



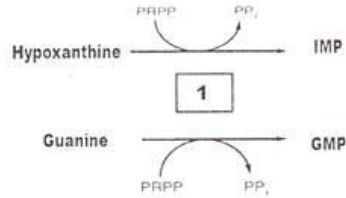
Final Biochemistry exam for 2nd Medical year (2017-2018)

All Questions are to be answered

I. Choose the correct answer within the ANSWER SHEET: (Total: 11 marks)

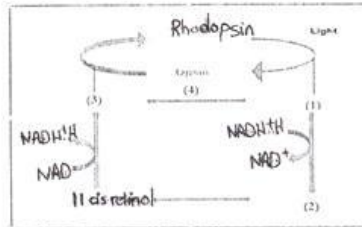
1. **Tryptophan could be considered as precursor of:**
a. Melatonin b. Thyroid hormones c. Melanin d. Epinephrine
2. **ATP is required in following reactions of urea cycle:**
a. Synthesis of carbamoyl phosphate and citrulline
b. Synthesis of citrulline and argininosuccinate
c. Synthesis of argininosuccinate and arginine
d. Synthesis of carbamoyl phosphate and argininosuccinate
3. **Which of the following is a component of cytochrome C oxidase?**
a. Coenzyme Q b. FMN c. cytochrome b d. cytochrome a
4. **For entry into the citric acid cycle, pyruvate must first be converted to acetyl CoA by the pyruvate dehydrogenase complex. This multienzyme complex has three cofactors. All of the following are advantages of a multienzyme complex except:**
a. Increased efficiency b. Protection of intermediates
c. Prevents unwanted side reactions d. No need for pyruvate to enter mitochondria
5. **Which of the following statements is correct?**
a. Thyroxine inhibits utilization of glucose
b. Insulin increases utilization of glucose
c. Glucagon promotes muscle glycogenolysis
d. Insulin inhibits lipogenesis from carbohydrates
6. **Growth hormone contains two disulfide residues between amino acids:**
a. 58-167 and 180-187 b. 53-165 and 182-189
c. 53- 167 and 182-189 d. 52-163 and 181 -189
7. **Riboflavin is a coenzyme in the reaction catalyzed by the enzyme:**
a. Acyl CoA synthetase b. Acyl CoA dehydrogenase
c. β -Hydroxy acyl CoA d. Enoyl CoA dehydrogenase
8. **Glycine is required for the synthesis of**
a. C5 in purines b. C2 in purines c. C8 in purines d. C6 in purines
9. **IMP enzyme is negatively regulated by:**
a. GMP b. AMP c. ATP d. CTP
10. **Which of the following inhibits acetyl coA Carboxylase enzyme:**
a. Citrate b. Acyl CoA c. ATP d. Malonate

8. Conversion of tyrosine to dihydroxyphenylalanine (DOPA) is catalyzed by enzyme which requires as a coenzyme.
9. Glycine can be synthesized from serine utilizing enzyme and needs as a coenzyme.
- 10.



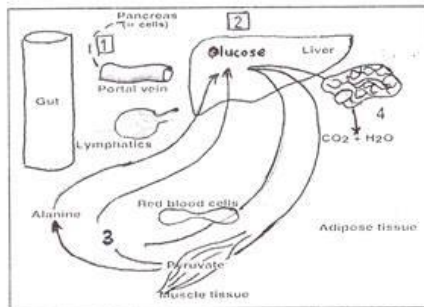
The enzyme (1) responsible for this reaction is called And the deficiency of this enzyme causes

11. Fill in the following spaces in visual cycle



- 1-
 2-
 3-
 4-

- 12.



- 1- Hormone increased in early fasting.....
 2- Main source of glucose in liver in early fasting.....
 3- A product from muscle which can be used for gluconeogenesis.....
 4- cannot be utilized by this organ as a fuel during fasting.

5. The cause of "Folate trap" is the irreversible conversion of methyl-tetrahydrofolate to methylene-tetrahydrofolate. ()
6. Histamine is formed from histidine by deamination. ()
7. A positive nitrogen balance occurs In growing infant ()
8. Phosphatidic acid is common intermediate in the synthesis of triacylglycerol and sphingolipids ()
9. Mature erythrocytes are absolutely dependent on krebs cycle activity for ATP production ()
10. Deficiency of glucose-6-P dehydrogenase decrease NADPH,H+ production (which is essential to reduce glutathione in RBCs). ()

IV. Complete the following sentences: (24 marks)

1. Conversion of acetyl-CoA to malonyl CoA occurs byenzyme and requires and
2. The carbon chain of fatty acids is shortened by 2 carbon atoms at a time. This involves successive reactions catalyzed by 4-enzymes that act in the following order:
 - a.
 - b.
 - c.
 - d.
3. The rate limiting enzyme of glycogenesis is and it is allosterically activated by
4. Hereditary fructose intolerance an inborn error of metabolism occurs due to deficient activity of enzyme and is clinically represented by.....
5. Activesplits..... of the inner layer of the plasma membrane into inositol triphosphate (IP3) and diacylglycerol (DAG).
6. Neurological manifestations in vitamin B6 deficiency are:
 - due to
 - due to
7. Vitamins that are essential for healthy Skin are vitaminsand and

