

## BIO-202 BIOCHEMISTRY (FINAL TERM)

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- Eicosanoids are derived from \_\_\_\_\_ fatty acids  
a) Omega 3    b) Omega 6    c) Omega 8    **D) Omega 3 and 6**
- Eicosanoids that cause the inflammation or called pro inflammatory.  
a) Omega 3    **b) Omega 6**    c) omega 9    d) All of these
- What is the correct ratio of omega 3 and 6 in the diet.  
a) 1:3    **b) 1:4**    c) 1:5    d) 1:8
- Omega-3 fatty acids such as alpha-linolenic acid and its derivatives has effects on human health is  
a) Inflammatory    **b) anti inflammatory**    c) no effects    d) all of these
- Docahexonic Acid (DHA) is selectively incorporated into \_\_\_\_  
a) Cell membrane    b) Retinal membrane    C) postsynaptic neuronal membrane    **d) B and C**
- Omega-3 fatty acids are beneficial particularly for \_\_ diseases  
a) Cardiovascular    b) Alzheimer's    c) Cancer    **d) All of these**
- Monoenoic Acids (Oleic Acid) are possibly the most common fatty acids present in  
**a) Olive Oil**    b) Corn    c) soy bean    d) peanut

topic 114

- Polyunsaturated fatty acids contain \_\_\_\_\_ Double bonds  
a) Single    b) Double    **c) More than one**    d) tripple
- Example of Polyunsaturated fatty acids are \_\_\_\_\_  
a) Linoleic Acid    b) alpha Linolenic Acid    c) Arachidonic Acid    **d) All of these**
- how many double bonds are present in Arachidonic Acid  
a) Single    b) Double    c) Triple    **d) Tetrad**
- Arachidonic Acid is synthesized from \_\_\_\_\_ Acid  
**a) Linoleic Acid**    b) Alpha-Linolenic Acid    c) Palmatic Acid    d) None of these
- \_\_\_\_\_ is the precursor of paracrine hormones called Eicosanoids  
a) Linoleic Acid    b) Alpha-Linolenic Acid    **c) Arachidonic Acid**    d) All of these
- Eicosanoids exert complex control over many bodily systems in \_\_\_\_\_  
a) inflammation    b) immunity    c) messengers    **d) All of these**

Topic 115

- Palmitoleic Acid belongs to which family?

## BIO-202 BIOCHEMISTRY (FINAL TERM)

- a) Omega 3    b) Omega 6    **c) Omega 7**    d) omega 8
15. Fatty acids commonly found in body which are  
a) Palmitic Acid                      b) Stearic Acid                      c) Oleic Acid                      **d) All of these**
16. the no of carbon atoms in stearic Acid are  
a) 15                      b) 16                      c) 17                      **d) 18**
17. most common saturated fatty acid found in Animals , plants and microorganisms  
**a) Palmitic Acid**                      b) Stearic Acid                      c) Oleic Acid                      d) None of these
18. Excess carbohydrates in the body are converted into  
**a) Palmitic Acid**                      b) Stearic Acid                      c) Oleic Acid                      d) None of these
19. \_\_\_\_\_ is the first fatty acid produced during fatty acid synthesis  
**a) Palmitic Acid**                      b) Stearic Acid                      c) Oleic Acid                      d) None of these
20. stearic acid are most abundant in animal fat up to  
a) 25%                      **b) 30%**                      c) 35%                      d) 40%
21. which is the monounsaturated Fatty acid (MUFA) found naturally  
a) Palmitic Acid                      b) Stearic Acid                      **c) Oleic Acid**                      d) None of these
22. which fatty acid is highly abundant in membrane lipids  
a) Palmitic Acid                      b) Stearic Acid                      **c) Oleic Acid**                      d) None of these
23. Glycerol and sphingosine are the type of \_\_\_\_\_ most commonly found in lipids  
a) Esters                      **b) Alcohols**                      c) Fatty Acids                      d) Amides
24. glycerol contains \_\_\_\_\_ Carbon and \_\_\_\_\_ hydroxyl OH groups  
**a) 3 and 3**                      b) 3 and 4                      c) 2 and 3                      d) 2 and 2
25. \_\_\_\_\_ is synthesized from Dihydroxyaceton phosphate  
a) Alcohols                      b) Fatty Acids                      **c) Glycerol**                      d) sphingosine
26. Dihydroxyaceton phosphate is acted upon by \_\_\_\_\_ enzymes to form glycerol  
a) one enzyme                      **b) two enzymes**                      c) three enzymes                      d) four enzymes
27. which enzyme remove the phosphate group from glycerol phosphate to become glycerol  
a) Glycerol phosphate dehydrogenase                      **b) glycerol kinase**  
c) phosphatease                      d) All of these

