

BIOCHEMISTRY

Subject

Second Exam -
Past Years & Suggested Questions
(Part One)

خاص
للفصل الدراسي الصيفي
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أكاديمية القصور

نود اعلامكم بوجود دورات

Lab Physiology

Lab Biochemistry

للتسجيل إرسال رسالة قصيرة الى الرقم ٠٧٨٥٧٠٦٠٠٨

على ان تحتوي (اسم الطالب ، المادة ، التخصص ، رقم خلوي الطالب)

مع ان نسم خطوط النجاح والتفوق ...

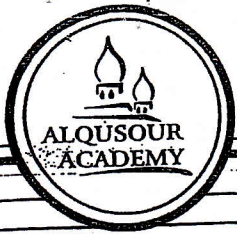
• ملاحظات هامة:

1- الرجاء من الطلبة الأجزاء الانتباه الى الخطأ الوارد في Chapter 16:

الصفحة رقم	الموقع	الخطأ	الصواب
15	اجابة السؤال رقم 4	C- α glucose and β galactose are epimers	D-furanose ring is planar

2- تم إرفاق Additional note لـ chapter 16 في نهاية هذا الجزء من الأسئلة و سكرر في الجزء الثاني كذلك.

- Regarding blood groups:
 - All groups contain L-fucose.
 - Blood group A has N-acetyl galactosamine.
 - Blood group B has α -D-galactose.
 - All of the above.
 - B and C only.
- Which of the following disaccharides is not a reducing sugar:
 - Sucrose
 - Maltose
 - Lactose
 - A and B



- 3) All of the following is true about sucralose **Except**:
- A. It contains chlorine instead of hydroxyl group.
 - B. Cannot be metabolized.
 - C. Contains galactose derivative and fructose residue.
 - D. Natural sweeteners derived from sucrose.
 - E. Doesn't provide calories.
- 4) Which of the followings contains $\beta(1-4)$ linkage
- A. Lactose
 - B. Cellobiose
 - C. Maltose
 - D. Amylose
 - E. A and B
- 5) Which of the following is considered as heteropolysaccharides
- A. Amylopectin
 - B. Peptidoglycan in bacterial cell wall
 - C. Chitin
 - D. Glycogen
 - E. Cellulose
- 6) Which of the following glucosaminoglycan is important for joint lubrication:
- A. keratan sulphate
 - B. Heparin
 - C. Hyaluronic acid
 - D. Chondroitin sulfate
 - E. A and C
- 7) Which of the following polysaccharide is found in plant cell wall
- A. Cellulose
 - B. Lignin
 - C. Pectin
 - D. A and C
 - E. All of the above
- 8) All of the following lipids is found in cell membrane **Except**:
- A. Triacylglycerol
 - B. Phosphoacylglycerol
 - C. Glycolipid
 - D. Cholesterol
 - E. Sphingolipids
- 9) Which of the following fatty acids has the lowest melting point
- A. Palmitic acid
 - B. Archidic acid
 - C. Oleic acid
 - D. Linolenic acid
 - E. Stearic acid



10) Which of the following lipids is Not based on a sphingosine backbone:

- A. Ceramide
- B. Cerebroside
- C. Sphingomyelin
- D. Cardiolipin
- E. Ganglioside

11) Myricyl cerotate is a :

- A. Sphingolipid
- B. Wax
- C. Phospholipid
- D. Glycolipid
- E. Steroid

12) Cerobroside contains:

- A. Monosaccharide
- B. Ceramide
- C. Phosphate and alcohol amine
- D. A and B
- E. B and C

13) All of the followings are true about cholesterol Except:

- A. It is highly Lipophilic.
- B. It is the precursor of vitamin E.
- C. Maintain the rigidity of the membrane.
- D. Contain three six-membered rings and one five-membered.
- E. Modify the role of membrane-bound proteins.

14) All of the followings are true about cell membrane Except:

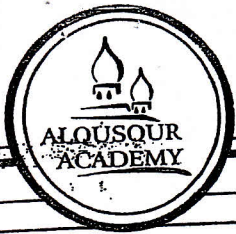
- A. The more saturated fatty acid, the more the rigidity of the membrane.
- B. Proteins movement is slower than lipid movement
- C. Flip-flop movement of the phospholipids is more than the lateral one
- D. Peripheral proteins are easy to be removed
- E. Biological membrane is dynamic structure

15) Glactoside permease is an example of:

- A. Secondary active transport.
- B. Facilitated diffusion.
- C. Primary active transport.
- D. Simple diffusion.
- E. Osmosis.

