

Chittagong Veterinary and Animal Sciences University
DVM 1st Year 2nd Semester Final Examination 2016
Course Title: Fodder Production (Theory)
Course Code: FPR-102
Full Marks: 35.0, Time: 2.0 Hours

(Figures in the right margin indicate full marks. Answer any 2 (TWO) questions from each section where **Question No. 1 is Compulsory**. Use separate answer scripts for each section)

Section-A

1. a. Define feed, forage and pasture. Classify fodder and fodder crops with example. 5.0
b. Briefly discuss the factors that affect the nutritive value of fodder. Why fodder production is important for dairy farming? 3.0
2. a. Define hay. What are the most important criteria of a fodder for hay making? Briefly discuss the possible ways for losses of nutrients during hay making. 4.0
b. Precisely discuss the production procedure of maize, cowpea, German grass, Napier grass, Para grass and ipil-ipil tree. 5.0
3. a. What is soil p^H . Discuss the importance of soil p^H for fodder production. 4.0
b. Define and classify soil. What are the causes of acidity and alkalinity of soil? How should you correct acidic and alkaline soil? 5.0

Section-B

4. a. Define silage. What are the objectives of silage preparation? Briefly discuss the ensiling process for preparation of silage. 4.0
b. What are different types of silage standards? Mention the chemical changes that take place during ensiling process. 5.0
5. a. Define weed. Classify weed with example. What are the beneficial and harmful effects of weed in a fodder field? 4.0
b. Briefly discuss the procedure for weed control under Bangladesh perspective. 5.0
6. a. Define irrigation. What are the objectives of irrigation? Discuss different types of irrigation methods with their merits and demerits. 4.0
b. Define compost and green manure. How should you differentiate them? Discuss the procedure for preparation of compost. 5.0

Chittagong Veterinary and Animal Sciences University
DVM 1st Year 2nd Semester Final Examination-2016
Course Title: Gross Anatomy (Theory)
Course Code: GRA-102 (T)
Full Marks: 70; Time: 3 Hours

(Figures in the right margin indicate full marks. Answer any **five** questions from each section. Use separate answer script for each section.)

Section-A

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|----|--|-----|
| 1. | a) Name the valves of the heart and the opening of the right atrium. | 2.0 |
| | b) Describe the branches and supply of the brachiocephalic trunk. | 5.0 |
| 2. | a) Mention the names of different types of conjunctiva. | 1.0 |
| | b) Mention the names of refractive media of eyeball and describe cornea of goat. | 6.0 |
| 3. | a) Give the location of right kidney of horse and cattle. | 3.0 |
| | b) Describe the anatomy of left kidney of horse. | 4.0 |
| 4. | a) Draw and label a cross section of penis of a bull. | 3.0 |
| | b) Describe the anatomy of uterus of a cow. | 4.0 |
| 5. | a. Describe the anatomy of the thyroid gland with the secretion and functions. | 3.0 |
| | b. Describe the anatomy of testis with the functions of testosterone hormone in a bull. | 4.0 |
| 6. | a. Define meninges. What are the layers and spaces of meninges? Differentiate between cranial and spinal meninges. | 4.0 |
| | b. Mention the formation and circulation of CSF. | 3.0 |

Section-B

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|-----|--|---------|
| 7. | Describe the blood supply of the pelvic limb of cattle. | 7.0 |
| 8. | a) List the lymphoid organs in goat. | 1.0 |
| | b) Describe the anatomy of the spleen of cattle. | 4.0 |
| | c) Mention the functions of lymphnode. | 2.0 |
| 9. | a) Mention the names of digital nerves of manus in goat. | 2.0 |
| | b) List the nerves of lumbar plexus with their major supplies in goat. | 5.0 |
| 10. | a) Mention the anatomical origin of the sympathetic and parasympathetic nerve. | 4.0 |
| | b) Give the origin, course and central connection of olfactory nerve. | 3.0 |
| 11. | a) List the sense organs of the body. | 1.0 |
| | b) Describe the anatomy of the internal ear of cattle. | 6.0 |
| 12. | Write short note on any two of the followings: | 3.5x2=7 |
| | a) Hoof of horse | |
| | b) Conduction system of the heart | |
| | c) Accessory male genital organs | |