## BIO-202 BIOCHEMISTRY (FINAL TERM)

28. Glycerol is a precursor for synthesis of \_\_\_\_\_ and \_\_\_\_\_ in the liver and adipose tissue  
a) Triacylglycerols and phospholipids      b) diacylglycerols and glycolipids  
c) monoacylglycerols and phospholipids      d) tryacylglycerols and glycolipids
29. when the body uses stored fat as a source of energy glycerol and \_\_\_\_\_ are released into blood stream  
a) Amino Acids      b) Glucose      c) Fatty acids      d) Triacylglycerols
30. sphingosine is an \_\_\_\_\_  
a) Poly Alcohol      b) Amino Alcohol      c) glyco Alcohol      d) Non of these
31. sphingosine is synthesized in the body in the form of \_\_\_\_\_  
a) Amide      b) Ceramide      c) newmide      d) glyride
32. serine and palmitoyl CoA condense to form a product ketosphinganine that is \_\_\_\_\_ to sphinganine  
a) Oxidised      b) Reduced      c) Hydrolysed      d) Condensed
33. sphingosine is formed via degradation of sphingolipid in the \_\_\_\_\_  
a) Lysosomes      b) Golgyappratus      c) Neuclyes      d) Cytoplasm
34. In Acrolein test we used \_\_\_\_\_ acid for dehydration to detect glycerol  
a) Nitric Acid      b) Phosphoric Acid      c) sulphuric Acid      d) Hydrochloric Acid
35. glycerol combines with three molecules of \_\_\_\_\_ to form glycerol trinitrate  
a) Nitric Acid      b) Phosphoric Acid      c) Sulphuric Acid      d) Hydrochloric Acid
36. which enzyme is used to hydrolyzed the Triacylglycerols  
a) Protease      b) glycerol kinase      c) phosphatease      d) lipase
37. There are \_\_\_\_\_ significant advantages to using triacylglycerol as stored fuels.  
a) One      b) two      c) three      d) four
38. The carbon atoms of fatty acids are more \_\_\_\_\_ than those of sugars.  
a) Oxidized      b) reduced      c) condensed      d) All of these
39. Triacylglycerol yields more than \_\_\_\_\_ as much energy as the oxidation of carbohydrates.  
a) Twice      b) thrice      c) four times      d) 5 times



## BIO-202 BIOCHEMISTRY (FINAL TERM)

a) Palmitic Acid      b) Stearic Acid      **c) Oleic Acid**      d) None of these

51. hydrolysis of a fat by an \_\_\_\_\_ is called saponification

a) Acid      b) Base      **c) Alkali**      d) All of these

52. the alkali salts of the fatty acids which are called

**a) soaps**      b) toothpaste      c) Detergents      d) All of these

53. which Alkali is used to form sodium palmitate soap formation

**a) NaOH**      b) CaOH      c) KOH      d) NH<sub>4</sub> OH

54. the amount of alkali needed to saponify a given quantity of fat will depend upon the number of \_\_\_\_\_ group present

a) Amino group      b) alkyl group      **c) carboxyl group**      d) ester group

55. Fats containing \_\_\_\_\_ chain fatty acids will have \_\_\_\_\_ COOH groups per gram than long chain fatty acids.

**a) Short –more**      b) long –more      c) short – less      d) long -less

56. saponification number of butter is

**a) 220 to 230**      b) 245 to 262      c) 194 to 200      d) 210 to 233

57. Additive reactions consist of

a) Hydrogenation      b) Halogenation      **c) A and B**      d) Decomposition

58. During the hydrogenation of a lipids the melting point \_\_\_\_\_ and fat becomes more \_\_\_\_\_ at room temperature.

a) decrease – liquid      **b) Increase –Solid**      c) Decrease –Solid      d) increase –liquid

59. During the hydrogenation of fatty acids catalyst is used

a) nickel      b) copper      **c) Nickel and copper**      d) Zinc

60. Margarine manufacturing means.....

**a) changing liquid to solid**      b) Solid to liquid      c) Liquid to liquid      d) All of these

61. addition of halogens in unsaturated fatty acids is called

a) Hydrogenation      **b) halogenation**      c) hydrohalogenation      d) All of these

## BIO-202 BIOCHEMISTRY (FINAL TERM)

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62. the degree of unsaturation is reflected by

- a) Iodine number      b) saponification number      c) A and B      d) Sodium Number

63. Iodine number is defined as the number of grams of iodine absorbed by \_\_\_\_ of fat

- a) 50gm      b) 100gm      c) 75gm      d) 85gm

64. during the conversion of Linoleic acid at room temperature into Tetraiodostearic acid which catalysts are/ is used

- a) Acetic Acid      b) Methanol      c) Acetic Acid and Methanol      d) None of these

65. fats rich in unsaturated fatty acids have \_\_\_\_\_

- a) High Iodine number      b) Low iodine number      c) Moderate iodine no      d) all of these

66. the higher is the iodine number the \_\_\_\_\_ reactive and \_\_\_\_\_ stable

- a) More –less      b) Less – more      c) More –More      d) Less –Less

67. Rancidity occurs particularly when expose to

- a) Light      b) Heat      b) Atmospheric Oxygen      d) All of these

68. \_\_\_\_\_ fats resist rancidity more than \_\_\_\_\_ fats that have unsaturated double bonds

- a) saturated –unsaturated      b) Unsaturated –Saturated      c) less saturated- More Unsaturated

69. Rancidity is occurs due to

- a) Oxidation      b) Hydrolysis      c) Hydration      d) Oxidation and Hydrolysis

