Collected questions from past papers

1- All of the following will cause mild or severe acidosis except:
a- the presence of ketone bodies in untreated diabetic patient
b- The production of acids like lactic acid during metabolism
c- Excessive breathing
d- Repeated vomiting from the stomach containing HCL.

Answer: d

2- How many molecules of water dissociate into OH- and H3O+?
a- one in 7
b- One in 10^7
c- One in 10^12
d- One in 10^-7

Answer: b

3- One of the following statements is not true about Carbonic acid/Bicarbonate buffer:
a- The most common extracellular buffer.
b- Under physiological conditions the ratio of [HCO3-]/ [H2CO3] = 20.
c- Its buffering range is less than the desirable pH and that's compensated by CO2 mobility.
d- When adding a strong acid, it will react with HCO3-
e- When adding a strong base, it will react with CO3-2

Answer: e

4- If you have X moles of KOH, how many moles of an acid must be added to have a buffer with equal concentrations of A- and HA?
a- X
b- X/2
c- 2X
d- 1.5 X
e- None of the above

Answer: c

5- A 0.1 M base (B) has dissociated in water. Its pKb = 5, Calculate it pH.
Answer --> 11

6- Which of the following has ion-dipole interaction:
Answer --> Na+ (H2O)

7-At neutral pH, the structure of glutamic acid is:
Answer --> the amino group is positively charged and the two carboxyl groups are negatively charged.

8- 100 mL of a buffer has a concentration of 0.2 M. The buffer is composed of a weak acid component and a conjugate base component and its pH=7.57. If 1 mL of 1 M HCl is added, what will be the new pH value? (Pka=7.57)

Answer --> 7.5

9- Below is the pKa of some weak acids. Which weak acid will be 91 % undissociated at pH=4.86?
a- Acetoacetic acid pka = 3.6
b- Lactic acid pKa=3.9
C- beta-hydroxyl butyric acid pka=4.8
d- propionic acid pka=4.9
e- Imidazolium pka=5.9

Answer: e

10- Which of the following acids or bases can make a buffer with its conjugate acid or its conjugate base?
a- HCl
b- KOH
c- H2SO4
d- None of the above
Answer: d

11- 100 mmol of a triprotic acid were titrated with KOH. PKa values = 3, 6, 9.
- How many mmoles of KOH must be added to have pH=6?
a- 100
b- 150
c- 200
d- 250
e- 300
Answer : 150

12-If 10 mmoles of NaOH were dissolved in 1 L of water. What will be the pH of the solution?
a- 2
b- 1
c- 3
d- 12
e- 9
Answer: d

13-One of the following is not derive from tyrosin:

dopamine
Epi
NE
melatonin <<<Answer
melanin.

14-Which of the following combinations of (Reduced sugar-Oxidized sugar) is incorrect: A- Fucose - Galactose
B- Deoxyribose - ribose
C- Sorbitol - Sorbose
d- Xylitol - xylulose
e- None of the above

Answer: A- Fucose - Galactose

15- Glycogen: a- can be digested by the enzyme alpha amylase.
b- Has glycosidic bonds that can be cleaved by exoglycosidase.
c- Has beta (1-4) glycosidic linkages.
d- Glycogen phosphorylase cleaves one glucose residue at a time from a branch end.
e- Provides energy quicker than starch due to its extensive branching.

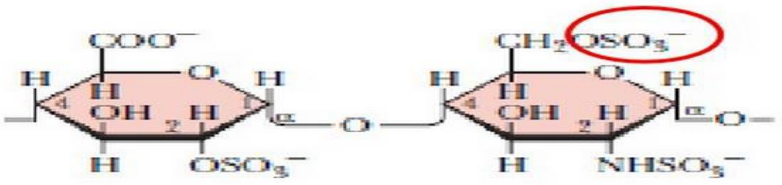
Answer :- Both d and e are correct

16-One of these sweeteners is very similar to sucrose but has 3 hydroxyl groups substituted by chlorine atoms: a- Aspartame
b- Saccharin
c- Sucralose
d- Cyclamate

e- None of the above

Answer : C

17-Which of the following statements is true about the structure shown below:



a- it's a component of the lubricating fluid of synovial joints.
b- A natural anticoagulant

Answer: b

18-The outer leaflet of a vesicle is composed of:

a- phospholipids with saturated fatty acyl groups
b- Phospholipids with unsaturated fatty acyl groups
c- Ganglioside
d- A+C

e- B+C

Answer : D

19- All of the following characteristics of prostaglandins you can use to distinguish PGE1 from PGE2a EXCEPT: a- the number of double bonds.
b- The presence of functional groups.
c- The presence of conjugated double bonds.
d- The precursor from which they are derived.