II. Put the suitable scientific term that best fits the following statements: (10 marks)

1. It is a medical condition characterized by deposition of sodium urate crystals in joints.
.....
2. An electron acceptor in reactions involving oxidation of hydroxylated carbon atoms. It accepts a hydride ion, H⁻ (two electrons and a proton) , and the hydroxylated carbon is oxidized to a carbonyl group -
.....
3. The removal of the amino group (NH₂) from α - amino acids where the amino acids lose two hydrogen atoms and addition of water to form keto acids and ammonia.
.....
4. They are utilizable as universal fuel by all cells except liver. Even the brain can use them to help meet its energy needs during prolonged periods of fasting.
.....
5. It is a 32-amino acid polypeptide hormone belongs to group II hormones using cAMP as a second messenger.
.....
6. Anemia in which the bone marrow produces abnormal nucleated erythroblasts with granules of iron accumulated in the mitochondria surrounding the nucleus.
.....
7. A metabolic disease due to deficiency of homogentisic acid oxidase enzyme which characterized with the black color of urine.
.....
8. It is a heat labile glycoprotein present in raw egg white and inhibits the absorption of biotin
.....
9. They are structural analogs of HMG CoA, and are reversible, competitive inhibitors of HMG CoA reductase that are used to treat hypercholesterolemia
.....
10. An irreversible inhibitor of enolase enzyme which lead to blockage of the whole glycolysis.
.....

III. Put (True) or (False) in front of each sentence and correct the wrong ones: (10 marks)

1. HDL contains more cholesterol than other types of lipoproteins. ()
.....
2. Progesterone is hydroxylated by 11 hydroxylase to form 11-deoxycorticosterone then by 21 hydroxylase produces corticosterone. ()
.....
3. Vitamin D-dependent rickets type II (VDDRII) is due to deficiency of the renal 25-hydroxyvitamin D alpha-hydroxylase. ()
.....
4. Methotrexate is a potent inhibitor for thymidylate synthase enzyme ()
.....

MCQ Answer sheet

<u>Question No</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
<u>1</u>				
<u>2</u>				
<u>3</u>				
<u>4</u>				
<u>5</u>				
<u>6</u>				
<u>7</u>				
<u>8</u>				
<u>9</u>				
<u>10</u>				
<u>11</u>				
<u>12</u>				
<u>13</u>				
<u>14</u>				
<u>15</u>				
<u>16</u>				
<u>17</u>				
<u>18</u>				
<u>19</u>				
<u>20</u>				
<u>21</u>				
<u>22</u>				

11. Familial hypercholesterolemia is a genetic disorder due to defect in:
- Transport of cholesterol from extrahepatic tissue to the liver
 - Impairment of cholesterol degradative pathway.
 - Impairment of uptake of cholesterol by tissues
 - impairment of HDL metabolism due to deficiency of Apo- A
12. An inborn error, maple syrup urine disease is due to deficiency of:
- Isovaleryl-CoA hydrogenase
 - Phenylalanine hydroxylase
 - Adenosyl transferase
 - α -Ketoacid decarboxylase
13. All of the following are disorder in phenylalanine & tyrosine metabolism except:
- Alkaptonuria
 - Phenylketonuria
 - Maple syrup urine disease
 - Albinism
14. Rice polishings contain this vitamin:
- Riboflavin
 - Niacin
 - Thiamine
 - Vitamin B12
15. Anemia can occur due to the deficiency of all the following except:
- Ascorbic acid.
 - Thiamin.
 - Folic acid.
 - Cyanocobalamin
16. The only energy requiring step in fatty acid oxidation is catalyzed by which of the following enzyme:
- Thiolase
 - HMG-CoA lyase
 - Thiokinase
 - Acyl CoA dehydrogenase
17. The enzyme deficient in Niemann-Pick disease is:
- α -Galactosidase
 - sphingomyelinase
 - α -Glucosidase
 - β -Glucosidase
18. Several reactions replenish these intermediates for use in the citric acid cycle. These reactions are called:
- Parasynthetic
 - Amphipathic
 - Anaplerotic
 - Amphibolic
19. Lactate formed in muscles can be utilized through
- Rapoport-Luebeling cycle
 - Glucose-alanine cycle
 - Cori's cycle
 - Citric acid cycle
20. Transmethylation of guanido acetic acid gives
- Creatine
 - Creatinine
 - Choline
 - n-methyl nicotinamide
21. Which of the following hormones are synthesized as pre-hormones:
- Glucagon and oxytocin
 - Catecholamine hormones and insulin
 - Growth hormone and Glucagon
 - ACTH and Catecholamine hormones
22. Glucose uptake by liver cells is
- Energy-consuming
 - A saturable process
 - Insulin-dependent
 - Insulin-independent

5. Thyroid and Parathyroid hormones regarding (Transport proteins, Receptor, Mediator, solubility)

Thyroid hormone	Parathyroid hormone

انتهت الامتنة

GOOD LUCK

3. Carbamoyl phosphate synthetase I and II

Carbamoyl phosphate synthetase I	Carbamoyl phosphate synthetase II

4. Chylomicron and VLDL

Chylomicron	VLDL

V. Compare between the following: (Total marks: 20 marks)

1. Glycolysis and Pentose phosphate pathway

Glycolysis	Pentose phosphate pathway

2. L-amino acid oxidase & L - glutamate dehydrogenase.

L-amino acid oxidase	L - glutamate dehydrogenase