70. oxidation of the fat molecules give rise to some short chains of

- a) Aldehydes      b) ketones      c) dicarboxylic acids      d) All of these

71. The Rancidity can be prevented in the food by adding

- a) Vitamin E      b) Vitamin D      c) Vitamin A      d) All of these

72. Second type of neutral lipids that are of physiological importance.

- a) Glycerol      b) alcohol      c) waxes      d) aldehydes

73. waxes are \_\_\_\_\_ in water and \_\_\_\_\_ in fat

- a) Soluble – insoluble      b) insoluble –soluble      c) soluble-soluble      d) insoluble-insoluble

## BIO-202 BIOCHEMISTRY (FINAL TERM)

---

74. waxes are \_\_\_\_\_ by lipases  
a) Digestible      **b) indigestible**      c) semi digestible      d) no effect
75. there \_\_\_\_\_ types of waxes  
a) One      **b) two**      c) Three      d) Four
76. True waxes are solid simple lipids containing a  
**a) Monohydric Alcohol**      b) Dihydric alcohol      c) trihydric alcohol      d) polyhydric alcohol
77. Which alcohol compound is found in plant cuticle waxes and in beeswax  
**a) Myricyl Alohol**      b) Cetyl Alohol      c) Polyhydric Alocohol      d) A and B
78. Example of true waxes is/are  
a) Bee wax      b) spermaceti wax      c) Cholesterol      **d) A and B**
79. Bees was is a mixture of waxes its chief constituent is  
**a) Myricyl and Palmitate**      b) Myrical and Aceatic Acid      c) Palmitate and Oleic Acid
80. sperm whale contains \_\_\_\_\_ wax in his head  
a) 330Kg      b) 300Kg      c) 350Kg      **d) 336kg**
81. the wax obtained by Brazilian palm tree is  
a) Bees was      **b) Carnauba wax**      c) jojoba wax      d) All of these
82. waxes used for candles, soaps and cosmetics is  
a) Bees was      b) Carnauba wax      **c) jojoba wax**      d) All of these
83. LDL cholesterol and HDL cholesterol stands for? no options  
a) Low density Lipoprotein      b) High density lipoprotein
84. which type of cholesterol have been associated with decreased risk for heart diseases  
a) LDL cholesterol      **b) HDL cholesterol**      c) TAG      d) Total cholesterol
85. lipoprotein particles are spherical aggregates with \_\_\_\_\_ lipids at the core and \_\_\_\_\_ protein side chains and lipid head groups at the surface  
a) **Hydrophobic –Hydrophilic**      b) Hydrophilic –hydrophobic

## BIO-202 BIOCHEMISTRY (FINAL TERM)

---

c) Hydrophobic –Hydrophobic

d) Hydrophilic –Hydrophilic

86. Lipoproteins function is to keep their components lipids as

a) Soluble

b) Insoluble

c) Semisoluble

d) None of these

87. Different types of lipoproteins are different in

a) Size

b) Density

c) Site of origin

d) All of these

88. The maximum concentration of TAG (Triacylglycerol) present in

a) chylomicrons

b) VLDL

c) LDL

d) HDL

89. the maximum concentration of cholesterol is present in

a) Chylomicron

b) LDL

c) VLDL

d) HDL

90. the Chylomicron remnant is removed from the circulation by the \_\_\_

a) Liver

b) Kidney

c) Intestine

d) Intestinal Mucosa

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Topics 133 to 142

91. \_\_\_\_\_ are assembled in the liver

a) Chylomicron

b) VLDL

c) LDL

d) HDL

92. LDL contain \_\_\_\_\_ as their major apolipoprotein that carry cholesterol to \_\_\_\_\_

a) apoB-100 and Extra Hepatic Tissue

b) apoB-200 and Liver

c) ApoB-100 and liver

c) ApoB-200 and Extra hepatic Tissue

93. \_\_\_\_\_ can also accumulate in the \_\_\_\_\_ lining the arteries resulting tin the formation of atherosclerosis.

a) Reduced LDL and Macrophage cells

b) Oxidized LDL and Macrophage cells

c) Oxidized HDL and macrophage cells

d) Reduced HDL and Macrophage cells

94. which type of lipoproteins originates in the liver and small intestine

a) Chylomicron

b) VLDL

c) LDL

d) HDL

95. which type of lipoprotein take up cholesterol from peripheral tissues and return it to the liver as cholesterol esters

## BIO-202 BIOCHEMISTRY (FINAL TERM)

- a) Chylomicron      b) VLDL      c) LDL      **d) HDL**
96. when cholesterol is taken up by the HDL, it is immediately \_\_\_\_\_ and becomes \_\_\_\_\_
- a) Esterified - Hydrophobic**      b) Oxidized - Hydrophobic  
c) Esterified - Hydrophilic      d) Oxidized -Hydrophilic
97. when cholesterol is taken up by the HDL it is called \_\_\_\_\_
- a) Nascent HDL      **b) Mature HDL**      c) Pre Mature HDL      d) All of these
98. which lipoprotein is called good cholesterol carrier
- a) Chylomicron      b) VLDL      c) LDL      **d) HDL**
99. Healthy Fats contain.....
- a) Monounsaturated fats      b) polyunsaturated fats      c) omega-3 polyunsaturated fats      **d) All of these**
100. unhealthy fat contains
- a) Trans-fat      b) Saturated fat      c) increased Cholesterol Content      **d) All of these**
101. elevate serum LDL but not HDL therefore they increase the risk of CHD
- a) **Trans fat**      b) Saturated fat      c) Increased Cholesterol Content      d)None of these
102. fatty acids of trans configuration in our food come from \_\_\_\_\_ different sources
- a) one      **b) two**      c) three      d) Four
103. The concentration of IP-TFA in partially hydrogenated fat may be as high as
- a) 60%**      b) 70%      c) 80%      d) 90%
104. in milk, RP-TFA is \_\_\_\_\_ of the fat
- a) 4-6 %**      b) 4-7%      c) 3-4%      d) 6-7%
105. \_\_\_\_\_ is more harmful than \_\_\_\_\_ when compared on a gram-to-gram basis
- a) RP-TFA and IP-TFA      **b) IP-TFA and RP-TFA**
106. the deleterious effect of trans fats occur at intakes of \_\_\_\_\_g/day
- a) 3 to 7      b)4 to 7      **c)2 to 7**      d) 5 to 7
107. saturated fats is associated with \_\_\_\_\_ levels of Total cholesterol and LDL cholesterol

