

University of Mosul

College of Veterinary Medicine

Department of Physiology,

Biochemistry & Pharmacology



Competitive examination / M.Sc. in

Veterinary Biochemistry

Time: 3 Hours

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Date: / / 2025

Choose the correct answer from the following: (**Answer all questions**) (100 Marks)

1- is the milk sugar.

- (A) Galactose (B) Glucose (C) Fructose (D) Lactose

2- Sucrose consists of:

- (A) Glucose + glucose (B) Glucose + fructose (C) Glucose + galactose (D) Glucose + mannose

3- The conversion of alanine to glucose is termed:

- (A) Glycolysis (B) Oxidative decarboxylation (C) Specific dynamic action (D) Gluconeogenesis

4- Conversion of glucose to glucose-6-phosphate in the liver is catalyzed by:

- (A) Hexokinase only (B) Glucokinase only
(C) Hexokinase and glucokinase (D) Glucose-6-phosphate dehydrogenase

5- Cephalin consists of:

- (A) Glycerol, fatty acids, phosphoric acid and choline.
(B) Glycerol, fatty acids, phosphoric acid and inositol.
(C) Glycerol, fatty acids, phosphoric acid and ethanolamine.
(D) Glycerol, fatty acids, phosphoric acid and serine.

6- Triglycerides are transported from liver to extrahepatic tissues by:

- (A) Chylomicrons (B) VLDL (C) HDL (D) LDL

7- β -oxidation takes place in:

- (A) Mitochondria (B) Cytoplasm (C) Chloroplasts (D) Nucleus

8- In mammals, the major fat in adipose tissues is:

- (A) Phospholipid (B) Cholesterol (C) Sphingolipids (D) Triacylglycerol

9- Gout is a metabolic disorder of catabolism of:

- (A) Pyrimidine (B) Purine (C) Alanine (D) Phenylalanine

10- Cyclic AMP can be formed from:

- (A) ATP (B) CMP (C) GTP (D) UTP

11- The sugar moiety present in RNA is:

- (A) Ribulose (B) Arabinose (C) Ribose (D) Deoxyribose

12- Phosphorylation of adenosine to AMP is catalyzed by:

- (A) Adenosine kinase (B) Deoxycytidine kinase
(C) Adenylosuccinase (D) Adenylosuccinate synthetase

13- Insulin secreted from.....cells of Langerhans of pancreas?

- (A) Alpha (B) Beta (C) Gamma (D) Delta

14- All the followings are the intracellular second messenger for hormone action, except:

- (A) c-AMP (B) c-GMP (C) Phosphatidylinositol (D) NADPH

15- Hormone that plays a central role in metabolic processes is:

- (A) FSH (B) Insulin (C) LH (D) ACTH

16- Respiratory chain is found in:

- (A) Mitochondria (B) Cytoplasm (C) Nucleus (D) Endoplasmic reticulum

17- In oxidative phosphorylation, the oxidation of one molecule of NADH produce:

- (A) 3ATP molecules (B) 5ATP molecules (C) 10ATP molecules (D) 36ATP
- 18- Acetyl CoA is not used for the synthesis of:**
 (A) Fatty acid (B) Cholesterol (C) Pyruvic acid (D) Citric acid
- 19- The enzyme that synthesizes ATP in oxidative phosphorylation is:**
 (A) Hexokinase (B) NADH dehydrogenase (C) Cytochrome oxidase (D) F₀F₁ATPase
- 20 – The digestive enzymes belongs to:**
 (A) Hydrolases (B) Transferases (C) Ligases (D) Isomerases
- 21– Which of the following non-proteins can act as an enzyme?**
 (A) DNA (B) RNA (C) Phospholipid (D) Nucleoside
- 22- Enzymes may be used as the following, except:**
 (A) Therapeutic agents (B) Nutrients (C) Diagnostic agents (D) Laboratory reagents
- 23- Isoenzymes can be characterized as:**
 (A) Non – protein part of enzyme.
 (B) Enzymes with same quaternary structure.
 (C) Similar enzymes that catalyze different reactions.
 (D) Multiple forms of given enzyme that catalyze same type of reactions.
- 24 – Antihemorrhagic vitamin is:**
 (A) Vitamin A (B) Vitamin E (C) Vitamin K (D) Vitamin D
- 25 – Which of the following is both a vitamin and a hormone?**
 (A) Ascorbic acid (B) Calciferol (C) Thiamine (D) Folic acid
- 26 – Functionally active form of vitamin D is:**
 (A) 1,25-dihydroxy cholecalciferol (B) 24,25 -dihydroxy cholecalciferol
 (C) 1,24 -dihydroxy cholecalciferol (D) 1,2- dihydroxy cholecalciferol
- 27 – Which of the following is water soluble vitamin?**
 (A) Vitamin E (B) Vitamin A (C) Vitamin C (D) Vitamin K
- 28 – All of the following vitamins have antioxidant property, except:**
 (A) β-carotene (B) Ascorbic acid (C) Cholecalciferol (D)Vitamin E
- 29 – Pyridoxal phosphate is a coenzyme for the reactions, except:**
 (A) Transamination (B) Deamination (C) Decarboxylation (D) Oxidation
- 30 – Biotin is involved in:**
 (A) Oxidation-reduction (B) Carboxylation (C) Dehydration (D) Deamination
- 31 – Plasma albumin performs the following functions except:**
 (A) Maintenance of osmotic pressure (B) Transport
 (C) Solubilisation of glucose (D) Buffer
- 32 – The element that prevent the development of dental carries is:**
 (A) Fluorine (B) Phosphorus (C) Selenium (D) Calcium
- 33 – Iodine is required for the formation of:**
 (A) Vitamin B₁₂ (B) Insulin (C) Thyroxine (D) Calcitonin
- 34 – Transport form of iron is:**
 (A) Transferrin (B) Ferritin (C) Hemosiderin (D) Ceruloplasmin
- 35 – Which of the following elements has role in electron transport chain?**
 (A) Iron (B) Iodine (C) Zinc (D) Fluoride
- 36 -All amino acids found in proteins are optically active, except:**
 (A) Serine (B) Glycine (C)Tyrosine (D) Arginine
- 37 – Which of the following is a non-protein amino acid?**

- (A) Proline (B) Histidine (C) Ornithine (D) Glycine

38-The function of Golgi apparatus is about.....

- (A) Lipids metabolism (B) Protein synthesis
(C) Oxidative phosphorylation (D) Macromolecules packaging

39-..... are proteins associated with the DNA in the nucleus.

- (A) Histones (B) Chromatids (C) Centromeres (D) Internes

40-Which of the following is a correct pathway?

- (A) DNA→Protein→mRNA (B) DNA→mRNA→Protein
(C) mRNA→DNA→Protein (D) RNA→Protein→mRNA

41-How does RNA differ from DNA?

- (A) RNA contains thymine instead of uracil and it is usually single-stranded.
(B) RNA contains uracil instead of thymine and it is usually double-stranded.
(C) RNA contains uracil instead of thymine and it is usually single-stranded.
(D) RNA contains uracil instead of cytosine.

42-Where does DNA replication take place?

- (A) Ribosome (B) Cytoplasm (C) Golgi apparatus (D) Nucleus

43-The process of synthesizing mRNA from DNA is called.....

- (A) Transcription (B) Replication (C) Translation (D) Reverse transcription

44-A triplet of nucleotide in mRNA is called

- (A) Amino acid (B) Codon (C) Tripeptide (D) Protein

45-The sequence of events for protein synthesis is.....

- (A) Replication then transcription. (B) Translation then transcription.
(C) Transcription then translation. (D) Replication then translation.

46-In DNA, which is the correct base pairing?

- (A) A with G (B) G with T (C) A with U (D) A with T

47-During transcription, the enzyme that binds to a specific section where an mRNA synthesized is.....

- (A) RNA Polymerase (B) DNA Polymerase (C) Helicase (D) Caspase

48-Factors involve termination are called.....

