

Chattogram Veterinary and Animal Sciences University
MS in Biochemistry July-December'2023, Semester Final Examination
 Department of Physiology, Biochemistry and Pharmacology
Course Title: Biochemical Molecular and Immuno-Diagnostics
Course Code: BMI-602
 Total Marks:40; Time: 2.0 hours

Answer any eight (8) of the following questions. Figure in the right margin indicate full marks.

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|-----|--|---------|
| 1. | a. Define Hazards. What are the causes of hazards? Classify hazards with suitable examples. | 1+1+1=3 |
| | b. Briefly describe the disposal of specimens and contaminated materials. | 2 |
| 2. | Write short notes on the following: | 1*5=5 |
| | (i) VNTR | |
| | (ii) RAPD | |
| | (iii) STR | |
| | (iv) mtDNA | |
| | (v) Y chromosome analysis | |
| 3. | a. What is DNA polymorphism? Sketch the organization of human genome. | 1+2=3 |
| | b. Give examples of DNA polymorphisms used in forensic genetics. | 2 |
| 4. | a. What is quality control? What are the three widely used statistics to quantify the reliability of a test? | 1+2=3 |
| | b. Write down the causes of system failure. | 2 |
| 5. | a. What is hemoglobin? Write down the normal and abnormal types of hemoglobin. | 1+2=3 |
| | b. What is blood group? Differentiate between ABO and RH system. | 2 |
| 6. | a. Why cross matching is necessary before blood transfusion? | 2 |
| | b. Write down the complications of blood transfusion. | 3 |
| 7. | a. Enumerate the biochemical markers used for the following organ function tests? | 3 |
| | a. General health panel test | |
| | b. Liver function test | |
| | b. What is ESR? What are the applications of this parameter in hematology? | 2 |
| 8. | a. Define bio-markers. What are the four major functions that laboratory test results can serve in the field of neoplasia? | 1+1=2 |
| | b. Write down the classes of biochemical used as Tumor markers. | 3 |
| 9. | a. What is HLA typing? Show the genes of the major Histocompatibility locus in terms of (i) MHC region, (ii) Gene products (iii) Tissue location (iv) Function | 1+2=3 |
| | b. Write down the clinical applications and method of HLA typing. | 2 |
| 10. | a. A newborn baby develops yellowness of skin and conjunctiva after 3 days of birth. The condition improved on giving phototherapy. Suggest the type of jaundice and biochemical tests to confirm the diagnosis. | 3 |
| | b. Write down the indication of the following marker: | 2 |
| | (i) HBV | |
| | (ii) HBsAg | |
| | (iii) HBeAg | |
| | (iv) HBV-DNA | |

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Biochemistry, July-December Semester, Final Examination-2023
Course Title: Advanced Metabolism (Theory)
Course Code: ADM-602
Full marks: 40; Time: 2 hours

Figures in the right margin indicate full marks. Answer any four (4) from the following questions.

1. a. Describe the conditions of equilibrium state in metabolism. What will happen if the metabolic reaction in cell are at equilibrium? 5
b. Write down some identification processes of non-equilibrium reactions in metabolic control. 5
2. a. Briefly describe about the molecular mechanism in the regulation of enzyme activity. 5
b. Give the brief outline on "Equilibrium binding on Polymeric protein". 5
3. a. Write down the step by step approaches for testing the theory of metabolic control. 5
b. Briefly describe about the sigmoidal binding curve of oxygen to hemoglobin in concept of biochemistry. How the curve works? 5
4. a. Explain the model of Adair and its significance for understanding sigmoid binding of oxygen to hemoglobin. 5
b. What is protein targeting? Write down the key aspects of protein targeting. 5
5. a. Explain the photosystem I and II processes in plant with figure. 5
b. Briefly describe about the post-transcriptional modification of mRNA. 5

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Biochemistry, July-December Semester, Final Examination-2023
Course Title: Veterinary Biochemistry (Theory)
Course Code: VEB-602
Full marks: 40; Time: 2 hours

Figures in the right margin indicate full marks. Answer any four (4) from the following questions.

