bromine, iodine, and astatine.**

→ In DNA, cytosine is around **18%** and adenine is also around **18%.**

→ Chylomicrons are **lipoprotein** particles that transport dietary lipids.

→ 13.phosphotidylcholine is formed from....**Choline + PA (Phophatidic acid)**

Zoology Legends

→ **Phosphatidylcholine** is formed from **choline and phosphatidic acid**.
→ Leukocytes are named due to their function as **white blood cells** that protect against infections.
→ Cholesterol is the **major sterol** in animal tissues
→ Cholesterol is an **amphipathic** lipid
→ Cholesterol is a **structural component of** all cell membranes, modulating their fluidity
→ Cholesterol is a precursor of **bile acids** steroid hormones **vitamin D**
→ pKa of the –COOH group in the range of **1.8 to 2.4**
→ pKa of the -NH3+ group in the range of ***8.8 to 1 1***
→ Serine + palmitate = **sphingolipids**.
→ **Maltose** is made up of two glucose molecules.
→ The titration curve of glycine is known as the **titration curve of an amino acid.**
→ Ethanolamine is a **primary amino alcohol.**
→ **aldotetroses and all monosaccharides** with five or more carbon atoms in the backbone occur predominantly as **cyclic (ring) structures.**
→ All the monosaccharides except dihydroxyacetoe contain one or more **asymmetric**
→ Benedicts reaction: The cuprous ion (Cu+) produced forms a **red cuprous oxide precipitate**
→ **Homopolysaccharides** contain **only a single** monomeric species

Zoology Legends

→ **Heteropolysaccharides contain two or more** different kinds

→ Simple **triglycerides**: Fatty acids connected to glycerol are of the same type • e.g., **tripalmitin**.

→ Most of the hexoses of living organisms are **D isomers**

→ For example, the naturally occurring form of **fructose** is the **D(–) isomer**

→ Most are not digested by human enzymes **oligosaccharides**

→ The ***hsp60*** family of chaperones, sometimes called **chaperonins**

→ carbohydrate and lipid components Like the **phospholipid sphingomyelin**

→ For example,D-glucose exists in solution as an intramolecular hemiacetal in which the free hydroxyl group at C-5 has reacted with the **aldehydic C-l**,

→ Glucose 6 Phosphate is formed by the addition of phosphate group to C6 of glucose by _ linkage. **Ester**

→ Which one of the following proteins stores iron?_**ferritin**

→ Rhinoceros horn is made up of **Keratin**

→ In glycine, the R group is another ***hydrogen atom***

→ The suffix 'ine' in cytosine and adenine indicates the presence of **nitrogen (amine)** in the ring.

→ DNA absorb ultraviolet light due to its absorption **by nucleotides** that results in chemical modifications in DNA.

Zoology Legends

→ The **conjugated double bonds** of purine and pyrimidine derivatives absorb ultraviolet light.

→ Iodine number of olive oil ranges from_**79 to 88,**

→ **high levels of HDL cholesterol** have been associated with a decreased risk for heart disease

→ Phosphatidylcholine is formed from_ **Choline + PA**

→

→ When initial velocity (Vo) is plotted against [S], the curve obtained is called as: ***hyperbolic curve results***,

→ Platelet aggregation is the culminating step in the cardiovascular diseases due to: **atherosclerosis**.

→ Imbalance of omega-6 and omega-3 PUFAs in the diet is associated with? **an increased risk of cardiovascular disease.**

→ Sugar phosphates are relatively stable at ph.

→ DNA absorbs ultraviolet light at a wavelength of around **260 nm.**

→ Adjacent nucleotides in DNA are joined by a **phosphodiester bond**.

→ If cytosine is 18% in a DNA molecule, then adenine would also be approximately **32%** (since adenine pairs with thymine in DNA and their percentages should sum to 100% together).

