

By the name of God

Biochemistry past paper questions

1. Sugarless gum , DNA , ABO blood group determinants :

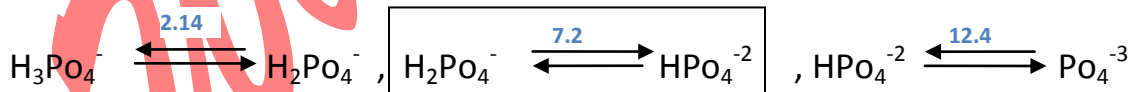
- a) ..
- b) They all contain reduced form of sugar
- c) ..
- d) ..
- e) ..

2. Raffinose, Digoxin, Streptomycin:

- a) They all contain ( glucose ??)
- b) They have  $\alpha$ -glycosidic bonds
- c) They are all considered oligosaccharides \*
- d) They are either disaccharides or oligosaccharides
- e) They are used as drugs in medicine

3.  $\text{H}_2\text{PO}_4^- : \text{HPO}_4^{2-}$  ..... 25:75

Pka:



$$\text{pH} = \text{pka} + \log( [\text{conjugate base}] / [\text{acid}] )$$

$$\text{pH} = 7.2 + \log( 75/25 )$$

c) 7.7 \*

4. Wrong statement about quaternary structure :  
Contain at least 3 or more polypeptide chains

5. Wrong statements :

In Haworth projections the oxygen is on the left \*

It's more convenient to represent furanoses by the less strained chair configuration \*

6. True statement:

$\alpha$  and  $\beta$  are kinds of super secondary structure

7. Wrong statements about cyclization of sugars :

C1 + C5 give cyclic hemiketal \*

C2 + C6 give cyclic hemiacetal \*

8. The non-reducing sugar of the following is :

a) Glucose

b) Fructose

c) Lactose

d) Sucrose \*

e) Maltose

9. True statement :

E) the type of glycosidic bond in polysaccharides determines their function \*

10. Wrong statement:

Carbohydrates are connected via non-covalent interaction to protein to form glycoproteins \*

11. True statement :

Lipids are connected covalently to proteins to form lipoproteins \*

12. The true statement is :

- a) The ribose in RNA makes it more susceptible to hydrolysis \*
- b) Both ( DNA and RNA ) are of multiple types with multiple functions
- c) Thymine is a modified ( ???)
- d) Both ( DNA and RNA ) are distributed in the nucleus

13. True:

Phosphoproteins contain amino acids esterified with phosphoric acid \*

14. Something about the amino acids and what connect them:

O-glycosides.....

N-glycosides.....

15. true:

Polysaccharides are mostly of the homopolysaccharides \*

16. the true statement:

- a) Bacterial cell walls are polymers of NAM monomers
- b) Chitin is composed of N-acetyl- $\beta$ -D-glucosamine \*

17. True:

2ry structure of ( proteins ?) .. hydrogen bonding between the backbone with repeated patterns \*

18. True:

- a) Cellulose ..  $\beta$ -glycosidic linkage \*
- b) Cellulose.. extensive intra and intermolecular hydrophobic interaction between chains

c) Cellulose is digested by some animals by their own

19. Wrong statement:

Amylopectin can be completely degraded to glucose and maltose by the two amylases \*

20. The odd one of the following is :

- a) Chondroitin sulphate
- b) Heparine
- c) Hyaluronic acid
- d) Hepran sulphate
- e) ?? \*

21. The non-volatile fatty acid of the following is :

- a)  $\text{CH}_3(\text{CH}_2)_2\text{COOH}$  \* ( short-chained)
- b)  $\text{CH}_3(\text{CH}_2)_{18}\text{COOH}$

22. True about hydrogenated/halogenated fatty acids :

- a) Lack fat-soluble vitamins ( A,D,E, and K ) \*
- b) Less pleasant as cooking fat
- c) More liable to rancidity

23. True :

- a) Waxes are of no nutritional value \*
- b) Waxes can be in solid and liquid states

