# Chittagong Veterinary and Animal Sciences University

**DVM 1st year 2nd Semester Final Examination 2018**

**Subject: Biochemistry (Theory)**

**Course Title: BIC-102 (T)**

**Full Marks: 70; Time: 3 Hours**

(Figures in the right margin indicate full marks. Answer **Three (3)** questions from each section, where question No. **1 & 5** are compulsory. Use separate answer script for each section. Fractions of the questions must be answered together)

## SECTION-A

1. a) Define and classify carbohydrates with example. Briefly discuss the functions of carbohydrate. 4
   b) Differentiate structural and storage carbohydrates. Discuss the functions of hyaluronic acid, chondroitin sulphate and glycosides in animal body. 4
   c) "Gluconeogenesis is an inevitable process in lactating ruminants"-Justify. 3

2. a) In ruminal metabolic pathways, how the glucose is formed from volatile fatty acid, specially from propionic acid. 4
   b) Mention the source, amino acid number and function of the following peptide. 4
      i) Oxytocin ii) Bradykinin
      iii) Vasopressin iv) Secretin
   c) Ascorbic acid is essential to supply in the primates diet- Justify your answer. 4

3. a) Define lipid, fat and oil. Write down the structure of lecithin and cephalin and discuss their functions in animal body. 4
   b) Discuss the process of $\beta$-oxidation in animal body. 4
   c) Carbohydrate or lipid which one gives more energy and why? Justify your argument with quantitative examples. 4

4. a) Discuss the structures and functions of nucleic acids. 4
   b) How DNA and RNA are synthesized in animal body. 4
   c) How denaturation of DNA and RNA taka place in animal body? Briefly discuss the process of protein biosynthesis. 4

## SECTION-B

5. a) Enumerate the fate of ammonia in ruminants and poultry separately? 3
   b) Differentiate between glutamate and Glutamine. List the catabolic pathway for protein metabolism. 3
   c) In cattle, what are the process to synthesis histamine and GABA from basophil and nerve cells respectively? 3
   d) What are the glycogenic and ketogenic amino acid. 2

6. a) What are steroids? What are some examples of steroids with biological function? 4
   b) How $\beta$-oxidation take part for generation ATP from fatty acid? What do you mean by activation of fatty acid? 4
   c) Briefly describe the role of compound lipid, from functional and structural perspective? 4

7. a) What do you mean by central dogma of life? Mention the enzymes involved in transcription and reverse transcription procedure? 3
   b) Describe Chargaff's rule in the context of base pair? Mention the functions of different RNA. 3
   c) Define replication? What are the requirement for DNA replication. 3
   d) Define codon and Anticodon? Describe their role in protein synthesis. 3

8. Write short notes on (any four): 3x4=12
   a) Redox-potential (b) Oxidative phosphorylation
   c) Lipid profile (d) Specificity on enzymes
   e) Coenzyme and Isoenzyme

# Chittagong Veterinary and Animal Sciences University

**DVM 1st year 2nd Semester Final Examination 2018**

**Subject: Gross Anatomy-II (Theory)**

**Course Title: GRA-102 (T)**

**Full Marks: 70; Time: 3 Hours**

(Figures in the right margin indicate full marks. Answer **Five (5)** questions from each section. Use separate answer script for each section. Fractions of the questions must be answered together)

## SECTION-A

1. a) Urinary system and genital system together called uro-genital system-Explain from anatomical point of view. 2
   b) List the anatomical differences between left and right kidneys. 3
   c) Enlist the anatomical structures of scrotum of goat. 2

2. a) Enlist the major branches of brachio-cephalic trunk. 1
   b) Enlist the major branches of abdominal aorta in cattle. 1
   c) Mention the anatomical location of the largest superficial veins at antebrachium and leg regions of goat. 2
   d) Note down the shape and location of the two clinically important superficial lymph nodes in cattle. 3

3. a) Briefly describe the anatomy the spleen of cattle. 3
   b) Define portal circulation and briefly describe the hepatoportal circulation. 4

4. a) Explain the anatomical difference of cranial and spinal dura matter. 1
   b) Enlist the ventricle of brain. 1
   c) Define brachial plexus and briefly describe courses of the nerve that supplies to the only palmar aspect of the digits of fore limb of a goat. 5

5. a) Enlist the branches of the largest cranial nerve and describe the courses of that branch which supplies to the lower jaw and lip of a cattle. 5
   b) Write short note on-sympathetic trunk. 2

6. a) Write down the colored part of eye. Enlist chambers of eyeball with anatomical boundary. 3
   b) Describe briefly the anatomy of the lacrimal apparatus with emphasis on naso-lacrimal duct. 3
   c) List the parts of conjunctive. 1

## SECTION-B

7. a) Summarize the internal facture of the body and cervix of the uterus of a cow. 4
   b) Write down the location, shape and possible surface structures of the right ovary of a cow. 3