## BIO-202 BIOCHEMISTRY (FINAL TERM)

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- a) Low      **b) High**      c) Medium      d) Very low
108. saturated fats are found in  
a) Butter and cheeses      b) milk and palm oil      c) Animal fat and coconut oil      **d) all of these**
109. Among the SFAs stearic acid appears to have \_\_\_\_\_ effect on LDL-C  
a) Negative      **b) Neutral**      c) Positive      d) Polar
110. Saturated Fatty Acids (SFAs) are considered to Hypercholesterolemic  
a) Luaric Acid      b) Myristic      c) palmitic      d) **All of these**
111. Deitary cholesterol has \_\_\_\_\_ on plasma cholesterol  
**a) Little effect**      b) Hight Effect      c) Medium Effect      d) Very low effect
112. There are \_\_\_\_\_ classes of phospholipids  
a) one      **b) two**      c) three      d) Four
113. membrane lipids are \_\_\_\_\_ i.e one end of the molecule is hydrophobic and the other is hydrophilic  
a) Amphoteric      **b) amphipathic**      c) amphophatic      d) none of these
114. Phospholipids is not synthesized by  
a) Liver      b) adipose tissues      c) mammary glands      **d) mature erythrocytes**
115. Phosphoglyceride is a diacylglycerol with a \_\_\_\_\_ group on the \_\_\_\_\_ carbon of glycerol  
**a) phosphate – 3 carbon**      b) Amide – 3 carbon      c) sulphate – 3 carbon      d) phosphate – 5
116. in general glycerophospholipids contain \_\_\_\_\_ at Carbon no 1( C-1)  
**a) Saturated**      b) Unsaturated      c) Phosphate      d) All of these
117. the phosphate group on phophatidic acid PA can be esterified to another compound containing \_\_\_\_\_  
a) Amide group      b) Alkyl Group      **c) Hydroxyl group**      d) Ester group
118. the most abundant phospholipids of the cell membrane is  
**a) Lecithins**      b) Phospholipidcholine      c) phospholipidaccetaline

## BIO-202 BIOCHEMISTRY (FINAL TERM)

119. the gaseous exchange occurs \_\_\_\_\_ in lungs

- a) Alveoli                      b) brochioles                      c) alviolus                      d) All of these

120. Adenosine 3'-phosphate-5'-phosphosulfate is the sulfate donor for :

- A) sulfated proteoglycans      B) Conjugate of drugs      C) Phosphosulfate      D) Both a and b

121. Which of the following methyl group donor:

- A) S-adenosylmethionine      B) Adenosine      c) Phosphate-5      d) All of these

122. \_\_\_\_\_ and \_\_\_\_\_ play key roles in activating or inhibiting proteins:

- a) GTP, GMP                      b) GDP, AMP                      c) GTP, GDP                      d) AMP, GMP

123. cAMP and cGMP serve as \_\_\_\_\_ messengers in signal transduction pathways:

- a) 1<sup>st</sup>                      b) 2<sup>nd</sup>                      c) 3<sup>rd</sup>                      d) 4<sup>th</sup>

124. synthetic purine and pyrimidine analogs contains which group?

- a) Halogens                      b) Thiols                      c) additional of nitrogen atoms      d) All of these

125. Pyrimidine are used for:

- a) Chemotherapy      b) Treatment of AIDS      c) Organ transplantation      d) All of these

126. suffix "ine" in bases denotes the presence of \_\_\_\_\_ in the ring.

- a) Nitrogen                      b) Amine                      c) Hydroxyl                      d) Both a and b

127. The nitrogen-containing bases belong to \_\_\_\_\_ families of compounds:

- a) 2                      b) 3                      c) 4                      d) 5

128. By the attachment of different groups to the \_\_\_\_\_ different types of pyrimidine and purine are generated.

- a) Rings                      b) Compound                      c) Nucleotide                      d) Both a and b

129. which nucleotide contains AG:

- a) DNA                      b) RNA                      c) Both                      d) None of these

130. Adenine when combines with \_\_\_\_\_ the structure is known as Adenosine

- a) Hexose                      b) Pentose                      c) Tetrose                      d) All of these

131. Deoxyguanosine refers to which base?

- A) Adinine+ pentose      b) Guanine+pentose      c) Guanine+ribose      d) Guanine+sucrose

132. Which of the following is Minor Purine Bases:

- a) Inosine                      b) methyl guanine                      c) Both a and b                      d) Guanine

