Chattogram Veterinary and Animal Sciences University
Faculty of Veterinary Medicine
Department Of Physiology, Biochemistry and Pharmacology
MS in Pharmacology January-June/ 2024 Semester Final Examination
Course Title: **Food Toxicology and Public Health (theory)**
Course code: FTP-601
Total marks: 40

Answer any four questions of the following where question no. **1 and 3 are compulsory.**

1. Veterinary drugs cover a broad range of chemical structures and usually undergo metabolism after administration to an animal. Modes of administration include injection, implantation, dermal application by spray or pour-on, and inclusion in feed or water, all of which may result in different rates of absorption, with possible differences in the tissue distribution and nature of the residues. What are the potential dangers of residues in animal products? 10

2. Food safety risk assessments play a crucial role in ensuring the safety of our food supply and maintaining consumer confidence in the food industry. Please explores the concept of food safety risk assessments and their importance in protecting public health. 10

3. Describe the Public health risks related to food safety issues in the live bird market. 10

4. Describe the food adulteration aspect in Bangladesh food industry and discuss its sources, health risk, and detection method. 10

5. Differentiate Between Hazard and Risk. Describe the Risk Analysis of Food Safety Hazards. 10

6. Illustrate the Natural toxicants in plant-based foods, including herbs and spices and herbal food supplements, and describe the accompanying risks. 10

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Pharmacology Final Examination 2024
Semester: January-June
Course Title: Phyto-Toxicology(Theory)
Course Code: PTL-601 (T)
Total marks: 40, Time: 2 hours

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

1	a.	Briefly describe the distribution, active principle, toxic effect of Suicide tree.	5
	b.	How will you treat a patient with Water hemlock toxicity?	5
2	a.	Explain the mode of action of Oleander poisoning.	5
	b.	How will you manage Deadly nightshade toxicity?	5
3	a	List the oxalate containing plants.	5
	b	How will you diagnose a case suspected with oxalate poisoning?	5
4	a	List the toxic symptoms of Sorghum toxicity.	5
	b	How does a toxicologist will assess to identify a plant responsible for certain toxicity?	5
5	a	What is the general line of treatment for plant toxicity?	5
	b	How will you prevent plant toxicity in animals?	5

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Pharmacology, January-June Semester, Final Examination-2024
Course Title: General Toxicology
Course Code: GTL-601
Full marks: 40; Time: 2 hours

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

1. a. Suppose, A dairy cow accidentally ingest bulk amount of poison. As a Veterinarian, which measure you should follow for removal of poison from stomach? How will you prevent more absorption of poison in this case? 5
   b. Describe the process of biotransformation of toxicants. 5

2. a. How agrochemicals poisoning occurs dairy farm? Write down the preventive measures of this poisoning. 5
   b. Write down the mechanism of cell death during mercury poisoning. Describe the diagnosis and treatment protocol of this poisoning. 5

3. a. Briefly describe about the "National Poison Data System (NPDS)". How NPDS surveillance system works? 5
   b. Sketch the toxicokinetic of trivalent and pentavalent arsenic poisoning. Enlist the clinical sign, post mortem findings and treatment protocol of these poisoning. 5

4. a. Write down the physio-chemical properties of toxicants. How exposure condition and environment affect the response of toxicant? 5
   b. Which poisoning can affect on hematopoietic process. Write down the diagnosis and treatment of those poisoning in cat. 5

5. a. How nitrate toxicity occurs in ruminant? Write down the clinical sign, differential diagnosis, and treatment protocol of this poisoning in cattle. 5
   b. Briefly describe about the specific and non-specific action of toxicants. 5

Chattogram Veterinary and Animal Sciences University
Faculty of Veterinary Medicine
Department Of Physiology, Biochemistry and Pharmacology
MS in Pharmacology January-June/ 2024 Semester Final Examination
Course Title: **Chemotherapy (Theory)**
Course code: CHT-601
Total marks: 40

