Total number of printed pages–4

3 (Sem–4/CBCS) ZOO HC 1

2021

ZOOLOGY

(Honours)

Paper : ZOO–HC–4016

(Comparative Anatomy of Vertebrates)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct option : 1×5=5

   (a) Skin in vertebrate consists of

   (i) Epidermis

   (ii) Dermis

   (iii) Both of these

   (iv) None of these

Contd.

(b) The pectoral girdle consists of the

(i) Clavicle and sternum

(ii) Sternum and scapula

(iii) Clavicle and scapula

(iv) Clavicle and coccyx

(c) Most of the fat digestion occurs in

(i) Rectum

(ii) Stomach

(iii) Duodenum

(iv) Small intestine

(d) Ciliated cells are found in

(i) Bronchus

(ii) Pancreas

(iii) Liver

(iv) Uterus

(e) Brain and spinal cord are collectively known as

(i) Neurons

(ii) Schwann cells

(iii) Nervous system

(iv) Nerves

2. Differentiate between the following : 2×5=10

(i) Brain and spinal cord

(ii) Gills and lungs

(iii) Visual and auditory receptors

(iv) Afferent arteriole and efferent arteriole

(v) Axial and appendicular skeleton.

3. Answer ***any three*** of the following questions : 5×3=15

(i) Give a brief account of visual receptors in man.

(ii) Write a short note on the evolution of urinogenital ducts in vertebrates.

(iii) Accessory respiratory organs in fishes.

(iv) Structure of autonomic nervous system.

(v) Types of dentitions in mammals.

4. Answer ***any three*** questions from the following : 10×3=30

(a) Cells of the epidermis derive from stem cells of the stratum basale. Describe how the cells change as they become integrated into the different layers of the epidermis. 10

(b) Describe three skeletal adaptations that allow flight in birds. Explain how would the chest structure differ between ostriches and penguins. 5+5=10

(c) How are mammalian lungs well adapted for exchange of gases by diffusion ? List *three* specific features and briefly note what each does to enhance diffusion across the respiratory surface. 4+3+3=10

(d) Ruminants, such as goat, are able to digest large amounts of plant material. Explain how plant material is passed through, digested, and absorbed in the ruminant digestive system. 10

(e) "The avian autonomic nervous system does not deviate much from that of the mammals"— Justify the statement. 10

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Total number of printed pages–4

3 (Sem–4/CBCS) ZOO HC 2

2021

ZOOLOGY

(Honours)

Paper : ZOO–HC–4026

(Animal Physiology : Life Sustaining Systems)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

GROUP–A

1. Answer the following as directed : 1×5=5

   (a) What is Rh factor ?

   (b) Kupffer cells occur in ————————.
   (Fill in the blank)

(c) State the function of the hormone 'vasopressin'.

(d) The human heart is *neurogenic/ pulsating/ myogenic.*

(Choose the correct answer)

(e) AB blood group contains *antigen A/ antigen B/ both antigen A and antigen B/ both antibody A and antibody B.*

(Choose the correct answer)

2. Answer the following questions briefly : 2×5=10

(a) Mention the role of secretin in digestion process.

(b) Differentiate between internal respiration and external respiration.

(c) Differentiate between S-A node and A-V node.

(d) What are blood clotting factors ?

(e) Define cardiac output.

3. Answer ***any three*** questions from the following : 5×3=15

(i) What is micturition ? How is it regulated ? 1+4=5

(ii) Write a short note on O_2-dissociation curve. 5

(iii) Give an account of mechanism and regulation of urine formation. 5

(iv) Describe briefly the role of bile in intestinal digestion process. 5

(v) Draw a standard Electrocardiogram (ECG) and explain the different segments in it. 1+4=5

GROUP–B

4. Answer ***any three*** of the following : (within **1200** words) 10×3=30

(a) What do you mean by respiratory pigment ? Mention the functions of respiratory pigment. Describe briefly the CO_2 transport mechanism in human body. 1+2+7=10

(b) Describe in details about digestion and absorption of fats in the intestine. 5+5=10

(c) Give a detailed account of the cellular contents of blood. Describe briefly the functions of platelet. 8+2=10

(d) What is cardiac cycle ? Discuss the different physiological events in the heart during a complete cardiac cycle. 2+8=10

(e) Give an account of extrinsic and intrinsic pathway of blood clotting mechanism. 4+6=10

Total number of printed pages–4

3 (Sem–4/CBCS) ZOO HC 3

2021

ZOOLOGY

(Honours)

Paper : ZOO–HC–4036

(Biochemistry of Metabolic Processes)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

GROUP–A

1. Answer the following as directed : 1×5=5

   (a) Enzymes of glycolysis are present in :

      (i) Inner mitochondrial membrane

      (ii) Outer mitochondrial membrane

Contd.

(iii) Mitochondrial matrix

(iv) Cytosol

(Choose the correct one)

(b) Total number of ATP formed in complete oxidation of one molecule of glucose is ————————. *(Fill in the blank)*

(c) ———————— is the principal form in which carbohydrate is stored in higher animals. *(Fill in the blank)*

(d) What are glucogenic amino acids ?

(e) Waxes are esters of fatty acids with higher alcohol other than glycerol.

(State True ***or*** *False)*

2. Give brief answers to the following questions : 2×5=10

(a) What is Ketogenesis ?

(b) What is Gluconeogenesis ?

(c) What is meant by protein denaturation ?

(d) Differentiate between anabolism and catabolism.

(e) What is meant by redox potential ?

3. Answer the following : ***(any three)*** 5×3=15

(a) ATP as the "Energy Currency of Cell". Explain the statement.

(b) State the fate of amino acids in the body.

(c) Write a note on the biological importance of carbohydrate in the body.

(d) Write briefly on the structure of proteins.

(e) How is palmitic acid synthesized ?

GROUP–B

4. Answer the following questions : ***(any three)*** 10×3=30

(a) Describe the process of Glycolysis with diagram.

(b) Write the process of β oxidation of fatty acid.

(c) What is urea ? Describe its formation in human body.

(d) Enumerate on the significance of Citric acid cycle.

(e) Discuss the Electron Transport System.

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