16) The deficiency of Retinol produce

- A. Rickets
- B. Bleeding
- C. Visual disturbances
- D. Increase in aging process
- E. None of the above



17) All are true about opsins Except:

- A. Rods contain one opsin type.
- B. Rhodopsin is formed from opsin and trans-retinal.
- C. Cons are responsible for color vision.
- D. β -carotene is the precursor for Vitamin A.

18) All of the followings are true about leukotriens Except:

- A. Synthesized from arachidonic acid.
- B. Present in leukocyte.
- C. Can induce asthma.
- D. Contain no conjugated double bonds.
- E. Cause smooth muscle contraction.

19) About Na^+/K^+ pump which is False:

- A. It's a primary active transport.
- B. Needs free energy before the movement of Na^+ .
- C. K^+ binds to the pump when it is phosphorylated.
- D. Moves 3 Na^+ in and 2 K^+ out.
- E. Hydrolysis of phosphate from the pump moves the K^+ .

20) Proteins held in the plasma membrane by covalent bonds between protein and:

- A. Myristoyl
- B. Palmitoyl group
- C. Hydrophobic interaction
- D. A and B only
- E. All of the above.

21) All of the following are unsaturated fatty acids EXCEPT:

- A. Palmitoleic acid.
- B. Palmitic acid.
- C. Oleic acid.
- D. Linoleic acid.
- E. Nervonic acid.

22) The correct structure for palmitic acid is:

- A. $\text{CH}_3(\text{CH}_2)_{12}\text{COOH}$.
- B. $\text{CH}_3(\text{CH}_2)_{16}\text{COOH}$.
- C. $\text{CH}_3(\text{CH}_2)_{18}\text{COOH}$.
- D. $\text{CH}_3(\text{CH}_2)_{14}\text{COOH}$.
- E. None of the above.

Form the following; choose the most appropriate association for questions (23-26).

A. Monosaccharide

B. Disaccharide

C. polysaccharide

23) Galactose

24) Amylose

25) Maltose

26) Fructose



27) Which of the following is true?

- A. A disaccharide with free hemiacetal end is a reducing sugar.
- B. Different stereochemical forms are possible in glycosidic linkages, having important consequences for the function of the substances thus formed.
- C. The repeating disaccharide of cellulose is β -cellobiose.
- D. The monomer of cellulose is the β -anomer of glucose.
- E. All of the above are true.
- F. All are true except C.

28) Which of the following is/are disaccharides:

- A. Sucrose.
- B. Maltose.
- C. Lactose.
- D. A and B.
- E. A, B, and C

29) Which of the following carbohydrates is/are ketose sugar?

- A. Galactose.
- B. Fructose.
- C. Glucose.
- D. Glyceraldehyde.

30) A carbohydrate that has an α 1-4 glycosidic linkage (s) only:

- A. Amylose.
- B. Sucrose.
- C. Glycogen.
- D. Lactose.

31) Sucrose is a disaccharide composed of _____ linked to _____.

- A. Galactose, glucose.
- B. Glucose, glucose.
- C. Galactose, fructose.
- D. Fructose, fructose.
- E. Glucose, fructose.

32) All of the following statements about D-glucose are correct EXCEPT:

- A. It is a C4 epimer of galactose.
- B. It is a reducing sugar.
- C. In combination with galactose, it forms lactose.
- D. The α and β configurations are determined at C2 (carbon 2).



33) α 1-4 linkage is found in:

- A. Sucrose.
- B. Maltose.
- C. Lactose.
- D. Galactose.

34) Animals stores carbohydrates in the form of:

- A. Glucose.
- B. Starch.
- C. Cellulose.
- D. Glycogen.

35) Glycogen is built up of:

- A. D-glucose.
- B. L-glucose.
- C. L-fructose.
- D. D-fructose.
- E. Galactose.

36) Branch points in glycogen are formed by?

- A. β 1-6 glycosidic links.
- B. α 1-6 glycosidic links.
- C. α 1-4 glycosidic links.
- D. β glycosidic links.

37) The basic structure of glycogen is based on which type of glycosidic linkage between glucose residues?

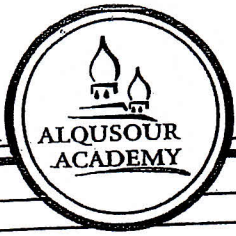
- A. β 1-4 links
- B. α 1-4 links.
- C. β 1-6 links.
- D. α 1-3 links.