→ RNA is referred to as **ribonucleic acid.**

→ 6-N-Methyllysine is constituent of contractile protein_ **myosin**

Zoology Legends

→A simple monoamino monocarboxylic - amino acid, such as alanine, is a **diprotic acid** when fully protonated

→Hemoglobin is a **tetramer**

→The deleterious effect of trans fat occur at intake **of 2 to 7 g/day**

→Ethanolamine **a primary alcohol and a primary amine**

→Sialic acid gives gangliosides the negative charge at PH? **7**

→At which pH denaturation of a double helical RNA occurs? **temperatures 20 C or more high**

→Enzymes are capable of recognizing and reacting with a special chemical substance called

→The reaction reaches equilibrium much faster because

→For example, **pepsin**, a **digestive enzyme in the stomach**, is maximally active at pH 2.

→Enzymes are capable of recognizing and reacting with a special chemical substance **called substrate**.

→The reaction reaches equilibrium much faster when the appropriate enzyme is present, **because the rate of the reaction is increased**.

→A higher numerical value of the Michaelis constant (Km) indicates a higher enzyme/transporter affinity for its **Substrate**

→Competitive inhibition shows Lineweaver-Burk plot Competitive inhibition shows a **characteristic Lineweaver-Burke plot**

→Pka of Acetic acid is **4.76**

Zoology Legends

→Sunflower osazones are **Maltose** in nature

→What is wrong about Michaelis Menten equation? Ans. **The rate of the reaction is inversely proportional to the enzyme concentration.**

→RNA referred as____ **working copies of DNA**

→Reversible inhibitors typically bind to enzymes through **noncovalent bond**.

→The mammalian ribosomes contains two major nucleo proteins subunit __**(Large 60S smaller 40S)**

→Constituent of chondrotin– **D –mannosamine**

→pKa value of histidine: **6.0**

→Reversible inhibitors bind to enzymes through: **Non-covalent interactions.**

→Hemiacetals are derivatives of: **Aldehydes** or Ketones

→Aromatic amino acid: Phenylalanine, Tyrosine, Tryptophan.

→Carbon number in lysine: **6 carbon atoms.**

→Cholesterol is: **Amphiphilic**.

→The double helix of RNA denatured in: Acidic, basic, or neutral conditions, depending on the specific RNA sequence and conditions.

→Bile is a fluid that is made and released by the liver and stored in the **gallbladder**

→The most important exceptions to Michaelis-Menten kinetics are the **regulatory enzymes.**

→,D-glucose exists in solution as an **intramolecular hemiacetal**

Zoology Legends

→ The formation of these ring structures is the result of a general reaction between alcohols and aldehydes or ketones to form derivatives **called hemiacetals or hemiketals.**

→ Leucine and lysine are the only exclusively **ketogenic amino acids**

→ In the first stage, as the newly synthesized polypeptide emerges from the **ribosome**

→ Similarly Crystalline glucose is α -**D -glucopyranose**

→ D-Glucose yields **D-Sorbitol**

Quiz MID Term Spring 2023

- Maleic acid have (**Double Bonds**)
- It is metabolized to glucose; one gram of GDL yields roughly the same amount of metabolic energy as (**one gram**) of sugar.
- When glucose is kept in alkaline solution for several hours, it undergoes isomerization to form (**D-fructose and D mannose**).
- Atomic number of Nitrogen is (**7**)
- Glycosidic bond of maltose is formed between the OH **of (carbon 1 and carbon 4)** of 2nd glucose monomers. Thereforer, it forms an alpha **(1– 4)** glycosidic bond.
- **(Entropy)** is a measure of the randomness or disorder in a system
- **(Proline)** residue introduces a destabilizing kink in an α helix