133. Mercaptopurine, Allopurinol & 8-Azaguanine are referred to which type of bases?

- a) Natural                      b) Unnatural                      c) Doubles                      d) Both a and b

134. Uric acid is the catabolic end product of \_\_\_\_\_ in human beings:

- a) Guanine                      b) Purine                      c) thymine                      d) Cytosine

Topics 153 to 162

1. Prostaglandins are fatty acids containing \_\_\_\_\_ atoms, including an internal \_\_\_\_\_

- a) 10 C – 5 carbon ring      b) 15C – 8 carbon ring      c) 20 C – 5 Carbon Ring      d) 20 C – 8 carbon ring

2. Prostaglandins have double bond between

- a) C13 and C 14                      b) C5 and C6                      c) C17 and C18                      d) All of these



## BIO-202 BIOCHEMISTRY (FINAL TERM)

15. lipoxygenase enzymes incorporation of \_\_\_ molecule in arachidonic acid and forms \_\_\_  
a) Oxygen – OOH      b) Oxygen – COOH      c) Oxygen – OH      d) Hydrogen – OH
16. when oxygen is added it isomerizes at \_\_\_ away from the hydro-peroxy  
a) One carbon      b) Two carbon      c) Three carbon      d) Four carbon
17. addition of oxygen during synthesis of leukotrienes and lipoxins configuration changes to  
a) Cis to trans      b) Trans to Cis      c) Cis to double trans      d) Trans to Double Cis
18. during the isomerization of double bond becomes \_\_\_ in Lipoxygenase pathway  
a) one step forward      b) one step backward      c) two step forward      d) two step backward
19. The Hydro-Peroxy group is  
a) Stable      b) Unstable      c) Very stable      d) low stable
20. which of the following molecules act as messenger molecules  
a) HETEs      b) Arachidonic Acid      c) Heme      d) All of these
21. LTs and LXs are stands for    no options  
Leukotrienes and Lipoxins  
HETEs: Hydroxy-eicosa-tetra-enoic acid      HPETEs: Hydro-peroxy-eicosa-tetra-enoic acid
22. LTs and LXs have \_\_\_ double bonds as compared to Prostaglandins have \_\_\_ double bonds  
a) 1 to 3 and 3 to 5      b) 3 to 5 and 1 to 3      c) 2 to 5 and 3 to 5      d) 2 to 4 and 2 to 5
23. HPETEs are the precursors of  
a) leukotrienes      b) lipoxins      c) leukotrienes and lipoxins      d) HETEs
24. 5-HPETE is converted to  
a) LTA4      b) LTA5      c) LTA6      d) LTA7
25. Functional leukotrienes are formed from LTA4 examples are  
a) LTB4      b) LTC4      c) LTD4      d) A and B
26. Removal of \_\_\_ residue from LTC4 forms LTD4  
a) Glycine      b) Glutamine      c) Glutamate      d) B and C

## BIO-202 BIOCHEMISTRY (FINAL TERM)

27. Leukotrienes were so named because they were first discovered in  
a) Red blood cells      **b) White blood cells**      c) Platelets      d) All blood cells

28. The lipoxins are formed through the action of \_\_ and \_\_ on Arachidonic Acid  
**a) 15 and 5 lipoxygenase**      b) 10 and 5 lipoxygenase  
c) 5 and 5 lipoxygenase      d) All of these

29. Chemotaxis is migration of \_\_ to the tissue site of injury or inflammation  
a) RBCs      **b) WBCs**      c) Platelets      d) All of these

30. Lipoxins induce chemotaxis and stimulate \_\_\_\_ radicals for killing microorganisms  
a) Oxide      **b) Super oxide**      c) Trioxide      d) All of these

31. which of the followings have very short half lives  
a) Prostaglandins      b) Thromboxanes      c) leukatrienes and lipoxins      **d) All of these**

32. Nucleotides are the building blocks of \_\_\_\_\_. No options  
Ans is Nucleic Acid

33. Nucleic acids, which include DNA and RNA, are made from monomers known as \_\_  
a) Nucleoside      **b) Nucleotides**      c) Poly nucleotides      d) All of these

34. Protein synthesis dependent on  
a) Nucleoside      **b) Nucleotides**      c) Poly nucleotides      d) All of these

35. Principal donors and acceptors of phosphoryl group in metabolism  
a) ATP      b) ADP      c) AMP      **d) ATP and ADP**

36. in ATP molecules the removal of \_\_ Group release energy  
a) Sugar group      b) Ribose group      **c) Phosphate**      d) All of these

37. Examples of Co- Enzymes are  
a) coenzyme A,      b) FAD      c)  $\text{NAD}^+$  and  $\text{NADP}^+$       **d) All of these**

1) Ether lipids compounds constitute as much as \_\_\_\_ of the phospholipids of brain and muscle

a) 5%      b) **10%**      c) 15%      d) 20%

2) Ether lipids with an unsaturated group (alkenyl) at the 1st position on the glycerol chain are called :