Answer any four questions of the following where question no. **1 and 3 are compulsory.**

1.	The rate of rising in the prevalence of antimicrobial resistant infections is now inversely related to the rate at which new medications are being approved. Therefore, developing resistance to antimicrobials is one of the most pressing public health issues of the 21st century. Describe Antimicrobials alternatives for the prevention and treatment of veterinary infectious diseases.	10
2.	Several naturally occurring and semisynthetic compounds can inhibit many of the beta-lactamase enzymes produced by penicillin-resistant bacteria. When used in combination with broad- or extended-spectrum penicillin's, there is a notable synergistic effect because the active penicillin is protected from enzymatic hydrolysis and thus is fully active against a wide variety of previously resistant bacteria. Please provide few examples of this type of approach.	10
3.	Antimicrobial agents play a key role in controlling and curing infectious disease. Soon after the discovery of the first antibiotic, the challenge of antibiotic resistance commenced. Antimicrobial agents use different mechanisms against bacteria to prevent their pathogenesis and they can be classified as bactericidal or bacteriostatic. Define bacteriostatic and bactericidal antibiotics. Sketch a bacterium and shown the different mechanism/pathway of resistance.	10
4.	As MDR microorganisms become more prevalent it is crucial to consider different environments, co-factors involved and sources of emergence, to evaluate the potential threat originating from MDR microorganisms. In this context, disinfectants, and antiseptics (DAs) are two significant factors as they are not only widely used in medical and manufacturing sectors but also in private households. The recent global pandemic of SARS-CoV-2 has extensively increased the use of DAs as their use was one of the main counter measures against the virus. Briefly describe the Factors affecting the efficacy of antiseptics and disinfectants.	10
5.	What is the AWaRe drug classification? What is the full form of AWaRe? Describe the Core Elements of Antibiotic Stewardship Programs in Resource-Limited Settings.	10
6.	Define therapeutics, therapy, and therapeutic triangle. How you relate herbal, homeopath and chemotherapeutics in veterinary practice.	10

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

MS in Pharmacology Final Exam
Session: January-June 2024
Subject: General Pharmacology (Theory)
Course Code: GPH-601 (T)

Marks: 40 Time: 2 Hours

Answer any four questions.
The marks for each question are given on the right side.

1.	a.	Describe the possible fates of drugs after metabolism. Define the Efficacy and potency of drugs.	5
	b.	A dog is given an oral drug in tablet form to act in its urinary bladder. Shortly describe the pharmacokinetic features necessary to facilitate this drug to reach the target site to execute the best effect.	5
2.	a.	For dogs, The TD50 and ED50 of Drug A are 23mg/kg b.w. and 19 mg/kg b.w., respectively whereas for Drug B, those are 27mg/kg b.w. and 20 mg/kg b.w. Which drug is better to deliver to a dog? Define Therapeutic Index.	5
	b.	Mention the features of the drug that will use these mechanisms: i) Diffusion, ii) Facilitated Diffusion, iii) Active Transport, iv) Filtration, v) Pinocytosis.	5
3.	a.	Drug A is given to a cow through the oral route to act on the uterus. The same drug is given through the IV route, the next day. In which route, the drugs will show better concentration in blood? Enlist the causes.	5
	b.	An acidic, non-polar drug,is administered in a buffalo, and after 24 hours the drug is present in the urine. Enlist the special pharmacokinetic features of that drug in the buffalo body.	5
4.	a.	Enlist the targets of drug action (Pharmacodynamics) in a living cell.	5
	b.	Generally, a dog can produce 29 μU/mL insulin. After administering Drugs, A, B, and C, the insulin levels become 92 μU/mL, 15 μU/mL and 0.001 μU/mL, respectively. After administering Drug D, the insulin levels become zero, and glucagon increases. Which one is agonist, antagonist, partially agonist, and Inverse agonist here? Define these terms too.	5
5.	a.	Describe the principles of chemotherapeutic drugs. Describe the physiological factors that need to be considered during the dosing of anesthetic drugs.	5
	b.	Which diagnostic tests can be performed to test the patients' incompatibility with the drugs having nervous, cardiac, hepatic, and renal targets?	5