1. a. Briefly describe about the biosynthesis of volatile fatty acid (VFA). 5
b. What is Bioenergetics? Write down the principle of it. 5
2. a. How ruminant microbes utilize urea for their protein biosynthesis? Briefly describe about it. 5
b. Describe the metabolic regulations and biological functions of glycolysis. 5
3. a. What are the significance of HMP pathway? Draw the reactions of oxidative phase of this pathway. 5
b. Briefly describe about the physiochemical properties of membrane lipid. 5
4. a. Draw the tertiary structure of protein. Explain the different bonds of it. 5
b. What are the role's of NADH and NADPH in living system? Also mention the differences between NADH and NADPH. 5
5. a. In between HDL and LDL which one is bad for our body? Why it is bad cholesterol? 5
b. Mention the differences among the processes of digestion and absorption in ruminant and non-ruminant. 5

Chattogram Veterinary and Animal Sciences University
Faculty of Veterinary Medicine
Department of Physiology, Biochemistry and Pharmacology
MS in (Biochemistry) July December semester final-2023
Course title: Recombinant DNA Technology
Course Code: RDT-602
Total Marks: 40

Figure in the right margin indicate full marks. Please answer 4 (Four) questions from this list

1. a) How do you describe the term “Acquisition of Genetic information” by prokaryote? 4+3+3
b) Define transformation, transduction and conjugation.
c) Please provide their role in genetic information flow.

2. a) In perspective to study the drug resistance plasmids-What is the role of R plasmid in antibiotic resistance? 4+3+3
b) What are the components of the R plasmid?
c) What is the difference between R plasmid and F plasmid?

3. a) What is the principle of Southern blotting? 3+2+2+3
b) What is the main purpose of blotting?
c) Which gel is used in Northern blotting?
d) What is the difference between Southern and northern blot?

4. a) Define cDNA? 2+4+4
b) Why is it important to make cDNA from the RNA?
c) Mention its role for construction of gene libraries.

5. a) Define Genetic Vectors. 2+5+3
b) Describe the Types, & Applications of genetic vectors.
c) What is the difference between integrating and non-integrating vectors?

6. a) Describe the methods of Construction of chromosomal clones. 5+5
b) Mention the steps of different types of recombination mechanism

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Physiology Final Examination 2023
Semester: July-December
Course Title: Concepts of Animal Welfare (Theory)
Course Code: CAW-602
Total marks: 40, Time: 2 hours

(Figures in the right indicate full marks. Answer any FOUR (4) questions).

1. a. Write down the combined definition of animal welfare. 2
b. How will you assess welfare of farm animal based on 5 freedoms? 3
c. Enlist the principles of veterinary ethics. 3
d. List the welfare indicators of normal animals. 2
2. a. Classify dog populations. How will you control stray dogs in Bangladesh? 4
b. Briefly discuss the welfare assessment protocol at dairy farm. 4
c. How will you assess attitude and behavior of farming staff at dairy farm? 2
3. a. Define humane slaughter? What are the welfare indicators during pre slaughter 5
handling and slaughter in Bangladesh?
b. What are the WOAHA guidelines of animal welfare? Discuss the guidelines for 5
the transport of animals.
4. a. List the humane methods of killing animals? How will you euthanize a severely 3
diseased horse?
b. What are the commonest animals used for laboratory research?? List major welfare 3
issues in animal experimentation.
c. State veterinarian oath? 2
d. Enlist the veterinary legislation in Bangladesh. 2
5. a. What are the penalties under Animal Welfare Act, 2019? 3
b. Define veterinary ethics. Write down the obligatory ethical values to be practiced 3
for a veterinary practitioner.
c. Discuss the role of veterinarians to promote animal welfare in Bangladesh 4

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology

MS in Physiology Final Examination 2023

Semester: July - December

Course Title: Integration Physiology (Theory)

Course Code: IPH-602

Total marks: 40, Time: 2 hours

(Figures in the right indicate full marks. Answer any FOUR (4) questions).

1. a. Write down the properties and functions of voluntary muscles. 5
b. What are the compositions of a myocyte? Draw and label sarcomere of skeletal muscle 5

2. a. What is the origin of cranial nerve? Write down the distribution of the cranial nerve. 3
b. Classify synapse. Write down the properties of synapse. 4
c. Briefly discuss the relation between hypothalamus and pituitary gland. 3

3. a. Enlist sensory modalities? Write down the function of smell. 3
b. Enlist the different layers of eye. Differentiate between rod and cone cells? 3
c. What is binocular vision? Briefly discuss about rhodopsin cycle. 4

4. a. Write down the formation, circulations and functions of CSF. 5
b. Classify autonomic nervous system? Differentiate between sympathetic and parasympathetic nervous system? 5

5. a. Write down the mechanism of smooth muscle contraction? 4
b. How does nervous system propagate action potential? 3
c. How does skin regulate body temperature in buffalo? 3

