

# CREATED BY:GHULAM MUTABA M.S.c(ZOOLOGY)

## BIO202 SOLVED PAST PAPERS(Final Terms)

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### **;Synthesis of lipoxins.**

**ANS:** They are group of compounds produced by leukocytes.

- They are conjugated tetraenes.
- They have structural similarities to the LTs.

**Synthesis:**By insertion of molecular oxygen at two sites arachidonic acid by sequential action of 5 and 5-lipo oxygenase.

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### **How are enzymes classified?(10)**

1. **ANS:** a substance produced by a living organism which acts as a catalyst to bring about a specific biochemical reaction.

**The classification is as follows:**

Group Name	Type of Reaction Catalysed	Example
Oxidoreductases	<i>Oxidation-reduction reactions</i>	Alcohol oxidoreductase (EC 1.1)
Transferases	<i>Transfer of functional groups</i>	Methyltransferase (EC 2.1)
Hydrolases	<i>Hydrolysis reactions</i>	Lipase (EC 3.1)
Lyases	<i>Addition to double bonds or single bonds</i>	Decarboxylases (EC 4.1)
Isomerases	<i>Isomerization reactions</i>	Epimerases and Racemases (EC 5.1)
Ligases	<i>Formation of bonds with ATP cleavage</i>	Enzymes forming carbon-oxygen bonds (EC 6.1)

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Q3: what are waxes its properties and classification.(10)

**ANS: Waxes** are a diverse class of organic compounds that are lipophilic, malleable solids near ambient temperatures. Waxes are insoluble in water but soluble in organic, nonpolar solvents.

**Classification:**

**Animal waxes**

- Beeswax - produced by honey bees
- Chinese wax - produced by the scale insect *Ceroplastes ceriferus*

**Vegetable waxes**

Soy wax - from soybean oil

- Tallow Tree wax - from the seeds of the tallow tree *Triadica sebifera*.

**Mineral waxes**

- Ceresin waxes
- Montan wax - extracted from lignite and brown coal

**Petroleum waxes**

- Paraffin wax - made of long-chain alkane hydrocarbons
- Microcrystalline wax - with very fine crystalline structure

**Properties:**

- Wax with colorful pigments added has been used as a medium in encaustic painting,
- and is used today in the manufacture of crayons, china markers and colored pencils.
- the sports of surfing and skateboarding often use wax to enhance the performance.

Q4: function of cAMP.(3)

**ANS:** cAMP is a second messenger, used for intracellular signal transduction, such as transferring into cells the effects of hormones like glucagon and adrenaline

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- It is also involved in the activation of protein kinases.
- In addition, cAMP binds to and regulates the function of ion channels such as the HCN channels.

**Q5: how banaspati gee is prouduced from oil.(2)**

**ANS:** Banspati Ghee is made with the combination of Hydrogenated Oils, Refined Sesame Oil. The ghee is manufactured state of the art multistage hygienically controlled plant. It gives a mouthwatering aroma and taste to your food. It is low in cholesterol which makes it safer for the heart patients. Vitamin A and D are added.

**Q6: hydrogenation of fats.**

**ANS:** **Hydrogenation** converts liquid vegetable oils into solid or semi-solid **fats**, such as those present in margarine. Changing the degree of saturation of the **fat** changes some important physical properties, such as the melting range, which is why liquid oils become semi-solid.

**Q7: saponification and its end products.**

**ANS;** Generally, saponification is a reaction between *triglycerides* and *sodium or potassium hydroxide* to yield **glycerol** and a **fatty acid salt (soap)**. The triglycerides are most often animal fats or vegetable oils.

Shortly, saponification is the alkaline hydrolysis of the fatty acid esters.

Saponification of *ethyl acetate* and *sodium hydroxide*,



**Q8: write three characters of glycerols.**

**ANS:** It is a colorless, odorless, viscous liquid that is sweet-tasting and non-toxic.

- The glycerol backbone is found in all lipids known as triglycerides.
- It is widely used in the food industry as a sweetener and humectant and in pharmaceutical formulations.