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Pharmacology, January-June Semester, Final Examination-2024
Course Title: Autacoids and their Pharmacological Modulators
Course Code: APM-601
Full marks: 40; Time: 2 hours

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

1.	a.	Draw the mechanism of Renin-Angiotensin-Aldosteron System (RAAS). Write down the pharmacological action of angiotensin in AT_1 and AT_2 receptors.	5
	b.	Mention the therapeutic uses of antihistaminic drugs. Enlist some antihistaminic drugs that are commonly use in veterinary practices with their generic name, trade name and dosage.	5
2.	a.	Write down the mode of action of kinin. Enlist the therapeutic uses and dosage of kinin antagonist.	5
	b.	How does histamine release from mast cell? Write down the mode of action of histamine in H_1, H_2, and H_3 receptor.	5
3.	a.	Write down the therapeutic use of Misoprostol and Dinoprost. Enlist the major receptors and their pharmacological effect of eicosanoids.	5
	b.	Explain the therapeutic values of O_2, CO_2 and N_2 gases in veterinary practices.	5
4.	a.	How cytokines are released? Enlist the functions of following cytokines: Interleukin, Interferon-γ, TNF- α.	5
	b.	Describe the biosynthesis process, mode of action and pharmacological effect of "platelet activating factor".	5
5.	a.	Write down the mode of action, indications, and contraindications of NSAID drugs.	5
	b.	"Paracetamol drug should not use as an antipyretic in Cat" - Justify this statements.	5

Chattogram Veterinary and Animal Sciences University
Faculty of Veterinary Medicine
Department Of Physiology, Biochemistry and Pharmacology
MS in Biochemistry January-June/ 2024 Semester Final Examination
Course Title: **Advanced Molecular Biology (Theory)**
Course code: AMB-601
Total marks: 40

Answer any four questions of the following where question no. **1 and 3 are compulsory.**

1. Bacteriophages (phages), viruses that infect and replicate inside bacteria leading to cell death, present an attractive new strategy for the treatment of intracellular infections. There is robust evidence that phages can enter the eucaryotic cell (both professional phagocytes and nonphagocytic cells) and retain their viability to eliminate intracellular bacteria. Please describe advances of new technologies such as phage engineering and nanotechnology to improve phage pharmacological properties. 10

2. Plants are regarded as a promising source of novel therapeutic agents due to their higher structural diversity as compared to standard synthetic chemistry. Plants have applications in the development of therapeutic agents: as a source of bioactive compounds for possible use as drugs. There are three approaches to natural product-based drug discovery: screening of crude extracts; screening of pre-fractionated extracts; screening of pure compounds. Discuss the applications of DNA microarray technology in herbal drug research and development with suitable examples. 10

3. Describe the Multiple sequence alignment. What are the 5 main approaches of multiple sequence alignment? What is homologous sequence in bioinformatics? How to determine homology between two sequences? 10

4. Define miRNAs, siRNAs, snoRNAs. Describe the Regulatory networks involving small non-coding RNAs. 10

5. Define i. Proteomics, ii. Accession number, iii. Nucleotide sequence iv. Protein sequence. 10

6. Define RNA silencing. Briefly describe the Key Mechanistic Principles and Considerations Concerning RNA Interference. 10

Chattogram Veterinary and Animal Sciences University
Faculty of Veterinary Medicine
Department Of Physiology, Biochemistry and Pharmacology
MS in Biochemistry January-June/ 2024 Semester Final Examination
Course Title: **Advanced Cell Biology (Theory)**
Course code: ADB-601
Total marks: 40

Answer any four questions of the following where question no. **1 and 3 are compulsory.**