38) Arachidonic acid has the structure 20:4 (5,8, 11, 14), this means:

- A. It is a saturated fatty acid.
- B. It has double bond at position $C4=C5$.
- C. It has 20 carbons.
- D. It has 4 carbons.
- E. None of the above.

39) The source of prostaglandins and thromboxanes is:

- A. Palmitic acid in phospholipids.
- B. Linolenic acid in phospholipids.
- C. Arachidonic acid.
- D. Palmitoleic acid.
- E. Stearic acid.



40) One of the following could be an essential fatty acid:

- A-Oleic acid
- B-Linolenic
- C-Palmetic acid
- D-Stearic acid
- E-All of the above

41) Steps in glycolysis that are under control:

- A. The steps: 1, 3, and 6
- B. The steps: 1, 7, and 10
- C. The steps: 1, 3, and 10
- D. The steps: 6, 7, and 10

42) The discoverer/s of the glycolytic pathway is/are:

- A. Gustav Embden, Otto Meyerhoff, Jacob Parnas
- B. Meyerhoff and Parnas
- C. Embden
- D. Gustav Embden, Otto Meyerhoff

43) When muscle tissue is exercising under anaerobic conditions, the production of _____ is important it assures a continuous supply of NAD⁺.

- A. Glycogen
- B. Lactate
- C. Fructose
- D. Glucose-6-phosphate
- E. Pyruvate

44) The intermediate in glycolysis:

- A. 1,3- bisphosphoglycerate
- B. Fructose 1,6-bisphosphate
- C. Glyceraldehyde-3-phosphate
- D. Pyruvate

45) Step/s in glycolysis that will be bypassed in gluconeogenesis is/are:

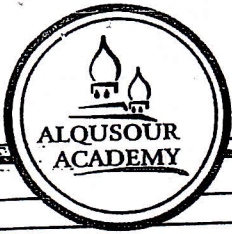
- A. Hexokinase –phosphofructokinase - pyruvate kinase
- B. Hexokinase – enolase – aldolase
- C. Phosphoglycerate kinase – enolase – aldolase
- D. Glucokinase – pyruvate kinase – aldolase.

46) Glycolysis is an anaerobic process.

- A. True
- B. False



- 47) During glycolysis, Fructose 1, 6 diphosphate is decomposed by the enzyme:
- Enolase
 - Fructokinase
 - Aldolase
 - Diphosphofructophosphatase
- 48) Which of the following enzyme is inhibited by glucose -6-phosphate?
- Hexokinase
 - Glucokinase
 - Phosphofructokinase-1
 - Phosphofructokinase-2
 - Pyruvate kinase
- 49) What is the net yield of NADH when 1 mole of glucose -6-phosphate is oxidized by aerobic glycolysis to yield pyruvate ?
- 0 mole of NADH
 - 1 mole of NADH
 - 2 mole of NADH
 - 3 mole of NADH
- 50) Which of the following enzymes of glycolysis is/are regulated?
- Hexokinase
 - Aldolase
 - Pyruvate kinase
 - A and C
- 51) The rate-limiting enzyme in glycolysis is:
- Hexokinase.
 - Glucokinase.
 - Phosphatase.
 - Phosphofructokinase.
- 52) The net of glycolysis of 1 glucose molecule are:
- Two pyruvate and consumed 2 ATP
 - Two pyruvate and generated 2 ATP
 - One pyruvate and consumed 2 ATP
 - One pyruvate and generated 2 ATP
 - None of the above
- 53) The isozyme of lactate dehydrogenase present in heart :
- LDH 1 (M4)
 - LDH 5 (H4)
 - LDH 1 (H4)
 - LDH 5 (M4)



54) The end product of anaerobic glycolysis in human are:

- A. Ethanol + (NAD⁺)
- B. Ethanol + (NADH)
- C. Lactate + (NAD⁺)
- D. Lactate + (NADH)

55) Regarding pyruvate all are true, Except :

- A. It is an end product of the preparation phase.
- B. It is an end product of the payoff phase.
- C. It is an end product of the glycolysis.
- D. It is a 3 carbon molecule.
- E. Can be reduced to lactate in the anaerobic pathway.

56) Two examples of substrate level phosphorylation in glucose metabolism are in the reactions of:

- A. 1,3 bisphosphoglycerate and phosphoenol pyruvate
- B. Glucose-6 phosphate and Fructo-6-phosphate
- C. 3 phosphoglyceraldehyde and phosphoenolpyruvate
- D. 1,3 diphosphoglycerate and 2-phosphoglycerate

57) What are the products of aldolase reaction?