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**Q9: function of bile salt.**

**ANS:** The function of bile salts in the duodenum is to solubilize ingested **fat** and **fat-soluble** vitamins, facilitating their **digestion** and **absorption**.

**Q10: example of condensation.**

**ANS: Condensation** occurs when water droplets form due to cooling air.

Common **examples of condensation** are: dew forming on grass in the early morning,

**Q11: PROPERTIES of nucleotide.**

**ANS:** A nucleoside is a nitrogenous base and a 5-carbon sugar. Thus a nucleoside plus a phosphate group yields a nucleotide.

Nucleotides also play a central role in metabolism at a fundamental, cellular level.

In experimental biochemistry, nucleotides can be radiolabeled with radionuclides to yield radionucleotides.

**Q12: nucleotide regulation.**

**ANS: Nucleotide** biosynthesis is **regulated** by feedback inhibition in a manner similar to the **regulation** of amino acid biosynthesis .

The synthesis of purine **nucleotides** is controlled by feedback inhibition at several sites.

**Q13: name two unnatural pyrimidine.**

**ANS:** cytosine , thymine , uracil.

**Q14: what is rancidity. which factors effect it?**

**ANS:** *Rancidity* is the complete or incomplete oxidation or hydrolysis of fats and oils when exposed to ... agents can also delay or prevent rancidification by inhibiting the growth of bacteria or other micro-organisms that *affect* the process.

**FACTORS:**

Temperature: decomposition rate increases as temperature rises.

**Q15: role of nueleotides energy currecy in cell.**

**ANS:** These are adenosine triphosphate (ATP), flavin adenine dinucleotide (FAD), and nicotinamide adenine dinucleotide (NAD<sup>+</sup>). Most biosynthetic reactions require *energy*, which is usually supplied by ATP. ... Since ATP is so frequently used this way, it is

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commonly called the "*energy currency* of the *cell*."

**Q16: simple lipids and its types.**

**ANS:** These lipids belong to a heterogeneous class of predominantly nonpolar compounds, mostly insoluble in water, but soluble in nonpolar organic solvents such as chloroform and benzene. Simple lipids: esters of fatty acids with various alcohols. a. Fats: esters of fatty acids with **glycerol**.

**Q17: name two structural homopolysaccharides.**

**ANS:** Starch, Cellulose.

**Q18: name factors that contract entropy.**

**ANS:** Here are some situations in which entropy increases:

- The entropy increases whenever heat flows from a hot object to a cold object.
- It increases when ice melts, water is heated, water boils, water evaporates.
- The entropy increases when a gas flows from a container under high pressure into a region of lower pressure.
- It increases when you spray something out of an aerosol can or you let air out of a tire

**Q19: composition of bile.**

**ANS:** After eating, this stored **bile** is discharged into the duodenum. The **composition** of gallbladder **bile** is 97% water, 0.7% **bile** salts, 0.2% bilirubin, 0.51% fats (cholesterol, fatty acids, and lecithin), and 200 meq/l inorganic salts.

**Q20: Enzyme kinetics.**

**Ans:** Enzyme kinetics is the study of the chemical reactions that are catalysed by enzymes. In enzyme kinetics, the reaction rate is measured and the effects of varying the conditions of the reaction are investigated.

**Q21: function of cGMP.**

**ANS:** **cGMP** acts as a second messenger much like cyclic AMP. Its most likely mechanism of action is activation of intracellular protein kinases in response to the binding of membrane-impermeable peptide hormones to the external cell surface.

**Q22: function of tRNA.**

**ANS:** Function of tRNA. The job of tRNA is to read the message of nucleic acids, or

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nucleotides, and **translate** it into proteins, or **amino acids**. The process of making a protein from an mRNA template is called translation.

**Q23: protein folding.**

**ANS:** *Protein folding* is the physical process by which a *protein* chain acquires its native 3-dimensional structure, a conformation that is usually biologically functional, in an expeditious and reproducible manner.

**Q24: km of mechail menton kinetic equation.**

**ANS:** Vmax is equal to the product of the catalyst rate **constant** (kcat) and the concentration of the **enzyme**. The **Michaelis-Menten equation** can then be rewritten as  $V = K_{cat} [\text{Enzyme}] [S] / (K_m + [S])$ . Kcat is equal to K2, and it measures the number of substrate molecules "turned over" by **enzyme** per second.