1. Describe the role of the cytokines during the cellular response? How do cytokines function in adaptive immunity. 10

2. How are microtubules involved in muscle contraction, mitosis, cytokinesis, and other cellular transformation? 10

3. What are the three main methods of neurotransmitter termination? What are the three major structural classes of neurotransmitters? Describe the GABA-Activated Chloride Channels in Secretory Nerve Endings. 10

4. Describe the Signal transduction pathways for activation of extracellular signal-regulated kinase by arachidonic acid. 10

5. Why do mitochondria and chloroplasts have small genomes? The mitochondrial genome encodes core subunits of the respiratory chain that drives oxidative phosphorylation and is, therefore, essential for energy conversion. Describe the Structure, mechanism, and regulation of mitochondrial DNA transcription initiation. 10

6. Describe the regulation Mechanism of Actin-Filament Assembly and Cross-Linking. What are the mechanisms of cell-surface receptors? Describe the Role of Cellular Receptors in Cell Signaling. 10

Chattogram Veterinary and Animal Sciences University

Department of Physiology, Biochemistry and Pharmacology

Masters in Biochemistry January-June Semester Final Examination' 2024

Course Title: Biochemistry of Natural Products (Theory)

Course Code: BNP-601

Total Marks: 40

Note: Figures in the right margin indicates full marks. Answer **any eight (8)** of the following questions where question number **1(one)** is compulsory.

1.	Define the following term: i. Atom, ii. Spectroscopy, iii. Relative abundance, iv. Isotope peak, v. Metastable ion	**1*5=5**
2.	a. What is electromagnetic spectrum? Figure out the electromagnetic spectrum with their wavelength. .	**2**
	b. Illustrate the Spectroscopic techniques with their effect on the molecule of a substance and information obtained	**3**
3.	a. Which of the following atoms do not exhibit nuclear magnetic resonance? C^{12}, O^{16}, N^{14}, N^{15}, H^{2}, F^{19}, C^{13}, P^{31}	**2**
	b. Write a brief note on the shielding and de-shielding of a nucleus.	**2**
	c. GC/MS	**1**
4.	a. What is NMR? Briefly describe the instrumentation pattern of NMR.	**1+2=3**
	b. What are the characteristics of solvent used in NMR spectroscopy?	**2**
5.	a. Describe the process of Mclafferty Rearrangement	**2.5**
	b. What is Nitrogen Rule? Write down the fragmentation of the following compounds: a. CH3-CH2-CH2-CH2, (b) Carboxylic acid	**1+1.5=2.5**
6.	a. Determine the structure of the compound whose m/e values are m/e 74(molecular ion), 56, 43, and 31(base peak).	**2**
	b. What are flavonoids? Write down the classification with their biological and physiological functions	**1+2=3**
7.	a. What is meant by the term chemical shift? Briefly describe the factors affecting chemical shift.	**2+3=5**
8.	Write short notes on any 2 (two) of the following: i. NOE, ii. COSY, iii. LCMS iv. Drug resistance	**2.5*2=5**
9.	a. Define antibiotics. Classify antibiotics with their mode of action.	**2+3=5**
10.	Briefly describe the isolation, purification and structure determination of Ergocalciferol.	**5**

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Biochemistry, January-June Semester, Final Examination-2024
Course Title: Principles of Biochemical Techniques
Course Code: PBT-601
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 discuss about different methods of tissue and cell homogenization. How will you prepare tissue and cell homogenates?	5
	b.	What do you mean by organ perfusion? Explain the procedure of organ perfusion.	5
2.	a.	Compare the principle, steps and uses of rate zonal and isopycnic centrifugation.	5
	b.	What is R_f value? Briefly discuss different types of adsorption chromatography.	5
3.	a.	Draw the instrumentation of mass spectroscopy. Discuss the principle, advantages and disadvantages of this spectroscopy.	5
	b.	What is SDS-PAGE? Discuss the procedure of SDS-PAGE with figure.	5
4.	a.	"Radio isotope play a crucial role in biological science"-Justify this statement.	5
	b.	What is gene mapping? Discuss about the steps of gene cloning.	5
5.	a.	What is polarimetry? How does polarimetry works? Write down the application of polarimetry.	5
	b.	Differentiate between i.) stocking gel and resolving gel. ii) Horizontal and vertical electrophoresis.	5