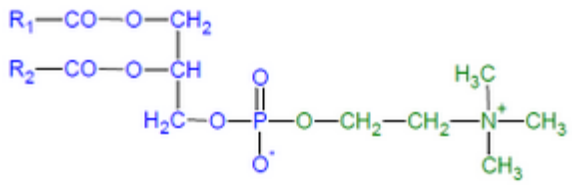
e- The positions of double bonds.

Answer : D

20-What is the correct order of the following fatty acids depending on melting point from the highest to lowest: oleic, palmitic acid, arachidonic acid, linolenic acid, stearic acid?

Answer: Stearic acid, palmitic acid, oleic, linolenic, arachidonic

21-Which of the following statements is true about the structure shown below:.



a- it's found exclusively in the inner mitochondrial membrane
b- Is a phosphatidylcholine
c- Sphingosine is a part of it

Answer --> b

22-Which of the following (vitamin- chemical structure - action) a- vitamin A - retinal - vision.
b- Vitamin D - 1, 25-dihydrocholeciferol - regulates calcium and phosphorus metabolism.
c- Vitamin E - alpha-tocopherol - antioxidant.
d- Vitamin k - the presence of isoprene units - coagulation.

Answer : D

23-A white-colored solution reacted with iodine to give dark-blue color. Which is true about the substance in the solution:
a- it's an unbranched helical polysaccharide.
b- It is a branched non-helical polysaccharide.
c- it's a branched helical polysaccharide.
d- it's an unbranched non-helical helical polysaccharide.
e- None of the above.

Answer: a

24- Buffers work the best at all these conditions except :

a- when the pH to be maintained using the buffer has a value close to the pKa of its acid component.

b- When the concentration of the acid component is equal to that of the base component.
c- When the acid component is completely dissociated

Answer: c

25- A phosphate buffer is composed of 0.5 M Na2HPO4 and 0.25 M NaH2PO4. If 0.05 M of HCL are added, what would be the approximate pH if pKa=7.2.

Answer --> 7.3

26-Humans are unable to digest :-

A – Starch B- denaturated proteins C- glycogen D- cellulose

Answer : D

27-Lactose is made by linking glucose and galactose by :

A – alpha:1-4 glycosidic linkage

B- Beta: 1-4 glycosidic linkage

C- Alpha: 1-6 glycosidic linkage

D- all of the above

Answer : B

28- one of the following sugars isn't/aren't a reducing sugar :

A – maltose

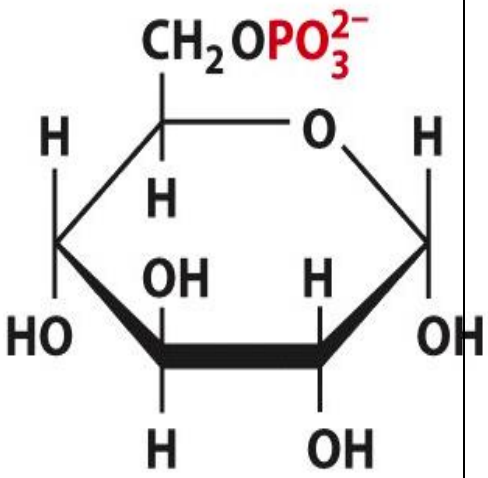
B- sucrose

C- glucose

D- Lactose

Answer: B

29- the following structure is :



A – formed by phosphor-esterfication reaction

B- glucose-6-phosphate

C- the first compound to be formed in glycolysis of glucose

D- all of the above

Answer: D

30-Polysaccharides are **not** considered reducing sugars because:

A – they don't contain a free anomeric carbon

B- they are hydrophilic

C – the amount of free anomeric carbons is too small in compare with the whole molecule

D- none of the above

Answer :C

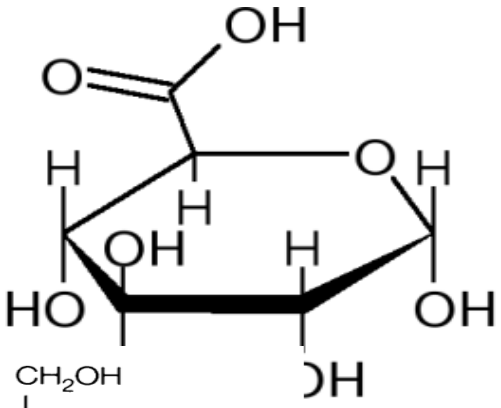
31- the following structure is :

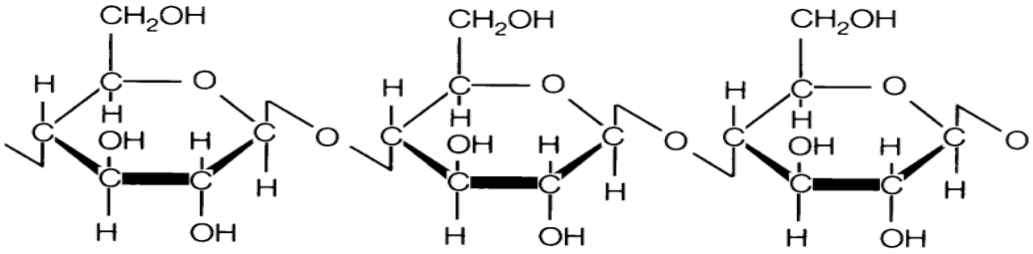
A – galactose

B- sorbitol

C- Gluconic acid

D- Glucuronic acid





Answer: Depending on the structure above which is a segment of a certain polypeptide answer the questions (1-3)

31-one of the following is true :

A – it can be raffinose sugar

B – it is a storage polysaccharides

C – it is a structural polysaccharide

D – it can be digested by our digestive system

Answer: C

32- the type of linkage in the structure is :-

A – alpha : 1-4

B- Beta : 1-4

C- alpha : 1-2

D – Alpha : 1-6

Answer:B

33- one of the following is wrong about the structure above :-

A – this structure is strengthened by hydrogen bonding

B – is a reducing sugar

C – make up plants cell wall

D – is a homopolysaccharide

Answer : B

34- humans can't digest fibers because :-

A – humans lack necessary enzymes

B- fibers are soluble in water

C – fibers are insoluble in water

D- Bile is ineffective on fibers

Answer: A

35- regarding the membrane oligosaccharide structures in various blood groups (ABO) which statement is not correct :

A – the core structure in all people is : N-Acetyl glucoseamine –Galactose – Fucose

B- blood group A has N-acetyl galactose amine plus the core structure

C- blood group B has Galactose plus the core structure

D – blood group O has only the core structure

Answer:A

36- which of the following is a glycosaminoglycan :-

A – Chondriotin-6- sulfate

B- Heparan sulfate

C – dermatan sulfate

D- all of the above

Anwer: D

37- D-glucose and D- galactose are :-

A – constituents of lactose

B – epimers

C – all of the above

D – structural isomers

Answer: C

38- wrong statement regarding the structure of Various polysaccharides is :

A – Amylopectin is a branched polymer of D-alpha glucose with alpha :1-4 glycosidic linkages with alpha:1-6 branching points

B – cellulose is a branched polymer of glucose with B-1,4- linkage

C-Glycogen is more branched than starch

D – Amylose is a nonbrached polymer of D-alpha glucose with alpha: 1-4 glycosidic linkage .