## BIO-202 BIOCHEMISTRY (FINAL TERM)

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A) Plasmalogens

b) Glycerophospholipids

c) (PAF) Platelet-activating factor

- 3) PAF is synthesized and released by a variety of cell \_\_\_\_:
- a) Size                      b) **Types**                      c) Length by numbers                      d) Both a and b
- 4) About \_\_\_\_ of the heart phospholipids are plasmalogens
- a) All  
b) **Half**  
c) One fourth  
d) Some
- 5) How many subclasses are There of sphingolipids:
- a) **2**  
b) 3  
c) 4  
d) 5
- 6) Sphingoglycolipids molecules contain \_\_\_\_ and \_\_\_\_ components:
- a) Carbohydrate  
b) Lipid  
c) **Both a and b**  
d) None of these
- 7) Sphingolipids, like other membrane lipids, are composed of:
- a) hydrophobic portion  
b) polar head group  
c) Plasmalogens  
d) **Both a and b**
- 8) Sphingomyelins are present in the \_\_\_\_ of animal cells:
- a) **plasma membranes**  
b) Nucleus  
c) Cytoplasm  
d) All body
- 9) Cerebroside have \_\_\_\_ sugar linked to ceramide:
- a) **Single**  
b) Double  
c) Triple  
d) Both a and d
- 10) Galactosylceramide is a major glycosphingolipid of \_\_\_\_:
- a) Nucleus  
b) Digestive system  
c) **Brain**  
d) Both a and b
- 11) Globosides are \_\_\_\_:
- a) **Glycosphingolipids**  
b) Galactosylceramide  
c) Cerebrosides  
d) Both a and b

## BIO-202 BIOCHEMISTRY (FINAL TERM)

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- 12) Globosides are highly abundant in
- a) RBCs
  - b) Wbc
  - c) Platelets
  - d) All of these
- 13) Sialic acids are acidic sugars with a \_\_\_ carbon backbone:
- a) Six
  - b) Seven
  - c) Eight
  - d) Nine
- 14) Sialic acid gives gangliosides the \_\_\_\_\_ charge at pH 7
- a) Neutral
  - b) Positive
  - c) Negative
  - d) Both b and c
- 15) About \_\_\_\_\_ of brain lipids are gangliosides and were first isolated from the ganglion of brain cells
- a) 4%
  - b) 5%
  - c) 6%
  - d) 7%
- 16) Gangliosides have a significant role in
- a) Growth
  - b) differentiation of tissues
  - c) carcinogenesis
  - d) All of these
- 17) The basis of blood groups depend on expression of different antigens on \_\_\_\_\_
- a) RBCs
  - b) Wbc
  - c) Platelets
  - d) All of these
- 18) Modification of O antigen results in \_\_\_\_\_ blood groups respectively:
- a) A
  - b) B
  - c) AB
  - d) All of these
- 19) Sulfatides are found predominantly in \_\_\_\_\_ ?
- a) nerve tissue
  - b) Kidney
  - c) Stomach
  - d) Both a and b
- 20) Gangliosides have oligosaccharides as their \_\_\_\_\_ head groups:
- a) Non\_polar
  - b) Polar
  - c) Neutral

## BIO-202 BIOCHEMISTRY (FINAL TERM)

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- d) Both a and b
- 21) Glyceroglycolipids are the predominant membrane lipids of ?
- a) Animals
  - b) Plants**
  - c) Prokaryotes
  - d) Eukaryotes
- 22) Galactolipids constitute about \_\_\_\_\_ of plant membrane lipids:
- a) 50% to 60%
  - b) 60% to 70%
  - c) 70% to 80 %**
  - d) 80% to 90%
- 23) abundant lipids in the biosphere are?
- a) Sulfolipids
  - b) Galactolipids**
  - c) Glycolipids
  - d) Glyceroglycolipids
- 24) Sulfonated glucose is joined to the \_\_\_ of diacylglycerol in glycosidic linkage:
- a) C2
  - b) C3**
  - c) C4
  - d) C5
- 25) Galactolipids and Sulfolipids are included in?
- a) Glyceroglycolipids**
  - b) Glycolipids
  - c) Glycerolipids
  - d) None of these
- 26) O antigen also referred to as \_\_\_\_\_ antigen:
- a) A
  - b) B
  - c) C
  - d) H**

27)

1. Nucleotides that includes in pyrimidines are/is

- a) Cytosine
- b) thymine
- c) Uracil
- d) All of these**

2. Cytosine when combine with pentose it be

- a) deoxyctytidine
- b) cytidine
- c) monoxycytidine
- d) A&B**





## BIO-202 BIOCHEMISTRY (FINAL TERM)

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c) Aromatic – Double

d) Aliphatic – Triple

19. structure that contain other atoms in addition to carbon in ring structure called

a) Homocyclic

b) Heterocyclic

c) Isocyclic

d) polycyclic

20. Nucleotides have nature

A) Aromatic

b) Heterocyclic

c) Aromatic and Heterocyclic

d) Homocyclic

21. the six atoms rings of Purine and pyrimidines are numbered in

a) Same direction

b) Opposite direction

b) Linear Direction

d) Cyclic Direction

22. which of the nucleoside contain double ring

a) Purine

b) Pyrimidine

c) Cycline

d) Hexocycline

23. Purines or pyrimidines with and \_\_\_\_\_ are weak bases

a) Amino Group

b) Hydroxyl Group

c) Methyl group

d) ester group

24. the most important functional groups of pyrimidines and purine are \_\_\_\_\_ no options