- A. Dihydroxyacetone phosphate and glyceraldehyde-3-phosphate.
- B. Dihydroxy acetone phosphate and fructose-1, 6-bisphosphate.
- C. Dihydroxy acetone phosphate glyceraldehyde.
- D. Dihydroxy acetone phosphate fructose-6-phosphate.
- E. Fructose 1, 6-bisphosphate and fructose-6-phosphate.

58) Which of the following enzyme reaction is associated with ATP expenditure (ATP hydrolysis)?

- A. Fructokinase.
- B. Hexokinase.
- C. Galactokinase.
- D. A and B.
- E. A, B and C.



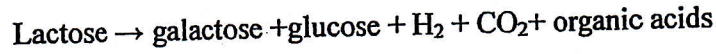
Additional Notes for Chapter 16:

Lactose intolerance:

Lactose → galactose + glucose

To break down lactose we need lactase enzyme which is normally found in the villi of the small intestine.

In some people deficiency of lactase enzyme will lead to the passage of the lactose unchanged into the intestinal lumen where bacteria containing lactase is found, this bacteria works on the lactose breaking it into not only galactose and glucose but also produces some byproducts as H₂ and CO₂ gas and some organic acids:



The presence of these gases will lead to bloatedness and diarrhea as well as abdominal cramps.

Treatment is by avoiding lactose containing food by sticking to a lactose free diet.

Students' sheet

Q #	Answer	Q #	Answer	Q #	Answer	Q #	Answer
1		16		31		46	
2		17		32		47	
3		18		33		48	
4		19		34		49	
5		20		35		50	
6		21		36		51	
7		22		37		52	
8		23		38		53	
9		24		39		54	
10		25		40		55	
11		26		41		56	
12		27		42		57	
13		28		43		58	
14		29		44			
15		30		45			

SOLUTION

Question #	Answer
1	D. All of the above.
2	A. Sucrose
3	D. Natural sweeteners derived from sucrose
4	E. A and B
5	B. Peptidoglycan in bacterial cell wall
6	C. Hyaluronic acid
7	D. A and C
8	A. Triacylglycerol
9	D. Linolenic acid
10	D. Cardiolipin
11	B. Waxe
12	D. A and B
13	B. It is the precursor of vitamin E
14	C. Flip-flop movement of the phospholipids is more than the lateral one
15	A. Secondary active transport
16	C. Visual disturbances
17	B. Rhodopsin is formed from opsin and trans-retinal
18	D. Contain no conjugated double bonds
19	D. Moves 3 Na ⁺ in and 2 K ⁺ out
20	D. A and B only
21	B. Palmitic acid
22	D. CH ₃ (CH ₂) ₁₄ COOH
23	A. Monosaccharide
24	C. polysaccharide
25	B. Disaccharide
26	A. Monosaccharide
27	E. All of the above are true
28	E. A, B, and C
29	B. Fructose
30	A. Amylose
31	E. Glucose, fructose
32	D. The α and β configurations are determined at C2 (carbon 2)
33	B. Maltose
34	D. Glycogen
35	A. D-glucose
36	B. α 1-6 glycosidic links
37	B. α 1-4 links
38	C. It has 20 carbons
39	C. Arachidonic acid
40	B. Linolenic
41	C. The steps: 1, 3, and 10
42	A. Gustav Embden, Otto Meyerhoff, Jacob Parnas
43	B. Lactate
44	B. Fructose 1,6-bisphosphate
45	A. Hexokinase -phosphofructokinase - pyruvate kinase
46	A. True
47	C. Aldolase
48	A. Hexokinase
49	C. 2 mole of NADH



50	D. A and C
51	D. Phosphofructokinase
52	B. Two pyruvate and generated 2 ATP
53	C. LDH 1 (H4)
54	C. Lactate + (NAD+)
55	A. It is an end product of the preparation phase
56	A. 1,3 bisphosphoglycerate and phosphoenol pyruvate
57	A. Dihydroxyacetone phosphate and glyceraldehyde-3-phosphate.
58	B. Hexokinase



أكاديمية القصور

تعلمكم بوجود دورات متخصصة

إمتحانات المستوى

(إنجليزي ، مهارات الحاسوب)

مع نخبة من المحاضرين المتميزين

للتسجيل إرسال رسالة قصيرة الى الرقم 0785706008

على ان تحتوي (اسم الطالب ، المادة ، التخصص ، رقم خطوي الطالب)

متميزين