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B.V.Sc. & A.H. (Second Professional) Examination – 2025
Veterinary Biochemistry Paper –I
(MSVE 2016)

Time: Three Hours **Maximum Marks: 100**
Weightage: 20

Unit-1 (General Veterinary Biochemistry)
Unit-3 (Veterinary Analytical Biochemistry)

Instructions:
1) Attempt all questions
2) Answer of all questions is to be written in the space provided along with the question in question-booklet.
3) Overwriting is not allowed in the objective type question.

Q.1 Fill in the blanks. **(20x0.5 = 10)**

1.1 DNA combines with a basic protein called .... to form nucleosomes.

1.2 .... is a mixture of non-specific proteolytic enzymes that causes complete hydrolysis of proteins

1.3 .... hydrolyses the peptide bonds containing lysine or arginine on the carbonyl side of peptide linkage.

1.4 The precipitation of proteins by neutral salts, is known as ....

1.5 The milk sugar lactose is composed of .... glycosidic bond.

1.6 The pentoses found in the RNA structure is ....

1.7 .... is the Edman's reagent used for protein sequencing?

1.8 .... is considered as the 22^{nd} amino acid.

1.9 ....is temperature at which half of the helical structure of DNA is lost.

1.10 Serum .... activity is elevated in acute pancreatitis.

1.11 The deoxynucleotides in DNA are held together by .... bond.

1.12 ....residues in α-helices tend to introduce a kink in the helix structure.

1.13 The process of formation of DNA from RNA is called as ....

1.14 .... discovered the cell.

1.15 Thyroid hormones are derivative of .... amino acid.

1.16 High levels of uric acid in the blood and its crystallization is the cause of ....

1.17 ....is a precursor to histamine.

1.18 Glucose, fructose and mannose forms ....osazones.

1.19 ....inhibit prostaglandin synthesis by blocking cyclooxygenase (COX).

1.20 .... is a non-reducing disaccharide that cannot form osazone.

Q.2 Choose the most suitable answer and write the number of the correct answer 1 or 2 or 3 or 4 in the space given against each sub question: (20x0.5 = 10)

2.1 The term for natural cell death or programmed cell death is ( )
1. Necrosis
2. Apoptosis
3. Autophagy
4. Oxidative stress

2.2 The sodium-potassium pump moves ( )
1. 3 Na^+ in, 2 K^+ out.
2. 3 Na^+ out, 2 K^+ in.
3. 2 Na^+ in, 3 K^+ out.
4. 2 Na^+ out, 2 K^+ in.

2.3 The pKa value of an acid is related to its strength as: ( )
1. Lower pKa = weaker acid.
2. Lower pKa = stronger acid.
3. Higher pKa = stronger acid.
4. pKa has no relation to acid strength.

2.4 In metabolic alkalosis, the most suitable IV fluid is: ( )
1. 0.9% NaCl with KCl.
2. Ringer's lactate
3. 5% Dextrose
4. Plasma expanders.

2.5 Which of the following sterol is present in plant cells: ( )
1. Ergosterol.
2. Stigmasterol.
3. Sitosterol.
4. All of the above.

2.6 The nitrogenous base present in lecithin: ( )
1. Choline.
2. Ethanolamine.
3. Inositol.
4. Serine.

2.7 In the Watson–Crick model, two DNA strands are held together by:( )
1. Ionic bonds.
2. Hydrogen bonds.
3. Peptide bonds.
4. Phosphodiester bonds.

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2.8 Sulphur containing essential animo acid: ( )

1. Cysteine.
2. Methionine.
3. Cystine.
4. Both Cysteine and Methionine.

2.9 Which of the following is not present in glutathione: ( )

1. Cysteine.
2. Glutamate.
3. Glycine.
4. Proline.

2.10 Insulin promotes all of the following except: ( )

1. Glycogen synthesis.
2. Lipogenesis.
3. Protein synthesis.
4. Glycogenolysis.

2.11 Method that cannot determine protein structure: ( )

1. X-ray crystallography.
2. NMR.
3. HPLC.
4. None of the above.

2.12 α Helix structure was proposed by: ( )

1. Watson and Crick.
2. Pauling and Corey.
3. Chargaff.
4. Avery and McCarty.

2.13 Indole group is present in which of the following amno acid: ( )

1. Tryptophan.
2. Tyrosine.
3. Arginine.
4. Proline

2.14 Which of the following is a good cholesterol: ( )

1. LDL.
2. VLDL.
3. HDL.
4. None of the above.

2.15 Which anticoagulant should be used for estimation of plasma glucose: ( )

1. EDTA.
2. Sodium Citrate.
3. Sodium Fluoride.
4. None of the above.

2.16 Thromboxane A_2 (TXA_2), produced by platelets, causes: ( )

1. Vasodilation and platelet inhibition.
2. Vasoconstriction and platelet aggregation.
3. Bronchodilation and uterine relaxation.
4. Increased gastric mucus secretion.