Chittagong Veterinary and Animal Sciences University
DVM 1st Year 2nd Semester Final Examination-2016
Course Title: Histology and Embryology-II (Theory)
Course Code: HEM-102 (T)
Full Marks: 70; Time: 3 Hours

(Figures in the right margin indicate full marks. Answers any **Five** questions from each section. Use separate answer script for each section. Split answer is discouraged)

Section-A

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|----|--|-----|
| 1. | a) Briefly describe the common histological features of the digestive tract. | 4.0 |
| | b) How will you differentiate reticulum from jejunum under light microscope? | 3.0 |
| 2. | a) Briefly describe the histology of the accessory genital organs of a bull. | 4.0 |
| | b) Draw and label the histology of uterus during follicular phase. | 3.0 |
| 3. | a) Briefly describe the histology of pancreas. | 4.0 |
| | b) How will you differentiate the parotid salivary gland, mandibular salivary gland and sublingual salivary gland from each other? | 3.0 |
| 4. | a) Give the histological differences between bronchi and bronchiole. | 2.0 |
| | b) Briefly describe the histological features of respiratory portion of the lung. | 5.0 |
| 5. | a) Draw and label a typical nephron. | 4.0 |
| | b) What do you know about juxtra-glomerular apparatus. | 3.0 |
| 6. | a) Briefly describe the fetal circulation. | 4.0 |
| | b) Define and classify the placenta based on the distribution of chorionic villi on chorionic surface with example. | 3.0 |

Section-B

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|-----|---|---------|
| 7. | a) Briefly discuss the cells of the gastric glands. | 4.0 |
| | b) What do you know about portal triads? | 3.0 |
| 8. | a) Histologically differentiate among lymphnode, spleen, thymus and tonsil in a tubular form. | 4.0 |
| | b) Briefly describe the histology of the white pulp of a spleen. | 3.0 |
| 9. | a) Write down the histology of testes. | 5.0 |
| | b) How will you differentiate proximal convoluted tubule from distal convoluted tubule of a nephron under light microscope. | 2.0 |
| 10. | a) Write down the histology of adrenal gland. | 4.0 |
| | b) How do you differentiate histologically among the secretory units of thyroid gland, prostate gland and mammary gland? | 03 |
| 11. | a) Draw and label the histology of an arterial wall. | 03 |
| | b) Briefly describe different types of ovarian follicle. | 4.0 |
| 12. | Write down short note on the followings (any two): | 3.5x2=7 |
| | a) Histology of the anterior pituitary gland | |
| | b) Histology of taste bud | |
| | c) Histology of skin | |

Chittagong Veterinary and Animal Sciences University
DVM 1st Year 2nd Semester Final Examination-2016
Course Title: Biochemistry (Theory)
Course Code: BIC-102 (T)
Full Marks: 70; Time: 3 Hours

(Figures in the right margin indicate full marks. Answers any **three** questions from each section where question no **1 and 5** are compulsory. Use separate answer script for each section. Split answer is discouraged)