8. a) Briefly describe the arterial blood supply of the fore limb in a cattle with specific location of the arteries in relation to bone. 5
   b) List the branches of the abdominal aorta sequentially. 2

9. a) Briefly describe the origin, course and innervation of the first two lumbar spinal nerves of a cattle. 4
   b) Mention the specific anatomical location of the ischiatic nerve at the gluteal and thigh region of a goat. 3

10. Write down the anatomical location, shape and size of endocrine glands of a cattle. 7

11. a) Briefly describe the anatomy of the internal ear of a cattle. 4
    b) List the refractive media of an eye. 1
    c) Mention the specific location of the nerve at the leg level that supplies to the plantar aspect of the digit. 2

12. Write short note on any two of followings: 3.5x2=7
    a) Spermatic cord
    b) Udder of a cow
    c) Fetal circulation
    d) Auditory ossicles

# Chittagong Veterinary and Animal Sciences University

**DVM 1st year 2nd Semester Final Examination-2018**

**Course Title: Histology & Embryology-II (Theory)**

**Course Code: HEM-102 (T)**

**Full Marks: 70, Time: 3 Hours**

(Figures in the right margin indicate full marks. Answer any **Five (5)** questions from each section. Use separate answer script for each section. Fractions of the questions must be answered together)

## SECTION-A

1. a) Briefly describe the histology of glomerulus and Juxtaglomerular apparatus of a nephron. 4
   b) How do you histologically differentiate renal cortex from renal medulla? 3

2. a) " Epithelium helps to identify an organ primarily" explain your opinion with examples. 4
   b) Describe the histology of a taste bub with a net diagram. 3

3. a) What do you mean by " blood-air-barrier" in lung? Enumerate the histological structures of the barrier. 3
   b) Briefly describe the histology of an adrenal gland of cattle. 4

4. a) How do you differentiate various types of parenchymatous cells in the pars distalis of pituitary gland by staining techniques. 3
   b) Briefly describe the histology of uterus considering estrus cycle. 4

5. a) What is blood capillary? Briefly describe the histology of different types of blood capillary with example. 3
   b) Write down the histological differences between artery and vein in tabular form with diagrams. 4

6. a) Draw and label the histology of the different parts of a nephron. 4
   b) Discuss the histo-morphology of non-keratinocytes in the epidermis of skin. 3

7. a) Give the histological comparison between spleen and lymph node. 3
   b) Briefly describe the histology of an ovarian cortex of a cow. 4

## SECTION-B

8. a) Write down the histology of the intestinal gland. 3
   b) Briefly describe the histology of the respiratory part of a lung. 4

9. a) Briefly describe the histology of a seminiferous tubule. 4
   b) How do you differentiate the thyroid follicle from the secretory acinus of mammary gland under microscope? 3

10. a) How do you differentiate among major salivary glands under microscope? 3
    b) Briefly describe the histology of the exocrine part of pancreas with their staining properties. 4

11. a) How do you differentiate among different parts of large intestine under microscope? 4
    b) Draw and label the histological structures of the fundic part of abomasum with especial emphasis of gland. 3

12. a) List the extraembryonic fetal membranes. 1
    b) Briefly describe embryonic developmental process of the digestive tract with diagrams. 6

13. a) Define and classify placenta with example. 3
    b) Briefly describe the histology of placenta on the basis of histo-morphological classification. 4

14. Write down short note on any two of followings: 3.5x2= 7
    a) Anatomical hepatic lobule
    b) Corpus luteum
    c) Cerebellum

# Chittagong Veterinary and Animal Sciences University

**DVM 1st year 2nd Semester Final Examination 2018**

**Course Title: Fodder Production (Theory)**

**Course Code: FPR- 102 (T)**

**Full Marks: 35, Time: 2 Hours**

(Figures in the right margin indicate full marks. Answer **Three (3)** questions from each section, where question No. **1** is compulsory. Use separate answer script for each section. Fractions of the questions must be answered together)

## SECTION-A

1. a) Define feed, fodder and forage. 1
   b) Write down the characteristics and qualities of legume fodder. Mention five legume and five non-legume fodder with their scientific name. 4

2. a) What is soil? Give the composition of soil. 2
   b) Write how will you treat the alkaline and acidic soil. 2
   c) Classify soil based on agro-ecological zone of Bangladesh with examples. 2

3. a) Write down the objectives of pasture management. 2
   b) Discuss briefly about the grazing management practices in pasture land. 4

4. a) Describe briefly the cultivation procedure of Napier grass. 3
   b) Indicate the morphology and fertilizer doses of cowpea, oat and guinea grass cultivation. 3

## SECTION-B

5. a) Why green fodder is very important for dairy cattle? 2
   b) Mention the time and method of sowing, irrigation system and nutritive value of Jumboo, Maize and Berseem fodder cultivation. 4

6. a) Define weed. Classify weed with examples. 3
   b) Write how will you control weed by mechanical and biological means. 3

7. a) What is silage and hay? Why legume fodder is not suitable for silage preparation? 3
   b) Indicate the chemical changes that occurs during ensiling. 3

8. Write short notes on the following (any three): 2x3=6
   a) Climate of Bangladesh.
   b) Zero and strip grazing.
   c) Ipil-ipil cultivation.
   d) Teesta silt tract and saline tract.