**Q25: what is duchne muscular dystrophy.**

**Ans:** *Duchenne muscular dystrophy (DMD)* is a genetic disorder characterized by progressive *muscle* degeneration and weakness. It is one of nine types of *muscular dystrophy*. *DMD* is caused by an absence of dystrophin, a protein that helps keep *muscle* cells intact.

**Q26:uses of cholesterol.**

**Cholesterol** is a major component of all cell membranes and is used to make essential molecules such as hormones, fat-soluble vitamins, and bile acids to help you digest your food.

**Q27: what is iodine number.**

**ANS:** The **iodine value** (or **iodine** adsorption **value** or **iodine number** or **iodine** index) in chemistry is the mass of **iodine** in grams that is consumed by 100 grams of a chemical substance. **Iodine numbers** are often used to determine the amount of unsaturation in fatty acids.

**Q28: glyceryl trinitrate (GTN).**

**ANS:** Nitroglycerin, also known as *glyceryl trinitrate (GTN)*, is a medication used for heart failure, high ..... has been confirmed by several persons in my laboratory, and I tested it several times on myself before I was certain that it has toxic *properties*.

**Q29: modifide amino acid in collagen.**

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**Ans:** A repeated sequence of three **amino acids** forms this sturdy structure. Every third **amino acid** is glycine, a small **amino acid** that fits perfectly inside the helix. Many of the remaining positions in the chain are filled by two unexpected **amino acids**: proline and a **modified** version of proline, hydroxyproline.

**Q30: domain in the synthesis of protein.**

**ANS:** A **protein domain** is a conserved part of a given protein sequence and (tertiary) structure that can evolve, function, and exist independently of the rest of the protein chain. Each domain forms a compact three-dimensional structure and often can be independently stable and folded. Many proteins consist of several structural domains. One domain may appear in a variety of different proteins. Molecular evolution uses domains as building blocks and these may be recombined in different arrangements to create proteins with different functions.

**Q31: Galactosylceramidase**

**ANS:** Galactosylceramidase is an enzyme that in humans is encoded by the GALC gene. Galactosylceramidase is an enzyme which removes galactose from ceramide derivatives.

**Q32: what is N-glycosidic linkage.**

**ANS:** In chemistry, a **glycosidic bond** or **glycosidic linkage** is a type of covalent **bond** that joins a carbohydrate (sugar) molecule to another group, which may or may not be another carbohydrate.

**Q33: difference between fats and oils.**

**ANS:** **difference between fats and oils** is that **fats** are typically solid at room temperature whereas **oils** are liquid at room temperature.

**fats are composed of high amounts of saturated fatty acids . where as oils are composed of mainly unsaturated fatty acids.**

**Q34: natural sources of waxes.**

**ANS: Petroleum** derived waxes.

**Natural wax** is also found on the surface of fruits.

**Natural wax** ester can be extracted from animals and plant.

**Q35:** function of Hsp70. Hsp70 has  
as been assumed to protect the cell via its chaperone functions. HSP70 family

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members function molecular chaperones in an ATP. Hsp70-1 also has been detected on tumor-derived exosomes of membrane Hsp70-1 positive tumors.

**Q36: howlight is prouduced in fireflies.**

**ANS: Light production in fireflies** is due to a type of chemical reaction called bioluminescence. This process occurs in specialized **light**-emitting organs, usually on a **firefly's** lower abdomen. The enzyme luciferase acts on the luciferin, in the presence of magnesium ions, ATP, and oxygen to **produce light**.

**Q37: STRUCTURAL importace and constrictle protein.**

**ANS:** The Protein constitution of the myofibrils.

Myosin,Adenosinetriphosphatase Activity,Reaction with Actin,The Myosin Molecule.

**Q38: why prolien does not stabilize in alpha helix?**

**ANS: Proline** is formally **NOT** an amino acid, but an imino acid. ... When **proline** is in a peptide bond, it **does not** have a hydrogen on the  $\alpha$  amino group, so it cannot donate a hydrogen bond to **stabilize** an  $\alpha$  helix or a  $\beta$  sheet. It is often said, inaccurately, that **proline** cannot exist in an  $\alpha$  helix.