Answer: B

39-About polysaccharides one of the following is true :-

A – the type of glycdosidic linkage in polysaccharides determines their function

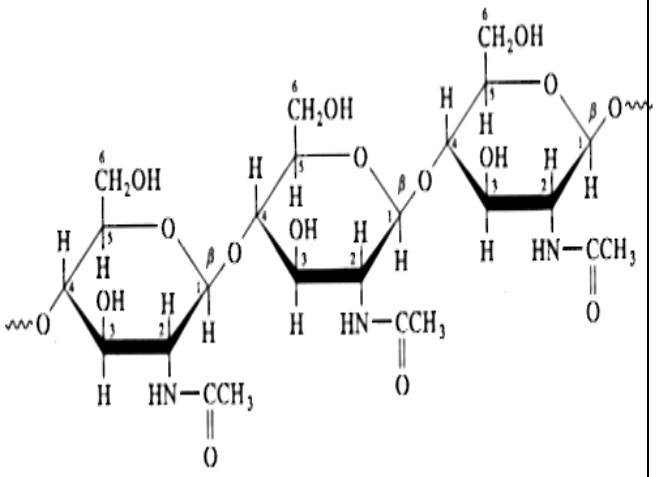
B- structural polysaccharides are more flexible than storage polysaccharides

C- pectin is an example of polysaccharides

D- A+C

Answer: D

40- the correct statement about the following polysaccharide is :-



A – it is a heteropolysacchardie

B – it forms the exoskeletone of insects

C- it is made of B-D-glucose sugar monomers

D – it forms the cell wall in plants

Answer: B

41- Glycosidic bonds :

A. Connect sugar molecules in both linear and branches of complex carbohydrates.

B. Only connect carbon-1 of one sugar to carbon-4 of another.

C. Destroy the asymmetric character of the participating carbons

D. Only connect carbon-1 of one sugar to carbon-6 of another

E. Are not found commonly in sugars

Answer : A

42- Complete the statement: The furanose form of fructose is generated by formation of a hemiketal involving the attack of the hydroxyl group on carbon ____ with carbon ____

A. 2 ,5

B. 5,2

C. 2, 6

D. 6, 2

E. 1, 6

Answer :B

43- Blood group antigen (ABO) are _____ on the outside of a red blood cell

A-Glycoproteins that differ in the protein moiety.
B-Glycolipids that differ in the carbohydrate moiety.
C-Membrane proteins that differ in state of phosphorylation.
D-The protein moieties of a glycoproteins that are encoded by different genes

Answer: B .

44- One of the following fatty acids is volatile at room temperature :

A – $CH_3(CH_2)_8COOH$

B- $CH_3(CH_2)_3COOH$

C – $CH_3(CH_2)_{14}COOH$

D- $CH_3(CH_2)_6COOH$

Answer: B

45- One of the followings is not produced from Arachidonic acid :-

A – testerone

B – leukotriens

C – prostacyclines

D – thrombaxane A2

Answer: A

46- $CH_3(CH_2)_{12}$ C—O—CO—$(CH_2)_{14}$ CH_3 This structure represent a :

A – Triglycerid

B – Palasmalogin

C – Wax

Answer: C

47- one of the most important reactions to break triglycerides into glycerol and 3 fatty acids in the salt form is :

A – dehydrogenation

B- Saponification

C- Phosphorylation

D – Hydrolysis

Answer: B

48- one of the following is wrong regarding Arachidonic acid :

A – it has 3 double bonds

B- it is an omega 6 fattyacid

C – it's designation is 20 :4

D – it used to synthesis molecules that stimulates leukocytes and platelets

Answer :A

49- one of the following is common in all phospholipids (including glycerophospholipids and sphingomeylines) :

A – glycerol backbone

B- the presence of at least one fatty acid

C – the presence of phosphate group

D - B + C

Answer: D

50- Cerebrosides , gangliosides ,Globisides are all

A – glycoproteins

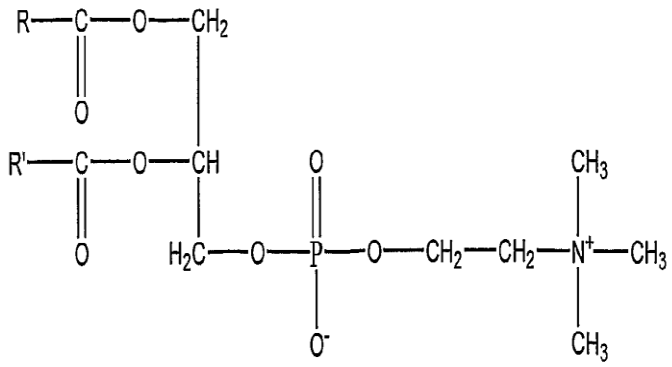
B – lipoproteins

C – glycerophospholipids

D – glycolipids

Answer: D

51- about the following structure one of the following is wrong :