Ans Nitrogens Rings Carbonyl groups Exocyclic Amino Group

25. Purine and Pyrimidine bases are \_\_\_\_\_

a) Hydrophilic

b) Hydrophobic

c) Neutral

d) All of these

26. The conjugated double bonds of purine and pyrimidine derivatives absorb

a) Infra red Light

b) Heat Waves

## BIO-202 BIOCHEMISTRY (FINAL TERM)

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c) UV Light

d) all of these

27. The mutagen property is utilized in \_\_\_ analysis of nucleotides and nucleic Acids

a) Qualitative Analysis

b) Quantitative Analysis

c) Qualitative and Quantitative Analysis

c) Numeric Analysis

28. purine and pyrimidine bases can exist in \_\_\_ form at physiologic pH

a) keto-enol

b) amine-imine

c) A&B

d) Aminol

29. Smaller pyrimidine molecule has the \_\_\_ and the larger purine molecule have \_\_\_

a) Longer name – shorter name

b) Shorter name – Larger name

c) Longer name – longer name

c) Shorter name – Shorter name

30. Sugars are linked to the heterocycle by a \_\_\_

a) Glycosidic Bond

b) N- Glycosidic Bond

c) B-N-Glycosidic Bond

d) All of these

31. B-N-Glycosidic Bond in Pyrimidine forms at \_\_\_ and Purine at \_\_\_

a) N-1 and N-9

b) N-3 and N-9

c) N-1 and N-3

d) At any position

32. glycosidic bond is formed when \_\_\_ removed from pentose and \_\_\_ removed from Base

a) OH and H

b) H and OH

c) OH and O

c) O and H

33. the difference between glycosidic linkage and O-glycosidic bond is

a) Nitrogen and Oxygen

b) Carbon and Nitrogen

c) oxygen and Hydroxyl

d) Amino and Carboxyl



## BIO-202 BIOCHEMISTRY (FINAL TERM)

---

c) Neutral pH

d) All of these

42. The negative charges on phosphate are generally neutralized by \_\_\_ with positive charges

a) ionic interactions

b) Covalent Interaction

c) Polar interactions

d) Non polar interactions

43. Cyclic GMP serves as second messenger in response to

a) Super oxide

b) Nitric oxide

c) Super Hydroxide

d) All of these

44. DNA is Present is

a) Chromosomes of Eukaryotes

b) Mitochondria

c) chloroplast and plasmids

d) All of these

45. DNA is a polymer of

a) Deoxyribonucleoside monophosphate

b) Deoxyribonucleoside diphosphate

c) Deoxyribonucleoside Triphosphate

d) All of these

46. The protein-DNA complex is present in a non membrane bound region known as

a) Plasmid

b) Nucloside

c) Nucleoid

d) Nucleolus

47. In DNA double helix, the two strands of DNA are held together by.

a) glycosidic linkage

b) Phosphodiester linkage

c) Hydrogen bonding

c) other interactions

48. The complex folding of large chromosomes within eukaryotic chromatin and bacterial nucleoids is generally considered

a) Primary structure

b) Secondary structure

c) tertiary structure

d) All of these

49. The stacking also involves a combination of \_\_\_ interactions between the bases.

## BIO-202 BIOCHEMISTRY (FINAL TERM)

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a) Van der Waals

b) Dipole – Dipole

c) Hydrogen bondings

d) A & B

50. Base stacking helps to \_\_\_ contact of the bases with water

a) Minimize

b) Maximize

c) no effect

d) All of these

51.

- 1) A key factor affecting the rate of a reaction catalyzed by an enzyme is the concentration of;
  - a) Enzyme
  - b) substrate,
  - c) pH
  - d) Temperature
- 2) because of reversibility of reactions, conversion of product \_\_\_\_\_ substrate:
  - a) Forward
  - b) Back
  - c) Stop at
  - d) Both a and b in some cases
- 3) One simplifying approach in kinetics experiments is to measure the :
  - a) Initial rate
  - b) designated  $V_0$
  - c)  $[S]$  greater  $\rightarrow$  concentration of,  $[E]$
  - d) All of these.
- 4)  $V_0$  is the \_\_\_\_\_?
  - a) initial velocity
  - b) Final velocity
- 5) Increase in substrate concentration \_\_\_\_\_  $V_0$  ;
  - a) Increase
  - b) Decrease
  - c) Stop
  - d) Both b and c
- 6) When initial velocity ( $V_0$ ) is plotted against  $[S]$  a hyperbolic curve results, which represent the \_\_\_\_\_:
  - a) Minimum velocity
  - b) Maximum velocity
  - c) Substrate concentration
  - d) Initial velocity
- 7) At relatively low concentrations of substrate,  $V_0$  \_\_\_\_\_ almost linearly:
  - a) Increases
  - b) Decreases
  - c) Go forward