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology

MS in Physiology Final Examination-2023

Semester: July-December

Course Title: **Digestive Physiology and Bioenergetics (Theory)**

Course Code: DPB-602

Total Marks: 40, Time-2 hours

Answer any 10 questions

4x10=40

1. The proteolytic enzymes are secreted from the stomach glands or pancreas in the form of inactive zymogen, why? Enlist the luminal phase enzymes of protein digestion with their mode of action.
2. How do Volatile Fatty Acids (VFAs) are produced from different types of carbohydrates in compound stomached animals?
3. How is protein digestion occurred in simple stomached animals?
4. Write down the physiological roles of hydrochloric acid (HCl) in food digestion. Sketch the mechanism of HCl secretion from parietal cells of stomach in dog?
5. What are the sources of succus entericus? Write down the composition and functions of succus entericus?
6. How protein digestion take place in compound stomach animal?
7. A 2 day old calf presented to SAQTVH showing clinical signs like subnormal temperature, dry mouth, cool extremities, sunken eyes, wet tail and perineum etc. Give your comments and manage the case.
8. Write down the mechanism of Na^+ , Cl^- and K^+ absorption through intestinal mucosal cells.
9. How does the digested end products of carbohydrate and protein are absorbed through intestinal epithelium in dog.
10. Briefly describe the formation of urea in the body.
11. Describe the process by which the ketone bodies are formed?
12. Define metabolism. How does acetate metabolism occur in ruminant?

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology

MS in Physiology Final Examination 2023

Semester: July-December

Course Title: Wild life Physiology (Theory)

Course Code: WPH-602

Total marks: 40, Time: 2 hours

(Figures in the right indicate full marks. Answer any FOUR (4) questions).

- 1 a. Define wildlife. What are the positive and negative values of wildlife? 5
- b. Explain briefly the basic requirements of wildlife. 5
- 2 a. What are the salient features of food chain and food web? 5
- b. Discuss the effect of light and temperature on wild animals. 5
- 3 a. Define wildlife habitat. What are the depending factors of wildlife habitat? 5
- b. Define animal behavior. What are the behavioral attributes of wild animal? 5
- 4 a. Write in detail about the adaptive behavior of chimpanzees and kangaroo rats. 5
- b. How can we encourage natural and rewarding behaviours in captivity? 5
- 5 a. How will you make habitat improvement for wild animals? 5
- b. Explain breeding potential and environmental resistance. 5

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Physiology Final Examination-2023
Semester: July-December

Course Title: **Excretory Physiology and Acid Base Balance (Theory)**

Course Code: EPA-602

Total Marks: 40, Time-2 hours

Answer any 10 questions

4x10=40

1. Define acid and base. Write down the endogenous sources of acid in cat.
2. Enlist the buffers of plasma and RBC in animal body. How do bicarbonate buffer systems neutralize strong acid (HCl) and strong base (NaOH) in blood?
3. Write down the mechanisms by which kidney maintain acid-base equilibrium. Discuss any one of them.
4. What are the hormones secreted from kidney? What is Renin-Angiotensin-Aldosterone system?
5. Explain the terms: renal threshold, plasma clearance, polyuria and oliguria.
6. Enlist excretory organs of the body. Write the important functions of kidneys.
7. How do H^+ , K^+ , and NH_3 are reabsorbed in renal tubules?
8. What is respiration? How does respiratory O_2 (oxygen) transport throughout the body?
9. Briefly discuss the mechanism of respiration.
10. What are the factors determined the diffusion of respiratory gases through blood air barrier? Discuss any two of them.
11. What is skin? Mention the major functions of skin.
12. Write down the hormonal regulation of sebum production. Mention the mechanism of sweat formation and secretion.

Chattogram Veterinary and Animal Sciences University
MS in Biochemistry July-December'2023, Semester Final Examination
Department of Physiology, Biochemistry and Pharmacology
Course Title: Advanced Chemistry of Bio-molecules
Course Code: ACB-602
Total Marks:40; Time: 2.0 hours

Answer any eight (8) of the following questions. Figure in the right margin indicate full marks.