Section-A

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|----|----|--|-----|
| 1. | a) | Define biomolecules. Which biomolecules are present in animal's body? Describe their respective roles and constituents in animal body. | 4.0 |
| | b) | What are the structural differences between starch and glycogen? | 4.0 |
| | c) | Write down the structure of α -D fructopyranose and table sugar. | 3.0 |
| 2. | a) | What are standard amino acids? Enlist the essential amino acids for poultry. Write down the structure of "Sulfur" group and "Pyrolidone" group containing amino acids. | 4.0 |
| | b) | Draw the structure of the following peptide "V-C-G". | 2.0 |
| | c) | What are the major structural features of bovine insulin? | 2.0 |
| | d) | Write down the structure and functions of two nonprotein amino acids. | 2.0 |
| | e) | Write down the specialized product formed by the following amino acids-
i. Tyrosine ii. Glycine iii. Histidine iv. Methionine | 2.0 |
| 3. | a) | What are the phases of glycolysis? How is fructose metabolized in muscle and liver? | 4.0 |
| | b) | How does galactose enter into the glycolysis? | 4.0 |
| | c) | What is anaplerotic reaction? Write the anaplerotic reactions with specified tissues/organisms. | 4.0 |
| 4. | a) | Classify lipid on the basis of their end products of hydrolysis. Why wax is more important in case of water fowl? | 3.0 |
| | b) | What is amphipathic lipid? Briefly describe the functions of cholesterol with its structure. | 3.0 |
| | c) | Define rancidity. Mention the causes of rancidity of fat. Why are acid and iodine values important to check the purity of fat? | 3.0 |
| | d) | Draw the structure of any phospholipid. How is unsaturated fatty acid converted into saturated fatty acid? | 3.0 |

Section-B

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|----|----|--|--------|
| 5. | a) | How does ruminant utilize propionate in gluconeogenesis? | 2.0 |
| | b) | Write down the reaction of glycolysis in which glucokinase, aldolase and lactate dehydrogenase enzyme act. | 3.0 |
| | c) | What is ketosis? How is ketone body formed in animal body? Write down the different physiological and pathological causes of ketosis. | 4.0 |
| | d) | Why does gluconeogenesis not occur in muscle cell? | 2.0 |
| 6. | a) | Write down the names of enzymes of pyruvate dehydrogenase complex and the coenzymes needed for oxidative decarboxylation of pyruvate to acetylCoA. | 4.0 |
| | b) | How does production of excess NH_3 affect brain tissue? Draw the relationship between urea cycle and krebs cycle. | 4.0 |
| | c) | Which macromolecules (carbohydrate and fat) give more energy? Write down the reactions of β -oxidation for one mole butyric acid. | 4.0 |
| 7. | a) | What is enzyme inhibition? Write down the differences between competitive and non competitive inhibition of enzyme. | 3.0 |
| | b) | Enlist some factors that affect enzymatic reaction. Briefly describe the effect of substrate concentration and temperature on an enzymatic reaction. | 4.0 |
| | c) | "Ruminant can digest cellulose but human cannot" discuss briefly. | 2.0 |
| | d) | Why is TCA cycle amphibolic in nature? | 3.0 |
| 8. | | Write down the short notes on the following (any four) | 4×3=12 |
| | a) | Biological roles of nucleic acids | |
| | b) | Optical properties of carbohydrate | |
| | c) | Transcription | |
| | d) | Protein denaturation | |
| | e) | Mucopolysaccharides | |
| | f) | Scope of biochemistry in the 21 st century | |

Chittagong Veterinary and Animal Sciences University
DVM 1st Year 2nd Semester Final Examination-2016
Course Title: Systemic Physiology (Theory)
Course Code: SPH-102 (T)
Full Marks: 70; Time: 3 Hours

(Figures in the right margin indicate full marks. Answers any **three** questions from each section where question no **1 and 5** are compulsory. Use separate answer script for each section. Split answer is discouraged)