2.17 Uric acid is the end product of metabolism of: ( )

1. Proteins.
2. Carbohydrates.
3. Purine.
4. Pyrimidine.

2.18 Ketone bodies can be detected by: ( )

1. Rothera's test.
2. Ross test.
3. Cow side test.
4. All of the above.

2.19 Which of the following is not an aromatic amino acid: ( )

1. Tryptophan.
2. Tyrosine.
3. Threonine.
4. Phenylalanine.

2.20 The major LDH isoenzymes of skeletal muscle and liver: ( )

1. LDH 1.
2. LDH 2.
3. LDH 4.
4. LDH 5.

Q.3 Attempt any <u>ten</u> out of the following twelve questions. Answer of each question should be in 2 to 3 lines. (10x2.0= 20)

3.1 Define asymmetric carbon with suitable example.

3.2 Define iso electric pH.

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3.3 Define mutarotation.

3.4 Define Enantiomers with suitable example.

3.5 Define Plasmalogen.

3.6 Define Rancidity

3.7 Define steroids with suitable example

3.8 Define decarboxylation with suitable example

3.9 What is Arrhenius concept of Acid and Bases?

3.10 Define Denaturation.

3.11 Define contractile protein with suitable example.

3.12 State, Cell theory.

Q.4 Attempt any <u>six</u> out of the following eight questions. Answer of each question should be in 8 to 10 lines. (6 x 6.0 = 36)

4.1 Write short note on Bovine Ketosis

4.2 Cytochrome p450 system of enzymes.

4.3 Enlist the liver function tests.

1.4 Write briefly about functions of Prostaglandins.

1.5 Henderson-Hasselbalch Equation.

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4.6 Difference between active and passive transport across membrane.

4.7 Hypoglycaemia in baby pigs.

4.8 Biochemistry of oxidative stress.

Q.5 Answer the following question in 1-2 pages (attempt any two). (2x12.0 = 24)

1. Define Carbohydrate, enlist its biological functions and classify monosaccharides with suitable examples.
2. Describe in detail the structure of DNA with labelled diagram. Also write down the types of RNA and their functions.
3. Describe in detail the diagnostic importance of non-functional plasma enzymes and Isoenzymes in animals.

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B.V.Sc. & A.H. (Second Professional) Examination – 2025

Veterinary Biochemistry Paper –II

(MSVE 2016)

Time: Three Hours

Maximum Marks: 100
Weightage: 20

Unit-2 (Intermediary Metabolism)

Instructions:

1) Attempt all questions
2) Answer of all questions is to be written in the space provided along with the question in question-booklet.
3) Overwriting is not allowed in the objective type question.

Q.1 Fill in the blanks. **(20x0.5 = 10)**

1.1 .... reduces the energy of activation.

1.2 Phosphorylation of glucose is caused by the enzyme...............................

1.3 The substrate level phosphorylation in citric acid cycle is catalyzed by the enzyme.................................

1.4 The metabolic pathway concerned with the conversion of lactate to Glucose is.......................................

1.5 Substrate concentration that causes half maximal velocity in an enzyme catalysed reaction is.....................

1.6 Net ATP produced in anaerobic glycolysis is..

1.7 Inhibition of succinic dehydrogenase by malonic acid is an example of.......................................

1.8 ....is an iron storage protein.

1.9 Alternate name for PPP pathway is...

1.10 EMP stands for which pathway...

1.11 Volatile fatty acids produced in the rumen are.......................................

1.12 Name the vitamin having antioxidant property..

1.13 Name the vitamin related to polyneuritis in birds..

1.14 Substrate level phosphorylation occur in.................................. pathways

1.15 Albinism is an inborn error, due to the lack of synthesis of the................. Pigment.

1.16 Alkaptonuria is an inborn error of metabolism of.................... amino acid.

1.17 Ketone bodies are ....,............and..............................

1.18 Urea cycle utilizes .... ATP.

1.19 Zinc is an integral part of .... enzyme.

1.20 Fluoride is an inhibitor of .... enzyme.

Q.2 Choose the most suitable answer and write the number of the correct answer 1 or 2 or 3 or 4 in the space given against each sub question: (20x0.5 = 10)