1. a. List four functions performed by proteins in living organisms, and for any one of these describe how a particular protein carries out its function. 1+2=3
b. Write down the structure of proteins. 2
2. What are enzymes and how would you classify them? Give an account of their properties and discuss their mode of action. 2+3=5
3. a. Differentiate between alpha helix and beta-pleated sheet. 2
b. Enumerate the bonds responsible for protein structure. Show these bonds in a protein structure. 3
4. a. What are the steps will you follow to determine the primary structure of a protein? Briefly describe these processes. 1+4=5
5. a. List the four properties of proteins. Define acid protein and basic protein. 2+1=3
b. Classify proteins based on their chemical nature. 2
6. a. Differentiate between proteins and polypeptide. Enumerate the four biologically important peptides with their specific function. 2+3=5
7. a. Distinguish the amino acid sequence between hemoglobin and myoglobin. 3
b. Enumerate the storage proteins found in different food grains. 2
8. a. Illustrate the functions affecting enzyme activity. Briefly describe the substrate concentration of enzyme velocity. 1+2=3
b. What is active site? Write down the salient features of an active site. 2
9. a. What is enzyme inhibition? Classify enzyme inhibition. Represents the competitive and non-competitive inhibition is a diagram. 1+2=3
b. Define co-enzyme. Give examples of coenzymes of V-complex vitamins. 2
10. a. What is enzyme immobilization? List a application of enzymes in the following fields (i) Therapeutic applications, (ii) Analytical application (iii) Genetic engineering and (iv) Industry 1+4=5

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Pharmacology Final Examination 2023
Semester: July - December
Course Title: Toxicology of Pesticides (Theory)
Course Code: TOP-602
Total marks: 40, Time: 2 hours

(Figures in the right indicate full marks. Answer any FOUR (4) questions).

1. a. Classify pesticides. Write down the mode of action, diagnosis and treatment of malathion poisoning. 5
b. Write down the common public health hazard caused by pesticides. 5
2. a. Briefly discuss the effects of pesticides and herbicides on honey bees and fish. 5
b. Write down the functions and mechanism of ideal fumigants in poultry. 5
3. a. Define toxicity. Write down the impact of pesticides toxicity on ecosystem. 5
b. How will you diagnose and treat acute arsenic poisoning? 5
4. a. Classify herbicides toxicity with their toxicokinetic and toxicodynamic properties 5
b. Briefly discuss the diagnosis and treatment of ANTU poisoning. 5
5. a. Differentiate organo-phosphorus poisoning from organo-carbamate poisoning? 5
b. Discuss the protocol of sample collection while any outbreak happen in dairy farm by toxic agent. 5

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Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Pharmacology Final Examination 2023

Semester: July-December

Course Title: Toxicology of Drugs and Chemical Residues (Theory)

Course Code: TCD-602

Total marks: 40, Time: 2 hours

(Figures in the right indicate full marks. Answer any FOUR (4) questions).

- 1 a. What is drug overdose? Write down the impact of drugs overdose in veterinary practice along with public health significance. 5
- b. What measures should be taken in case of controlling hazard impact of drugs? 5
- 2 a. What is margin of safety of drugs? What steps should be taken during the monitoring and detection of antibiotic residues? 5
- b. List in a tabular format about drug toxicity, side effects and contraindication of cephalosporin, cotrimazole, ciprofloxacin and azithromycin. 5
- 3 a. Do you think occupational hazards in veterinary practice is neglected issue? What are the deleterious effect of physical, psychological, and chemical hazards? 5
- b. Define bio-monitoring. Write down the process of bio-monitoring. 5
- 4 a. Describe the pesticide pollution and enlist the different sorts of pesticides that have impact on human health. 5
- b. How does Chattogram get free from toxic DDT stockpile? 5
- 5 a. What are the risk associated with the use of veterinary drugs and chemicals in aquaculture? 5
- b. Write down the name of drugs that cause hypersensitivity in body with example. 5

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Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology

MS in Pharmacology

Semester: July-December 2022

Subject: Systemic Pharmacology (Theory)

Course Code: SPH-602 (T)

Full Marks: 40

Answer any four questions. Marks are mentioned on the right side of each question.

1. a. Enlist the disadvantages of using systemic antacids in an animal. 2
b. Emetics are contraindicated in horses, rats, and cattle. Shortly describe the causes. 4
c. Sketch the mechanism of action of Bulk and Osmotic purgatives. 4

2. a. Enlist the indications and contraindications of emetics and purgatives. 2
b. Differentiate between reflex and direct sialogogues with a special focus on the mechanism of actions. 2
c. Sketch the mechanism of action of Codeine sulfate. 3
d. Shortly describe the pharmacokinetics of Propofol. In which animal it is contraindicated and why? 3

3. a. Enlist five anti-anemic agents. 1
b. Differentiate between Heart Tonic and Heart Stimulant. 3
c. Sketch the mechanism of action of Fluticasone. 3
d. Differentiate between Ketamine and Diazepam in a tabular manner. 3

4. a. Enlist five non-systemic antacids. 1
b. Sketch the mechanism of action of Salbutamol. 3
c. Differentiate between loop diuretics and thiazide diuretics. 3
d. Describe the mechanism of actions of Aminophylline as respiratory stimulants, nervous stimulants, and diuretics. 3