Section-A

1. a) List the hormones that work on kidney. How does ADH regulate urine formation in cow? 4.0
b) What are the steps of urine formation? Discuss the reabsorption and secretion of substances along with different parts of nephron. 4.0
c) What is structural and functional unit of kidney? Define plasma clearance, renal threshold, oliguria and uremia. 3.0
2. a) What is respiration? Enumerate the structures involved in respiratory tract. 3.0
b) How does gaseous exchange take place through the respiratory membrane? 5.0
c) List the factors that are determined the diffusion of respiratory gases through blood air barrier. 4.0
What do you mean by vital capacity and tidal volume?
3. a) Write down the end product of microbial digestion. How do rumen microbes produce VFA from polysaccharides? 4.0
b) List the mechanical factors of digestion. Enlist the amylolytic, proteolytic and lipolytic enzymes found in the gastrointestinal tract. 4.0
c) How does protein digestion occur in simple stomach animal? 4.0
4. a) Give the classification of muscles and their functions. 3.0
b) Write down the characteristics of muscle that have intercalated disc. State the steps of skeletal muscle contraction and relaxation. 5.0
c) Define end plate potential and refractory period. What are the differences among skeletal, cardiac and smooth muscles? 4.0

Section-B

5. a) List the thermoregulatory behavior of mammals and birds. How do you determine the rectal temperature of cow? Write down the rectal temperature of goat, dog and cow. 4.0
b) What is heat balance? Write down the mechanism of heat gain in the animal body. 3.0
c) What are the differences between homeothermic and poikilothermic animals? How does a buffalo maintain body temperature when exposed to hot weather? 4.0
6. a) List the sensory modalities of dog. Define flight zone and point of balance. Why do you learn these two things? 3.0
b) Classify the farm animal behavior. List the normal behavior of domestic chickens. 3.0
c) What are the five principles of animal welfare? Briefly discuss the social behaviour of cattle. 4.0
d) Classify vision of cattle. What are the behaviour indicators of normal animal? 2.0
7. a) What is meant by growth curve? Enlist and discuss various factors affecting growth of animal. 4.0
b) Enlist the special adaptive features of camel and penguin in their respective environment. 4.0
c) What is the hormone that helps in nutrient absorption? Write down the mechanism of sodium absorption. 4.0
8. a) List the organs that are related to acid-base balance homeostasis. Briefly describe about respiratory mechanism in acid- base balance. 4.0
b) List the buffer system in blood. How ammonia is formed and eliminated via urine? 4.0
c) List the different parts of digestive tracts of a chicken. Write down the composition and functions of intestinal juices. 4.0

Chittagong Veterinary and Animal Sciences University
DVM 1st Year 2nd Semester Final Examination-2016
Course Title: Avian Anatomy (Theory)
Course Code: AVA-102 (T)
Full Marks: 35; Time: 2 Hours

(Figures in the right margin indicate full marks. Answer any **three** questions from each section where question no **6** is compulsory. Use separate answer script for each section. Split answer is discouraged)

Section-A

1. a) Sequentially enlist different segments of digestive tract of chicken. 3.0
b) Describe the anatomy of glandular stomach in chicken. 3.0
2. Mention the parts of genital system of a hen. How an egg is formed within the oviduct? 6.0
3. a) How colorectum is formed? Write down its importance. 2.0
b) Which lymphatic organ is the modification of proctodium? Write down the anatomy of this lymphatic organ. 4.0
4. Enlist the air sacs of bird and briefly describe the flying mechanism. 6.0
5. a) How pygostyle is formed in chicken? What is the significance of it? 2.0
b) Describe the synsacrum of poultry. 2.0
c) Write two pneumatic bones of birds. Give the vertebral formula of chicken. 2.0

Section-B

6. Answer the following questions very briefly (**any five**): 5.0
 - i) What is the location of testis in a cock?
 - ii) Write the location of pancreas of poultry.
 - iii) What do you mean by pneumatic bone?
 - iv) What is the location of cecal tonsil in chicken?
 - v) Why the feathers of duck remain dry when they swim in water?
 - vi) What is the shape and location of gall bladder in chicken?
7. a) Name two veins of chicken from where you can collect blood sample. 2.0
b) Briefly describe the anatomy of liver of poultry and mention its functions. 4.0
8. a) Mention the name of vocal organ of bird. Briefly describe the anatomy of it. 3.0
b) What are differences between mammalian and avian respiratory systems? 3.0
9. a) Enlist the organs of genital system of cock. How will you differentiate the phallus of cock from that of drake? 3.0
b) Mention the organs of urinary system of chicken and write down the anatomy of kidney. 3.0
10. Write short note on (**any two**): 2×3=6
 - i) Ovary
 - ii) Pineal gland of hen
 - iii) Cloaca