## BIO-202 BIOCHEMISTRY (FINAL TERM)

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- d) Go reverse
- 8) At this point in the reaction, if  $[S] \gg E$ , all available enzyme is
- Unsaturated
  - Saturated**
  - Polymerase enzyme
  - Helicase enzyme
- 9) finite limit of \_\_\_\_ is called saturation kinetics
- $[S]$
  - $V_{min}$
  - E
  - $V_{max}$**
- 10) Michaelis constant is represented by?
- $M_c$
  - $M_k$
  - $K_m$**
  - $M_{hc}$
- 11) Low concentration of substrate is needed to half-saturate the enzyme i.e. to reach a velocity that is \_\_\_\_?
- $1V_{max}$
  - $1/2V_{max}$**
  - $2V_{max}$
  - $2/3V_{max}$
- 12) A numerically \_\_\_\_  $K_m$  reflects a \_\_\_\_ affinity of enzyme;
- High, high
  - High, low
  - Low, low.
  - Low, high.**
- 13)  $K_m$  glucose of approximately
- 0.5mM
  - 0.05 mM**
  - 0.005mM
  - 5mM
- 14) Write Michaelis-Menten equation, the rate equation with its symbols detail;.....no option
- Ans is
- $$V_o = v_{max} \frac{[S]}{K_m + [S]}$$
- $$V_o = V_{max} \frac{[S]}{K_m + [S]}$$
- $K_m + [S]$  Where;
- $V_o$  = initial reaction velocity
  - $V_{max}$  = maximal velocity
  - $K_m$  = Michaelis constant
  - $= \frac{K_1 + K_2}{K_1}$
  - $[S]$  = substrate concentration
- 15) Leonor Michaelis and Maud Menten in \_\_\_\_\_, proposed a simple model that accounts for most of the features of enzyme-catalyzed reactions:
- 1919

## BIO-202 BIOCHEMISTRY (FINAL TERM)

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- b) 1911
- c) 1939
- d) 1913

16) What is abbreviation of ES?

- a) Enzyme study
- b) Enzyme starting
- c) Energy substrate
- d) Enzymes substrate

1. \_\_\_ is the most abundant substance in living systems, making up \_\_\_% or more of the weight of most organisms

- a) Water – 80%
- b) Protein – 70%
- c) Water – 70%
- d) Carbohydrate - 70%

2. \_\_\_\_\_ are of crucial importance to the structure and function of biomolecules

- a) Hydrogen bonding
- b) Polarity
- c) Tendency of water to ionize
- d) A and C

3. What gives water to its unusual properties like higher MP, BP and Heat of Vaporization

- a) Covalent bonding
- b) Hydrogen bonding
- c) Dipole forces
- d) Intermolecular forces

4. The water molecules have \_\_\_ partial charges

- a) positive
- b) Negative
- c) One negative and 2 positive
- d) All of these

5. Attraction between Oxygen atom of one water molecule and hydrogen of another molecule this bonding is called

- a) Covalent bonding
- b) Electrostatic forces
- c) Hydrogen bonding
- d) All of these

6. oxygen atom allows each water molecule to form hydrogen bonds with as many as \_\_\_ neighboring water molecules

- a) One
- b) Two
- c) Three
- d) Four



## BIO-202 BIOCHEMISTRY (FINAL TERM)

c)  $K_w$

d)  $K_{eq}$

14. The value for  $K_{eq}$ , determined by electrical conductivity measurements of pure water, is \_\_\_ at 25°C

a)  $1.8 \times 10^{-16}$

b)  $1.9 \times 10^{+16}$

c)  $1.8 \times 10^{-18}$

d)  $1.9 \times 10^{-1}$

15. When there are exactly equal concentrations of  $H^+$  and  $OH^-$ , as in pure water, the solution is said to be at \_

a) Acidic pH

b) Basic pH

c) Alkali pH

d) Neutral pH

16. pH means

a) Negative logarithm

b) Negative logarithm of Hydrogen ions

c) Negative logarithm of  $HO$  ions

d) positive logarithm of Hydrogen ions

17. For each pH unit less than 7.0, the  $[H^+]$  is \_\_\_ tenfold and for each pH unit above 7.0, it is \_\_\_ tenfold

a) increased and decreased

b) Decreased and increased

c) less and decreased

d) more and increased

18.  $pH + pOH =$  \_\_\_\_\_

a) 11

b) 12

c) 13

d) 14

19. What will be the pH of 0.1 M HCl?

a) 1

b) -1

c) +1

d) 2

20. The stronger the acid, the greater its tendency ionizes that means...

a) to gain electrons

b) to gain proton

c) to lose its proton

d) to gain electrons

21. Which of the following acids are strong acids?

a) sulphuric Acid

b) Hydrochloric Acid

c) Nitric Acid

d) All of these

22. Strong bases are/is

a) NaOH

b) CaOH

c)  $NH_4OH$

d) All of these

23. The stronger the tendency to dissociate a proton, the stronger is the acid and the \_\_\_ its  $pK_a$

a) stronger

b) higher

c) neutral

d) lower

## BIO-202 BIOCHEMISTRY (FINAL TERM)

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24. \_\_\_\_\_ is used to determine the amount of an acid in a given solution

- a) Molarity                      b) pH                      c) Titraton                      d) normality

25. A measured volume of the acid is titrated with a solution \_\_\_\_ of known concentration

- a) weak Base                      b) Strong Bas                      c) neutral solution                      d) All of these

26. The pH of the equimolar solution of acetic acid and acetate is exactly equal to the pKa of acetic acid pKa = \_\_\_\_\_

- a) 4.32                      b) 4.75                      c) 4.76                      d) 9

27. The Henderson Hassebalch HH equation relates

- a) pH                      b) pka                      c) buffer concentration                      d) All of these

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