Zoology Legends

- Amino acids A. Aliphatic R groups is **(Proline)**
- The major hemoglobin in adults is **(Hemoglobin A).**
- This adjustment in the BPG level has **(only a small effect)** on the binding of oxygen in the lungs
- **(carbon 5 in glucose)** determines whether the sugar belongs to the D or L series
- Glucose and Galactose are an example of an epimeric pair which differ only with respect to **(C4)**
- **(Eicosanoids)** exert complex control over many bodily systems; in inflammation immunity, and as messengers in the central nervous system.
- **(Primary systemic amyloidosis)** is caused by deposition of fibrils consisting of misfolded **(immunoglobulin)** light chain
- Well-defined structures of proteins is **(Tertiary Structure)**
- The amide group of asparagine serves as the site of attachment for an oligosaccharide chain in a glycoprotein… **serine**
- The salt that is water-soluble is…**potassium (K)**.
- The partial pressure of oxygen needed to achieve half saturation of the binding sites is called **p50**.
- Hemoglobin is present in **red blood cells**.
- Immunoglobulins are **proteins** in nature.
- Lauric acid, the saturated fatty acid, has **12** carbon chains.
- Okazaki fragments have **DNA Ligase** Enzyme
- What is the common hemoglobin?

- Answer: **HbA**

➢ What is the pressure of oxygen?
- Answer: **30 mmHg**

➢ What is a common example of a monosaccharide?
- Answer: **glucose**

➢ Which of the following is a polysaccharide?
- Answer: **Starch**

➢ What is sickle cell anemia?
- Answer: a **genetic disorder**

➢ What is the pKa value of histidine?
- Answer: **6.0**

➢ What is the pKa value of acetic acid?
- Answer: **4.76**

➢ Hemoglobin is a tetra…
- Answer: **four subunits**

➢ What is the amount of CO2 in bicarbonate?
- Answer: **80 to 85%**

➢ What are the domains of protein structure?
- Answer: **Primary, secondary, tertiary, and quaternary**

➢ Cooperative binding of oxygen refers to the binding of oxygen molecules to **one subunit** of a protein influencing the binding of oxygen to other subunits.

➢ Are Na and K soluble in water?
- Answer: **Yes**

➢ What causes protein misfolding?
- Answer: **Genetic mutations, environmental conditions, or protein imbalances.**

Zoology Legends

- What is the partial pressure of oxygen in the lungs?
  - Answer: **30 mmHg**
- Glutamate residue is replaced by?
  - Answer: **Valine**
- About … of the amino acid residues in the myoglobin are found in α helices with bends in between?
  - Answer: **78%**
- What is the pK value of glutamate?
  - Answer: **3.22**
- Is sucrose a reducing sugar?
  - Answer: **No**, sucrose is a non-reducing sugar.
- What is the pKa value of alanine?
  - Answer: **5.7**
- DNA have sugar?
  - Answer: **Deoxyribose**.
- The reappearing process of DNA is called…
  - Answer: **DNA replication**
- A (-PO3 2-) from ATP is transferred to an alcohol forming…
  - Answer: **phosphorylation**
- What is the end product of glycolysis?
  - Option: **Pyruvate**
- In the submersion process, organisms grow in which medium?

  Option:
- What is the structure of tRNA?
  - Option: **Cloverleaf-shaped structure**
- The synthesis process of glucose is called…

- Option: **Gluconeogenesis**

➢ What type of hemoglobin do humans have?
- Option: ***HbA***

➢ Is histidine polar or non-polar?
- Option: **polar**

➢ Mono Amino mono-carboxylic Amino Acid is **Cysteine**

➢ Hydroxyl group of **serine and threonine** serve the site attachment for Oligosaccharides.

➢ Which Amino acid in Beta Turn
The designation of a sugar isomer as the D form or as the L form **carbon 5th** in glucose.

➢ PK2 value of glycine **9.60**

➢ Which Acetic acid acts Both glycogenic / ketogenic… **Lysine / leucine**

➢ Myoglobin have have **single peptide** Chain

➢ Enzymes which catalytic / Shuffling is… **Protein disulfide isomerase (PDI).**

➢ Na and K are **H2o (Water)** Soluble.

➢ **Increasing** the affinity of the Hb for the further O2 addition.

➢ When strenuous exercise lowers the **pO2** of muscle tissue to about **5 mm Hg**, myoglobin releases O2 for mitochondrial synthesis of ATP, permitting continued muscular activity.