**Q39: define amolyte.**

**ANS: Definition of ammolite.** plural ammolites. : a semi-precious gemstone consisting of fossilized ammonite shells. The winner will be sent an **ammolite** trophy, the official gemstone of the Alberta.

**Q40: What are anomers.**

**ANS:** Anomers are stereoisomers of cyclic sugars that differ in configuration only at the hemiacetal or hemiketal carbon.

**Anomers** are a unique type of stereoisomer, and are used when talking about carbohydrates.

**Q41: what is stereoisomer.**

**ANS: stereoisomers** are isomeric molecules that have the same molecular formula and sequence of bonded atoms (constitution), but differ in the three-dimensional orientations of their atoms in space. ... By definition, molecules that are **stereoisomers** of each other represent the same structural isomer.

**Q42: what is tautomerism.**

**ANS: Tautomers** are isomers of a compound which differ only in the position of the protons and electrons. ... A reaction which involves simple proton transfer in an



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intramolecular fashion is called a **tautomerism**. Keto-enol **tautomerism** is a very common process, and is acid or base catalysed.

**Q43: carier of intermediate.**

**ANS: Intermediate carrier** definition is - a transportation line participating in a through movement which neither originates nor terminates the passengers or freight

**Q44:coenzyme definition.**

**ANS: A coenzyme** is an organic non-protein compound that binds with an enzyme to catalyze a reaction.**Coenzymes** are often broadly called cofactors, but they are chemically different.

**Q45: difference between oxidative and hydrolytic rancidity.**

**ANS: Hydrolytic rancidity** refers to the odor that develops when triglycerides are hydrolyzed and free fatty acids are released.

This reaction ... **Oxidative**. **Oxidative** rancidity is associated with the degradation by oxygen **in the air**.

**Q46: charateristics of enantiomers.**

**ANS: Enantiomers** are pairs of molecules that are non-superimposable mirror images of each other.

A pair of **enantiomers** must be a chiral compound, which means it has a chiral carbon.

**Enantiomers** rotate the direction of plane polarized light to equal, but opposite angles and interact with other chiral molecules differently.

**Q47: importace of sorbitol.**

**ANS: Sorbitol** can be used as a laxative when taken orally or as an enema.

**Sorbitol** works as a laxative by drawing water into the large intestine, stimulating bowel movements.

**Sorbitol** is a low-calorie sweetener chemically extracted from glucose. It is used as an alternative to sugar in a range of foods, including low-calorie.

**Q48: what is meant by pKa?**

**ANS: pKa Definition.**  $pK_a$  is the negative base-10 logarithm of the acid dissociation constant ( $K_a$ ) of a solution.  $pK_a = -\log_{10}K_a$ . The lower the  $pK_a$  value, the stronger the acid.

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**Q49: difference between nucleoside and nucleotide.**

**ANS:** A **nucleoside** consists of a nitrogenous base covalently attached to a sugar (ribose or deoxyribose) but without the phosphate group. A **nucleotide** consists of a nitrogenous base, a sugar (ribose or deoxyribose) and one to three phosphate groups.

**Q50: Types of cyclic nucleotides.**

**ANS:** A **cyclic nucleotide** (cNMP) is a single-phosphate nucleotide with a cyclic bond arrangement between the sugar and phosphate groups. Like other nucleotides, cyclic nucleotides are composed of three functional groups: a sugar, a nitrogenous base, and a single phosphate group.

**Q51: Properties of nitrogenous bases.**

**ANS:** A nitrogenous base is simply a nitrogen-containing molecule that has the same chemical properties as a base. They are particularly important since they make up the building blocks of DNA and RNA: adenine, guanine, cytosine, thymine and uracil.

**Q52: Numbering of carbons of pentose sugar in nucleotides and nucleosides.**

**ANS:** The 5-carbon sugars ribose and deoxyribose are important components of nucleotides, and are found in RNA and DNA, respectively.

**Nucleotides and Nucleosides ... are pentose sugars, containing five carbon atoms.**