(I)

A - it's the most important membrane lipid

B – it's degraded by lecithinase enzyme

C – it has sphingosine backbone

Answer: C

52- one of the following lipids is located in the cytoplasmic side of the plasma membrane :-

A – Glycolipids

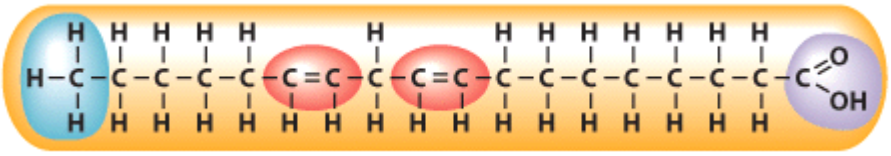
B- phosphatidylcholine

C- phosphotidylinositole

D – sphingomylein

Answer: C

53- Which of the following describes the fatty acid in the diagram :



A – monounsaturated fatty acid

B- saturated fatty acid

C-trans fat

D- polyunsaturated fatty acid

Answer: D

54- Which of the following statements about the function of lipids in the body in false?

A – Cholesterol is used to make Vitamin D

B – Triglycerides serve as a concentrated source of energy

C – Adipose tissue provide cushion for our organs

D- all sphingolipids have phosphate group in common

Answer: B

55- after the removal of the sugar molecule in ganglioside the molecule that remain is:-

A – ceramide

B- sphingosine

C – Glycerol

D – triglyceride

Answer: A

56- what is the feature of Vitamine E that makes it a biological antioxidant :

A – it's hydrophobic

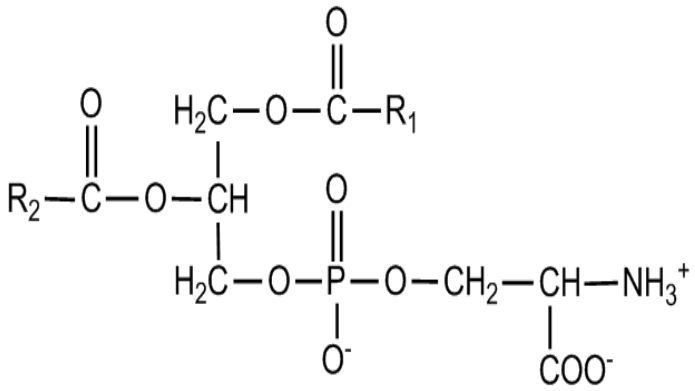
B – it contain a long fatty acid chain

C – it contains an aromatic ring

D – it's associated with the cell membrane

Answer: C

57- the following structure is :



A – phosphatydl ethanolamine

B – phosphatydlserine

C-Cerebrosides

D – phosphatydl inositol

Answer: B

58- Aspirin helps to minimize the risks of heart attacks by :

A – reducing the synthesis of thromboxane A2

B- reducing the synthesis of archidonic acids

C – blocking cyclooxygenase enzyme

D- A+C

Answer:D

59- one of the following molecules is not amphipathic :-

A – phospholipids

B- Triacylglycerol

C – Cholestrol

D – free fatty acid

Answer: B

60- For hydrogen bonding.. it's between an electronegative atom and a hydrogenconnected to :

a)Iodine
b)Electronegative atom
c)Carbon
d)Sulfur

Answer: B

61- The group that contains only polar amino acids among the following :
a)Phe, ser,tyr
b)Cys, ser,asp
c)glu,Met, ala
d)Pro,leu, trp

Answer: B

62- All of the following are 18-carbon fatty acids except :
a)Palmitic
b)Oleic
c)Stearic
d)Linolenic
e)Linoec
Answer:A

63-The true statement:
a) Bacterial cel walls are polymers of NAM mononers
b) Chitin is composed of N-actyl-β-D-glucoseamine

Answer: B