# Chittagong Veterinary and Animal Sciences University

**DVM 1st year 2nd Semester Final Examination 2018**

**Subject: Systemic Physiology (Theory)**

**Course Title: SPH-102 (T)**

**Full Marks: 70; Time: 3 Hours**

(Figures in the right margin indicate full marks. Answer **three (3)** questions from each section of which question no. **1 and 5** are compulsory. Use separate answer script for each section. Fractions of the questions may be answered together)

## SECTION-A

1. a) Write the composition of urine of a dog. 2
   b) Define polyuria, oliguria, renal clearance and glycosuria. 2
   c) Enlist excretory organs of the body. Write the important functions of kidneys. 3
   d) Discuss the role of renal tubules in urine formation. 4

2. a) Describe the terms "metabolic acidosis" and "metabolic alkalosis". Write down the compensatory mechanisms of metabolic acidosis and metabolic alkalosis in dog. 4
   b) Show the roles of respiration in acid base regulation of a dairy cow. 3
   c) Briefly discuss the phases of prenatal growth and post-natal growth. 3
   d) Describe the carbon di-oxide transportation process of blood. 2

3. a) Write down the composition of inspired and expired air. 2
   b) State the different layer of respiratory membranes. 2
   c) What is respiration? How does respiratory $O_2$ (oxygen) transport throughout the body? 4
   d) Briefly discuss the mechanism of respiration. 4

4. a) Briefly describe the skeletal muscle contraction mechanism. 3
   b) Explain the nervous control of smooth muscle contraction. 3
   c) Write short notes on: 6
      (i) Calf's digestion (ii) Rigormortis

## SECTION-B

5. a) Write down the physiological responses of ADH in case of dehydration and excessive intake of water. 3
   b) Write the hormones secreted from urinary system? Enlist the steps of urine formation. What are the substances reabsorbed in the proximal convoluted tubule of a cow? 4
   c) Discuss the terms: Plasma clearance and renal threshold. Show the normal and abnormal constituents of urine. 4

6. a) Define absorption. Write down the sites and routine of absorption of different digested foodstuffs in GI tract. 3
   b) Define "mixed micelle" and "chylomicron". Write down the mechanism of formation and secretion of chylomicron by intestinal mucosal cells. 3
   c) How is protein digestion occurred in simple stomach animals? 3
   d) What are the sources of succus entericus? Write down the composition and function of succus entericus. 3

7. a) What are the factors determined the diffusion of respiratory gases through blood air barrier? Discuss any two of them. 4
   b) What is Hering-Breuer inflation and deflation reflex? Briefly discuss about the chemical control of respiration. 3
   c) Show the principal means of acclimatization to high altitude. 2
   d) Write short note on avian respiration. 3

8. a) Enlist universal freedoms of animals. Briefly discuss the social behaviour of cattle. 4
   b) Define stereotypy? Write the abnormal behaviour of cattle with health risk. 4
   c) What is hypoxia? State the different types of hypoxia. 4

# Chittagong Veterinary and Animal Sciences University

## DVM 1st year 2nd Semester Final Examination 2018

## 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 (3)** questions from each section. Where question No. **5** is compulsory. Use separate answer script for each section. Fractions of the questions must be answered together)

## SECTION-A

1. a) What do you mean by pneumatic bone? Name the pneumatic bones of birds and mention their anatomy. 3
   b) Enlist the air sacs of chicken and describe the anatomy of thoracic air sac. 3

2. a) Describe the process of egg formation within the oviduct with diagram. 4
   b) Write a short note on ovary of a hen. 2

3. a) Name the joints of the wing and leg of poultry. Give the vertebral formula of hen. 3
   b) Write down the anatomy of keel bone of poultry. 3

4. a) Write down the anatomical location of the following organs: 4
      (i) Kidney (ii) Pancreas
      (iii) Uropygeal gland (iv) Testis of cook
   b) How cloaca is formed? 2

## SECTION-B

5. Enlist the lymphatic organs of poultry and briefly describe the anatomy of any two of them. 5

6. a) Define the following terms: Synsacrum and Pygostyle 2
   b) How the pectoral and pelvic girdle is formed? 2
   c) Briefly describe the anatomy of the avian trachea. 2

7. a) Write down the different segments of digestive system of a chicken. 2
   b) Describe the anatomy of the stomach and large intestine of chicken. 4

11. Write short notes on (any three) 3x2= 6
    a) Flying muscles of bird
    b) Esophagus of a chicken
    c) Copulatory apparatus of a cock
    d) Liver of chicken

**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: 1×4=4
      (i) Codon, (ii) Gene, (iii) Tm 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 $Co_2$ 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) Vmax and iv) Km
   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 $CO_2$ and $H_2O$. 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