➢ The remainder of the CO2 is transported as dissolved HCO3-**(80 to 85%)**

Zoology Legends

- As in **sickle cell anemia** to deletion of a larger portion of the **polypeptide chain** (as in most cases of Duchenne muscular dystrophy
- **Maltose** sunflower-shaped
- Thus glucose, fructose and mannose give the same type **(needle-shaped) osazones.**
- Which one is non- polar Aliphatic **proline**
- Nonpolar, **Aliphatic R Groups** includes, Glycine, Alanine, Proline, Valine, Leucine, Isoleucine, Methionine
- Structure of hemoglobin is ? **Tetramal**
- Iron is? **transition metal**
- Sure! Here are the answers to the multiple-choice questions (MCQs) you provided:
- Different compositions of carbohydrate **(oligosaccahride chains)** in different antigens.
- These oligosaccharides are attached to proteins through a **serine or threonine** residue or to ceramide lipid intermediate
- Palmitic acid is a saturated fatty acid and contains **16 carbon atoms**.
- In sickle cell anemia, methionine is replaced by **valine** in the beta-globin chain of hemoglobin.
- The intermediate of glycolysis is called **glyceraldehyde-3-phosphate**.
- Podé puff osazones are given by **reducing sugars** such as glucose and fructose.
- The symbol for tyrosine is **Tyr**.

Zoology Legends

- E. coli converts lactose to lactate by the enzyme lactate **dehydrogenase**.
- Myosin includes the amino acid called **leucine**.
- Leucine, isoleucine, and tyrosine are amino acids that contain a **heterocyclic R group.**
- The pKa of alanine is approximately **2.34**
- **Histidine** is an amino acid that contains an **aromatic imidazole** group.
- An example of a contractile protein is **actin**.
- Immunoglobulins (antibodies) contain **four protein chains**: two heavy chains and two light chains.
- Stereoisomers that are mirror images of each other are called....**enantiomers**
- Glucose and Galactose are an example of an epimoric pair which differ only with respect to..... **C4**
- Example of hemopolysacchrides ? **Starch**
- Hemoglobin consist of ? **Two alpha & two beta chains**
- Classification of protein? **All options**
- Naturally occurring isomers ? **L- isomers**
- Maltose consist of which molecules? **Two**
- Furfural compounds have sugar? **Pentose**
- protein examples? **All**
- Concentration in lungs and tissues? **High low**
- Value can be denoted by ? **pKa**

Zoology Legends

Repeated Questions Spring 2023

Short Questions:

→Define the medical properties of nucleotides and nucleic acids.

→Define Immnuglobin, conjugated proteins, and complex protein.

→Write the Michaelis-Menten equation.

Zoology Legends

→Distribution of waxes in nature.
→Three pyrimidine bases.
→Difference between enantiomers and stereoisomers.
→Three functional groups of purines and pyrimidines.
→Three steps involved in catalytic enzymatic reaction.
→Define zero-order reaction.
→What are globosides?
→What is the Mediterranean diet?
→Components of a nucleotide.
→Name three unusual bases or modified bases.
→Three examples of polyunsaturated fatty acids.
→What is sterol? Provide an example.
→Concentration of [OH-] in a solution of 0.1 M NaOH.
→How do fireflies produce light?

Long Questions:

→Properties of Triacylglycerol.
→Physical properties of cyclic AMP.

Zoology Legends

→How are proteins classified based on what basis?

→What information can be obtained from a titration of the glycine curve?

→Hydrogenation with respect to fats.

→Properties of nitrogenous bases.

→Effect of pH on the ionization of the active site.

→Describe the beta conformation in proteins.

→Describe the hydrogen bond in DNA.

→Induced fit hypothesis.

→Medical applications of nucleotides and nucleic acids.

→Components of inorganic cofactors.

→Properties of palmitic acid.

→Properties of waxes.

→Describe the properties of nucleic acids.

→Define and explain rancidity.

→Reaction velocity.

→What is the Mediterranean diet and its health benefits?

→Explain the role of hydrogen ions (H+) in a solution of 0.1 M NaOH.

→Describe how fireflies produce light.

Zoology Legends

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Remember me in you Precious Prayer

Jazak Allah