- (A) Elongation factors (B) Release factors (C) Stop factors (D) Initiation factors

49-The 80S ribosome consists of subunits.

- (A) 30S and 50S (B) 60S and 30S (C) 40S and 60S (D) 20S and 70S

50-In messenger RNA, each codon specifies a particular.....

- (A) Nucleotide (B) Enzyme (C) Promoter (D) Amino acid

51 - The general mechanism that enzyme acts is by

- A) Selectively enhancing the rate of the forward reaction
B) Altering the change in free energy of the reaction
C) Changing the equilibrium constant of the reaction
D) Decreasing the rate of activation

52- The co-enzyme is often a:

- (A) Metal. (B) Organic compound (C) Inorganic ion (D) Protein

53- -----considers the most common cofactor of enzymes.

- (A) N (B) S (C) Zn (D) P

54- Transaminase enzymes belong to the class:

(A) Hydrolases (B) Transferases (C) Oxidoreductases (D) Isomerases

55- The power house of the cell is:

(A) Nucleus (B) Cell membrane (C) Mitochondria (D) Lysosomes

56- Enzymes catalyzing electron transport are present mainly in the:

(A) Ribosomes (B) Endoplasmic reticulum
(C) Lysosomes (D) Inner mitochondrial membrane

57- The most active site of protein synthesis is the

(A) Nucleus (B) Ribosome (C) Mitochondrion (D) Cell sap

58- The degradative processes are categorized under the heading of

(A) Anabolism (B) Catabolism (C) Metabolism (D) Synthesis

59- Polysaccharides are:

(A) Polymers (B) Acids (C) Proteins (D) Oils

60- A polysaccharide which is often called animal starch is:

(A) Glycogen (B) Starch (C) Inulin (D) Dextrin

61- Amylose is a constituent of:

(A) Starch (B) Cellulose (C) Glycogen (D) Inulin

62- Gluconeogenesis is decreased by:

(A) Glucagon (B) Epinephrine (C) Glucocorticoids (D) Insulin

63- The following is an enzyme required for glycolysis:

(A) Pyruvate kinase (B) Pyruvate carboxylase
(C) Glucose-6-phosphatase (D) Glycerokinase

64- Starch and glycogen are polymers of:

(A) Fructose (B) Mannose (C) α -D-Glucose (D) Galactose

65- An aromatic amino acid is:

(A) Lysine (B) Tyrosine (C) Taurine (D) Arginine

66- An amino acid not found in proteins is:

(A) β -Alanine (B) Proline (C) Lysine (D) Histidine

67- The main site of urea synthesis in mammals is:

(A) Liver (B) Skin (C) Intestine (D) Kidney

68- During starvation, the first reserve nutrient to be depleted is:

(A) Glycogen (B) Proteins (C) Triglycerides (D) Cholesterol

69- A polymeric unit of starch which has a branched structure is:

(A) Glucose (B) Amylopectin (C) Isomaltose (D) Amylose

70- In denaturation of proteins, the bond which is not broken:

(A) Disulphide bond (B) Peptide bond (C) Hydrogen bond (D) Ionic bond

71- Pyridoxal phosphate is central to:

(A) Deamination (B) Amination (C) Carboxylation (D) Transamination

72- A deficiency of vitamin B12 causes:

(A) Beri-Beri (B) Scurvy (C) Pernicious anemia (D) Ricket

73- Cholesterol is a precursor in the biogenesis of:

(A) Vitamin A (B) Vitamin D (C) Vitamin E (D) Vitamin C

74- The number of ATP produced in the Krebs cycle is

(A) 3 (B) 6 (C) 12 (D) 24

75- Enzymes, which are produced in inactive form in the living cells, are called

(A) Papain (B) Lysozymes (C) Apoenzymes (D) Proenzymes

76- Dietary fats after absorption appear in the circulation as:

- (A) LDL (B) VLDL (C) Chylomicrons (D) HDL

77- Ketone bodies are synthesized in the:

- (A) Liver (B) Gallbladder (C) Kidney (D) Pancreas

78- Bile acid are stored in the:

- (A) Liver (B) Gallbladder (C) Kidney (D) Pancreas

79- Glutathione is a :

- (A) Monopeptide (B) Dipeptide (C) Tripeptide (D) Tetrapeptide

80- A carbohydrate found in DNA is:

- (A) Ribose (B) Deoxyribose (C) Ribulose (D) Xylulose

81- Fructose-1, 6-biphosphate is formed by the action of:

- (A) Phosphofruktokinase-1 (B) Phosphofruktokinase-2

- (C) Fructose-1, 6-biphosphatase (D) Glucokinase

82- Before pyruvic acid enters the TCA cycle it must be converted to:

- (A) Citrate (B) Acetyl CoA (C) Lactate (D) α -ketoglutarate

83- Synthesis of Glucose from amino acids is termed as:

- (A) Glycolysis (B) Glycogenesis (C) Gluconeogenesis (D) Lipogenesis

84- The lipoprotein richest in cholesterol is :

- (A) Chylomicrons (B) HDL (C) VLDL (D) LDL

85- Which of the following is omega-3 polyunsaturated fatty acid?

- (A) Linoleic acid (B) Linolenic acid (C) Cholic acid (D) Arachidonic acid

86- Hyperchylomicronemia may be caused by Deficiency of :

- (A) Apo B-48 (B) Apo B-100 (C) Apo C-II (D) Apo E

87- Fatty liver may be caused by :

- (A) Overproduction of triacylglycerol (B) Overproduction of LDL
(C) Impaired synthesis of triacylglycerol (D) Impaired synthesis of LDL

88- In endocrinology, -----means the time required for a hormone to fall to half its original concentration in the specified fluid or blood.

- (A) Concentration (B) Half-life (C) Percentage (D) Prohormone

89- A substance that are secreted by endocrine gland into the blood is:

- (A) Pheromone (B) True hormone (C) Paracrine hormone (D) Autocrine hormone

90- Intermediate lobe of pituitary gland synthesis and secrete:

- (A) MSH (B) LH (C) GH (D) ADH

91- The hormone that is essential of hypothalamic-pituitary-adrenal axis is:

- (A) ACTH (B) Estrogen (C) Ghrelin (D) Glucagon

92- -----, the maintenance of equilibrium of internal body functions in response to external changes.

- (A) Prohormone (B) Prehormone (C) Receptor (D) Homeostasis

93- The hormone that is secreted from pancreas and regulate both endocrine and exocrine function of pancreas is:

- (A) Glucagon (B) Insulin (C) Somatostatin (D) Pancreatic polypeptide

94- Thyroid gland follicular cells synthesis and secreted thyroid hormones depending on:

- (A) Ca (B) Na (C) Fe (D) I

95- ----- are air-borne signals secreted by exocrine glands and stimulate target cells in another animal, usually of the opposite sex.

- (A) Paracrine hormones (B) True hormones (C) Pheromones (D) Neurotransmitters

96- -----molecules act on own cell of source.

(A) Autocrine (B) Paracrine (C) Endocrine (D) Intracrine

97- Follicular stimulating hormone (FSH) secreted from:

(A) Anterior pituitary (B) Posterior pituitary (C) Middle pituitary (D) Ovary

98- ----- can play a role in emotional bonding between human and dogs.

(A) Glucagon (B) Testosterone (C) Estrogen (D) Oxytocin

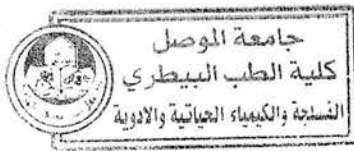
99- Within the plasma, T4 and T3 are mostly transported entirely in association with-----.

(A) Thyroxine-binding globulin (TBG) (B) Albumin (C) Thyroglobulin (D) Ceruloplasmin

100- PTH is a linear polypeptide consisting of 84 amino acids, it is initially synthesized in -----
----- as a pro-hormone.

(A) Oxyphil cells (B) Chief cells (C) P cells (D) Parietal cells

Good Luck



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