Biomedical Engineering

Biochemistry
Course Code : BME 291
Level : 200
Allowed Time : 2 hours
First Semester 2018 /2019
Final term exam
50 marks

Faculty Of Engineering
27-12-2018

Biochemistry exam

تعليمات

- الإجابة في الأماكن المخصصة فقط في نفس ورقة الامتحان وكل سؤال على حدة.
- ممنوع تكرار أية إجابة أو إعادتها في أماكن أخرى.
- ليست هناك أية فرصة لإضافة ورق زائد.
- الصفحة الأخيرة مسودة ولا يعتد بأي كتابة فيها كإجابة.
- يتكون الإمتحان من خمسة اسئلة ويقع في 7 صفحات بالمسودة وجميع الأسئلة إجبارية.
- ممنوع أية كتابات خارجة عن مضمون الإجابة حتى لا تعرض نفسك للمسائلة القانونية.

Directions

- All questions are to be attempted in the same exam papers.
- Answers should be written in the provided spaces.
- Do not repeat any answer in other places.
- No additional Booklets could be provided.
- The last paper is a Draft Paper not to be corrected.
- The exam consists of 5 questions in 7 pages including a draft page.

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Part 1

Question (1): Complete the following sentences: **(12 marks, 0,5 mark/each)**

1- Sucrose is composed of ..... and..... sugar units.

2- Dextrins are partial hydrolytic products of ..... and they are used in ..... and .....

3- The storage form of carbohydrates in animals is .....

4- Amino acids with amide side chains are ..... and .....while the amino acid containing imino group is .....

5- Arginine is classified as ..... while tyrosine is classified as ..... regarding their nutritional value.

6- Glycine is classified as ..... and leucine is classified as..... regarding their biological values.

7- The amino acids that are post-translationally modified in collagen are .....and .....

8- Naming of polypeptide chain starts from the .....

9- ..... is a rod-like structure of protein and its formation may be disrupted by the presence of ..... or .....

10- Examples of quaternary protein structure are ..... and .....

11-..... and .....are transport proteins while ..... is an example of protective protein.

Question (2): Give the name of each of the followings: **(6 marks, 1 mark/each)**

No.	Statement	Answer
1	Mirror image isomers of the same sugar molecule.	
2	Sugar acid derived from galactose after oxidizing the last CH_2OH group.	
3	Disaccharide that is composed of glucose and galactose.	
4	Secondary structure of protein in which the polypeptide chains line up side by side.	
5	The process of breaking peptide bonds of protein by adding water.	
6	The overall three-dimensional shape of an entire protein molecule.	

Part 2

Question (1): Complete the following sentences: **(12 marks, 0,5 mark/each)**

1- Margarine is produced by adding ..... to the unsaturated fatty acids and has many disadvantages as it does not contain ..... and .....

2- Fats and oils can be protected from rancidity by ..... , ... and .....

3- Cardiolipin is formed from ..... , ... and .....

4- .....enzyme causes removal of unsaturated fatty acid from cephalin producing a compound called ..... which is haemolytic in action.

5- ..... is a saturated fatty acid which contain 16 carbon atoms while ..... is a saturated fatty acid which contain 18 carbon atoms.

6- Cephalin enter in the formation of ..... and ..... in the body.

7- Diffusion is the net movement of particles from an area with .....concentration to an area with .....

8- Active transport requires ..... as molecules must be pumped against .....

9- ..... is an example for uniport protein carrier however ..... is an example for antiport protein carrier.

10- Organisms control membrane fluidity by ..... , ... and .....

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Question (2): Give the name of each of the followings: **(14 marks, 1 mark/each)**

No.	Statement	Answer
1	The substance which is produced in industry by hydrolysis of neutral fats with NaOH.	
2	Simple lipid which contains alcohol higher than glycerol.	
3	The unpleasant odour and taste developed after exposing fats and oils to light, oxygen, moisture and warm temperature.	
4	Phospholipid which is formed from glycerol, two fatty acids, phosphate and choline.	
5	A special class of phosphoglyceride in which the fatty acid on the carbon atom number one is replaced by an α-β unsaturated fatty alcohol, forming ether linkage.	
6	Lipoprotein which transfer cholesterol to cells throughout the body and can cause cholesterol to buildup within the arteries.	
7	The name of the sugar which is present in RNA.	
8	The basic proteins which are tightly bound with eukaryotic DNA.	
9	Circular rings of DNA that replicate independently of the chromosomes in prokaryotic organisms.	
10	The basic unit of structure and function in the human body.	
11	Type of membrane proteins which penetrate the hydrophobic core of bilayer.	
12	The tissue which covers the surfaces of the body, inside and outside.	
13	A group of specialized cells that work together to perform the same function.	
14	DNA fundamental structural units that resemble beads on a string.	

Question (3): Read the sentences carefully then write (True) if the sentence is correct and (False) if it is incorrect: **(6 marks, 0,5 mark/each)**

Sentence	Answer
1- Cholesterol is used for synthesis of adrenal cortical hormones, vitamin D3 and bile acids.	
2- Pure fats and oils when freshly prepared are colourless, odourless and tasteless.	
3- RNA exist as single strand.	
4- In the DNA double helix, the two backbones run parallel.	
5- Organ is a group of two or more different types of tissue that work together to perform a specific function.	
6- Cardiac muscle is weak and voluntary.	
7- Nucleotide = nucleoside + phosphate group	
8- Adenine and guanine are purines nitrogenous bases.	
9- Adenine (A) always pairs with cytosine (C), and guanine (G) always pairs with thymine (T).	
10- mRNA carries the genetic information from nuclear DNA to the cytosol.	
11- The rate of transport of nonpolar compounds through cell membrane is low.	
12- The plasma membrane exhibits selective permeability.	

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Draft

Examination Committee

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