2.1 Which amino acid acts as sink for ammonia ( )
1. Glutamate
2. Aspartate
3. Lysine
4. Leucine

2.2 Fatty acids can be oxidized in the body by ( )
1. α-oxidation
2. β-oxidation
3. ω-oxidation
4. All of these

2.3 Hypercholesterolemia is observed in the disorder: ( )
1. Hypothyroidism
2. Diabetes mellitus
3. Both A&B
4. None of these

2.4 Glycolysis cycle enzymes are localized in: ( )
1. Cytoplasm
2. Mitochondria
3. Golgi apparatus
4. Nucleus

2.5 The two final products of oxidation of odd chain fatty acids are: ( )
1. Acetyl CoA & Malonyl CoA
2. Acetyl CoA & acetylCoA
3. Acetyl CoA & propionylCoA
4. Acetyl CoA &SuccinylCoA

2.6 The amino acid which is purely ketogenic: ( )
1. Phenylalanine
2. Leucine
3. Tryptophan
4. All of these

2.7 The enzyme in glycolysis catalyse as irreversible reaction: ( )
1. Hexokinase
2. Phosphofructokinase
3. Pyruvate kinase
4. All of these

2.8 An allosteric inhibitor of IMP dehydrogenase is: ( )

1. AMP
2. ADP
3. GTP
4. GDP

2.9 Name high energy compound in glycolysis: ( )

1. ATP
2. GTP
3. UDPG
4. All of these

2.10 Michaelis Menton enzyme kinetics shows type of curve ( )

1. Sigmoida
2. Hyperbolic
3. Hypobolic
4. Parabolic

2.11 Net production of ATP in aerobic glycolysis is: ( )

1. 2 ATP
2. 8 ATP
3. 30 ATP
4. 38 ATP

2.12 End product of phosphogluconate pathway is: ( )

1. Pentose sugar
2. NADPH
3. Both A& B
4. None of the above

2.13 Ketone body having mousy smell is/are: ( )

1. Acetone
2. Acetoacetate
3. β-hydroxy butyrate
4. All of the above

2.14 Km is substrate concentration at which V becomes: ( )

1. Half of the Vmax
2. Double of Vmax
3. Equal to Vmax
4. None of the above

2.15 Uric acid is: ( )

1. Insoluble
2. Sparingly soluble
3. Soluble
4. None of the above

2.16 NADPH serves to regenerate in red cells to prevent their lysis. ( )

1. Cholesterol
2. Glutathione
3. NADP
4. Cysteine

2.17 The catalytically active enzyme-cofactor complex is called as: ( )

1. Holoenzyme
2. Apoenzyme
3. Coenzyme
4. All of the above

2.18 How many times palmitic acid undergoes β-oxidative pathway for its oxidation ( )

1. 8 times
2. 7 times
3. 9 times
4. 10 times

2.19 The number of ATP produced when a molecule of acetyl Co A is oxidized through citric acid cycle: ( )

1. 12
2. 24
3. 15
4. 38

2.20 The connecting link between HMP shunt and lipid synthesis is: ( )

1. Ribose
2. NADPH
3. Glycogen
4. NADH

Q.3 Attempt any <u>ten</u> out of the following twelve questions. Answer of each question should be in 2 to 3 lines. **(10x2.0= 20)**

3.1 Differentiate between a coenzyme and a cofactor with one example of each?

3.2 What are isoenzymes? Provide an example.

3.3 Define the Michaelis constant (Km) and its significance in enzyme kinetics?

3.4 Define the term "turnover number" in enzyme kinetics.

3.5 What is the role of an uncoupler in oxidative phosphorylation

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3.6 What is the allosteric enzyme, write an example?

3.7 How does cyanide inhibit the electron transport chain

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3.8 What do know about Chargaff's Rule?

3.9 Define Transformation?

3.10 How does the pentose phosphate pathway contribute to biosynthesis?

3.11 Define suicidal inhibition with one example?

3.12 Define decarboxylation with one example?

Q.4 Attempt any six out of the following eight questions. Answer of each question should be in 8 to 10 lines. (6 x 6.0 = 36)

4.1 Write the classification of enzymes as per the IUBMB?

4.2 Describe Cori's cycle in brief?

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4.3 Enlist factors affecting enzyme action?

4.4 Describe in brief on competitive inhibition?

4.5 Describe in brief on metabolism of purine?

4.6 Describe in brief on gluconeogenesis?

4.7 Describe in brief on Ketone body formation and its importance?

4.8 Describe in brief on ETC and oxidative phosphorylation

Q.5 Answer the following question in 1-2 pages (attempt any two). (2x12.0 = 24)

5.1 Discuss urea cycle and its importance in the body?

5.2 Discuss HMP shunt and its importance in the body?

5.3. Discuss beta oxidation of palmitic acid and its energetics?