Chittagong Veterinary and Animal Sciences University
DVM 1st Year 2nd Semester Final Examination-2015

Course Title: Biochemistry
Course Code: BIC- 102 (T)
Full Marks: 70; Time: 3 Hours

*(Figures in the right margin indicate full marks. Answer any three questions from each section where question no. 1 and 5 are compulsory. Use separate answer script for each section. Split answer is discouraged)

Section-A

1. a) Briefly state the application of biochemical knowledge in the field of veterinary and animal science. 2
b) Distinguish between the member of the following pairs: 6
i. Epimer and anomer
ii. Starch and cellulose
iii. Lactose and maltose
c) Define tautomerization. Write down the structures of a deoxy sugar and an aminosugar. 3
2. a) Classify proteins on the basis of their biochemical functions. Why is egg protein nutritionally an ideal protein? 4
b) What do you mean by 'protein denaturation'? Briefly state the changes in physical, chemical and biological properties of denatured protein. 4
c) Name (i) ketotriose and a monosaccharide found in fruits and honey; (ii) a natural anticoagulant and a metalloprotein occurring in blood; (iii) two forms of secondary structure and agents that cause protein denaturation and (iv) a sulfur containing amino acid and an acidic amino acid. 1x4=4
3. a) Classify lipids with examples. Distinguish between fat and oil. 5
b) Name the essential fatty acids. Why are they essential for animals? 3
c) Match the following: 0.5x8=4

Column-A	Column-B
Triacylglycerols	Odd chain fatty acids
Tocopherol	Phospholipids
Omega ₆ fatty acid	Ketone body
β-hydroxybutyric acid	Essential fatty acids
Lecithin	Vitamin E
Valeric acid	Simple lipids
HDL	Lipoprotein
Cyclopentanoperhydrophenanthrene	Steroid nucleus
4. a) Define nucleic acids. What are the basic differences between DNA and RNA in relation to their base compositions, site at location and functions? 4
b) Write down the role of mRNA, tRNA and rRNA in protein biosynthesis. How does protein biosynthesis occur in a eukaryotic cell? 4
c) Define the followings terms: 1x4=4
(i) Codon, (ii) Gene, (iii) T_m and (iv) Central dogma

Section-B

5. a) Define metabolism. List the unique features of anabolism and catabolism. 3
b) Differentiate between glycolysis and gluconeogenesis. Show the reactions for the entry of glucose into the main stream of glycolysis with enzymes and co-factors involved. 4
c) Explain how 38 moles of ATP are produced when a mole of glucose is completely oxidized into CO₂ and water. 4
6. a) Classify enzymes on the basis of reaction types that they catalyze (with one example in each class). 3
b) Enumerate the factors affecting enzyme action. Discuss the effect of temperature and p^H. 3
c) Define the following terms: 3
i) Co-enzyme, ii) Co-factor, iii) V_{max} and iv) K_m
d) What is action site? Write down salient features of action site. 3
7. a) How many moles of ATP will be produced from a complete oxidation of one mole of glucose? Mention the importance of pentose phosphate pathway in lactating animal. 3
b) Illustrate the cori cycle. State the biological significance of cori cycle in animal. 3
c) What is anaplerotic reaction? Give one example. 3
d) What are the end products of an odd-numbered fatty acid when it is oxidized via beta-oxidation? Show how this end product is further oxidized into CO₂ and H₂O. 3
8. Write short notes **any four** of the following: 3x4=12
(i) Urea cycle, ii) Mutarotation, iii) β-oxidation, iv) Glycogenolysis, v) Chargaff's rule and vi) Replication