5. a. Differentiate between the pharmacokinetics of Gabapentin and Pregabalin. 2
b. Describe the pharmacology of Bromhexine. 4
c. Sketch the mechanism of action of Domperidone and Metoclopramide. 4

Chattogram Veterinary and Animal Sciences University
Faculty of Veterinary Medicine
Department of Physiology, Biochemistry and Pharmacology
MS in (Pharmacology) July December semester final-2023
Course title: Endocrine and Nutritional Pharmacology
Course Code: ENP-602
Total Marks: 40

Figure in the right margin indicate full marks. Please answer any 4 (Four) questions from this list

1. Give a brief overview about the Pharmacological and Therapeutic uses, side effects and contraindications of hormones in veterinary practices. 10
2. a) Describe the Prostaglandin biosynthesis pathways. 3+4+3
b) Enlist the name about Prostaglandin-containing preparation for veterinary purpose.
c) What are the different pharmacologic agents used during difficult birthing for large animals.
3. a) Enumerate the effects of Vitamin A and Vitamin D in poultry. 2+3+3+2
b) Describe the Mechanism of Vitamin A and Vitamin D synthesis in biological system.
c) In addition, please describe the Role of Vitamin D in Small Animal Bone Metabolism.
d) Which body system is responsible for the regulation and synthesis of vitamin D?
4. a) What minerals are deficient in farm animals? 5+5
b) What are the most common major minerals animal rations lack?
5. a) Describe the Application of Exogenous GnRH in Food Animal Production. 3+3+4
b) Enlist the Available hormones use for livestock in Bangladesh.
c) Describe in a sketch about the Target organs and their final secretory products of pituitary hormones
6. a) Describe Common nutrition-related problems of poultry. 4+3+3
b) Describe the deficiency diseases of water-soluble vitamins in poultry
c) How a Vet treat thiamine deficiency in chickens.

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Pharmacology, July-December Semester, Final Examination-2023
Course Title: Chemotherapy of Parasitic Disease
Course Code: CPD-602
Full marks: 40; Time: 2 hours

Figures in the right margin indicate full marks. Answer any four (4) from the following questions.

1. a. Briefly describe some natural compounds that are use against cestode. 5
b. Write down the pharmacology of niclosamide drugs in veterinary practices. 5
2. a. Mention the use, mode of action, indication, contraindication and dosage of Hexachlorophene and Praziquantel drugs. 5
b. Enlist some drugs that are use for treatment of Fasciolosis and Paramphistomiasis. 5
3. a. Write down the chemistry, pharmacological action, mode of action, dose and contraindication of the following drugs: 5
i) Nitroxynil ii) Oxyclozanide + Tetramisole
b. "Levamisole drugs act as immune modulator in host"- Justify this statement. 5
4. a. How will you perform shuttle and rotation programs for control of Coccidiosis in a poultry farm? 5
b. Write down the mode of action, indication and dosage of Piperazine citrate and Benzimidazole drugs. 5
5. a. Enlist some important protozoal diseases in livestock and poultry and mention their specific drugs of choice. 5
b. Write down the mode of action, therapeutic use and dosage of imidocarb and ivermectin drugs. 5

Chattogram Veterinary and Animal Sciences University
Faculty of Veterinary Medicine
Department of Physiology, Biochemistry and Pharmacology
MS in (Pharmacology) July December semester final-2023
Course title: Pharmacy
Course Code: PHM-602
Total Marks: 40

Figure in the right margin indicate full marks. Please answer 4 (Four) questions from this list

1. Describe the Branches of Pharmacy, its Studies and Applications. 10

2. a) Define community Pharmacy. 2+4+4
b) How you will be inspiring community pharmacy practice in Bangladesh.
c) Describe the main activities of community pharmacist and duties of community pharmacist.

3. a) What is the history of pharmacy in Bangladesh? 5+5
b) How many pharmaceuticals are there in Bangladesh? Please enlist their name.

4. a) Define Trade mark and Trade mark law; 2+6+2
b) How do you describe the marketing of Veterinary drugs, Code of ethics in Pharmaceutical Marketing (CPMP),
c) What are the pricing policies for drugs in Bangladesh?

5. a) Analysing the metabolic fate of oral administration drugs. 4+3+3
b) Describe the Effect of route of administration and distribution on drug action.
c) Mention the steps in Syrup preparation, processing, manufacturing, packaging, labeling and quality control

6. a) Describe the Organization and association related to Pharmacy practice; 4+6
b) Describe the scope and responsibilities of Director General for Drug Administration (DGDA); Bangladesh Pharmaceutical Society (BPS) and Pharmacy Graduate Association (PGA).