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Biochemistry, January-June Semester, Final Examination-2024
Course Title: Intermediary Metabolism and Regulation (Theory)
Course Code: IMR-601
Full marks: 40; Time: 2 hours

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

1. a. "CAM pathway is a special type of carbon fixation pathway"- Justify this statement. 5
   b. Describe the experimental approaches that are used for study of metabolism. 5

2. a. How NH_3 toxicity occur in animal? Describe the process of urea and uric acid synthesis and their regulation. 5
   b. Differentiate the following i) Glycolysis and Fermentation ii) Cyclic and non-cyclic photophosphorylation. 5

3. a. Describe the process of cholesterol biosynthesis in your body. 5
   b. "Krebs cycle is amphibolic in nature"- Justify this statement. Why this cycle is called open cycle? 5

4. a. Write down the Chemiosmotic hypothesis for oxidative phosphorylation. How will you differentiate between substrate level phosphorylation and oxidative phosphorylation. 5
   b. Briefly describe about the hormonal control of metabolism. 5

5. a. Describe the process of Glycogenolysis in human. Which factors are involve for its regulation? Write down the clinical significance of Glycogenolysis. 5
   b. Draw the structure of glyoxysomes. How glyoxysomes play a crucial role in seed germination? 5

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Physiology Final Examination-2024
Semester: January-June
Course Title: **Body fluid and Circulatory Physiology** (Theory)
Course Code: **BCP-601**
Total marks: **40, Time: 2 hours**

(Figures in the right indicate full marks: Answer any **Ten (10)** questions)
Questions are equal value 10x4=40

1. Where does the conduction of heart start and write it's spreading sequentially? What are the conditions that must be maintained for normal conducting system?

2. Briefly discuss the nervous regulation of heart.

3. How do hypoproteinemia and lymphatic obstruction create edema in animal body?

4. In sketch form, write down the cardiovascular responses during hemorrhage.

5. List the circulations exists in the body. Discuss briefly the renal portal system of dog.

6. Classify blood vessels. Discuss about blood vessel which contain two-third to three-fourth of the total blood.

7. What is CSF? Sketch the course of CSF with its functions in animal body.

8. By Roman numerals- write down the factors or proteins in the blood coagulation system. Define the term plasmin with its significance.

9. List the name of blood farming organs during embryonic and postnatal life. Write down the life span of different blood cells in animal body.

10. What are Rh factors? Write its clinical significance.

11. What are the factors necessary for hemoglobin synthesis? Describe mechanism of the synthesis of hemoglobin.

12. Differentiate between the following terms:
    (a) Homeostasis and hemostasis
    (b) Serum and plasma
    (c) Lymphocyte and monocyte
    (d) ICF and ECF

Chittagong Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Physiology Final Examination 2024
Semester: January-June
Course Title: Animal Behavior and Welfare (Theory)
Course Code: ABW-601
Total marks: 40, Time: 2 hours

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

1. a. What are the five freedoms we consider ensuring animal welfare? 3

   b. Identify behavior indicator of good welfare in cattle. 3
   c. What are the WOAH standards of animal welfare? 4

2. a. As a veterinarian what is your role towards animal welfare in Bangladesh? 5

   b. What do mean by stereotypy. Write down the abnormal behavior of cattle with their health risk? 5

3. a. Enumerate the sexual behavior of male and female animals. 5

   b. How the animal welfare and human welfare are connected in between? 5

4. a. What points could be considered to assess the welfare of dairy cow at farm? 4

   b. What are the mode of transport of livestock in Bangladesh? 2
   c. List the welfare indicators during loading, unloading and at livestock market of cattle. 4