24. One of the following doesn't contain glycerol:

- a) Sphingomyeline \*
- b) Cephalins
- c) Cardiolipin

25. All of the following are 18-carbon fatty acids **except** :

- a) Palmitic\*

- b) Oleic
- c) Stearic
- d) Linolenic
- e) Linoec

26. The true statement about cholesterol is :

- a) Cholesterol increase the fluidity of plasma membranes
- b) Vitamen D is the source of cholesterol
- c) Cholesterol is synthesized from acetyl-coA \*
- d) Cholesterol can be obtained from animals and plants
- e) All tissues of human have cholesterol with nearly same amounts

27. True:

Snake venom hydrolyses licithins \*

28. Something about ( thromboplastin)..... clotting of blood

29. Which lipoprotein among the following has the lowest density :

- a) Chylomicrons \*
- b) LDL
- c) HDL

30. Something about ( scavenger of oxidizing agent )

31. Wrong:

Oxytocin have receptors only in the uterus \*

32. The true about Aspirin is :

- a) Blocks the synthesis of leukotriens
- b) Activates phospholipase A2
- c) Activates cyclooxygenase
- d) Blocks the synthesis of prostaglandins/thromboxanes \*
- e) Blocks the synthesis of arachidonic acid

33. True :

- a) Melting point of nucleic acids increase with increasing the A-T content
- b) Melting point( mid point of transition) decrease with decreasing G-C content \*

34. For hydrogen bonding.. it's between an electronegative atom and a hydrogen connected to :

- a) Iodine
- b) Electronegative atom \*
- c) Carbon
- d) Sulfur

35. True:

- a) siRNA regulates the translation of its mRNA \*
- b) siRNA .. natural (not synthetic)
- c) siRNA units with proteins to do specific functions

36. Wrong about Denaturation of DNA:

- a) Mainly by heat and renaturation is by slow cooling
- b) It affects the 2ry and the sequence of the amino acids \*
- c) Results in hyperchromaticity

37. Wrong:

- a) In  $\alpha$ -helix of DNA the H-bonds are parallel to the axis of the helix \*

38. 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

39. The amino acid that moves further/faster towards the anode :

- a) Asp or glu ( both of them are true but I don't remember which one was among the choices ) \*

40. Group of only non-polar amino acids : ...

41. True:

- a) Tryptophan is the precursor of serotonin\*

42. Tyrosine ..... dopamine ///// epinephrine

43. Wrong:

- a) High levels of tryptophan cause depression\*
- b) Chinese restaurant syndrome... monosodium glutamate
- c) Aspartame... L-ASP-L- phenylalanine
- d) Alatame.... Ala instead if phe

44. Wrong :

- a) Carnosine dipeptide for..... Heavy \*
- b) Glutathione, tripeptide, a scavenger for oxidizing agents
- c) Enkephalins, pentapeptide, analgesics

True statements :

- 45. 3° structure .. 3-D arrangement of all atoms
- 46. 2° structure.. repeated patterns at regular intervals
- 47.  $\beta$ -sheets .. H-bond intra +inter chain-bonds
- 48. 3° of proteins .. back bone + side chains

49. Complex protein structures :

- a)  $\_N$  ... Of Asn \*
- b)  $\_O$  ... of OH of Ser or Thr \*

50. True statements:

- a) Glycoproteins .. covalent \*
- b) Lipoproteins .. non-covalent \*
- c) Phosphoproteins .. aminoacids esterified to ( phosphoric acid / phosphate group ??) \*

51. True:

- a) Most denaturation in proteins is irreversible

52. True:

- a) Chaperons .. correct and timely folding of many proteins

53. True:

- a) In  $\alpha$ - helix the H-bonds are parallel to the axis of the helix



54. Regarding to denaturation of DNA , which of the following statements is not correct :

- a) Is Mainly by heat.. renaturation is by slow cooling
- b) It affects the 2<sup>o</sup> structure and the sequence of the nucleic acids \*
- c) Results in hyperchromicity

Ward M.