5. a. You are appointed as a Meat Inspector Officer in the City Corporation. What will be your duties in the slaughterhouses? 5

   b. What are the poor welfare issues at the live bird market and ways to improve the situations? 5

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

MS in Physiology Final Examination 2024

Semester: January-June

Course Title: Molecular Cell Physiology (Theory)

Course Code: MCP-601 (T)

Total marks: 40, Time: 2 hours

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

1	a.	Briefly describe the central dogma of molecular biology.	5
	b.	How do the nucleotides form a DNA chain?	5
2	a.	Classify different types of genes with examples.	5
	b.	Explain the purpose of phylogenetics.	5
3	a	Define node, branch, topology, root	5
	b	Draw an unscaled branches of a phylogenic tree.	5
4	a	Classify different types of intercellular signaling with examples.	5
	b	How will you describe about cell surface receptors?	5
5	a	Why second messenger is important in signal transduction?	5
	b	Explain the role of cAMP.	5

Chattogram Veterinary and Animal Sciences University
Department of Physiology, Biochemistry and Pharmacology
MS in Physiology Final Examination-2024
Semester: January-June
Course Title: **Avian Physiology** (Theory)
Course Code: **AVP-601**
Total marks: **40, Time: 2 hours**

(Figures in the right indicate full marks: Answer any **Ten (10)** questions)
Questions are equal value 10x4=40

1. What is panting? How do birds regulate their temperature during extreme heat?

2. Write down the glucose and calcium regulating hormones. How do they work?

3. Differentiate between avian respiration and mammalian respiration. Write down the name and physiological roles of air sacs in respiration of poultry.

4. "Kidneys are important homeostatic organs whereby the body water and solutes are maintained at fairly constant levels"-explain how they do?

5. List the endocrine organs of birds. Write down the effects of estrogen on plasma and tissue constituents.

6. Write down the organs of GI tract of birds. Enlist the functions of bile and liver in poultry.

7. List the mechanical factors of digestion. Briefly describe the CHO digestion and absorption in chicken.

8. Other than plasma protein, briefly discuss about the plasma constituents of birds.

9. Enlist the hemopoietic organs. Write down the defensive properties of heterophils and monocytes of birds.

10. Define blood pressure. Discuss briefly the influencing factors of blood pressure in poultry..

11. What are the principal gonadal hormones of birds? Write down the physiological roles of estrogen on plasma and tissue constituents.

12. Write down the composition of semen. Sketch the spermatogenesis in duck.

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

MS in Physiology Final Exam

Session: January-June 2024

Subject: Endocrine and Reproductive Physiology (Theory)

Course Code: ERP-601 (T)

Marks: 40 Time: 2 Hours

Answer any four questions.

The marks for each question are given in the right side.

1.	a.	Sketch the process of synthesis of a steroid hormone. How does it work at the cellular level?	6
	b.	Differentiate between local and trophin hormones.	4
2.	a.	Which factors are responsible for a good testicular development in a high libido bull? Which factors are responsible for the excellent development of udder?	5
	b.	How are the homeostasis of calcium and glucose maintained in animals' bodies? Sketch and briefly describe the mechanisms.	5
3.	a.	Describe the Estrous cycle with the graphical representation of the changes of hormones in the cycle.	6
	b.	Briefly describe the structures and processes responsible for maintaining a favorable temperature for spermatogenesis in bull testes.	4
4.	a.	Tabularly differentiate among various ovarian follicles.	5
	b.	"Dietary fat helps in the formation of hormones"-give your logic.	5
5.	a.	Describe the effect of environmental stress on the endocrine and reproductive functions of an animal.	6
	b.	By observing which signs a vet can understand that a cow, a mare, a female rabbit and a queen are in estrus?	4