(12)

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Your Roll No. : .....

2019

Sl. No. of Q. Paper : **2285** **IC**

Unique Paper Code : 32231401

Name of the Course : **B.Sc. (Hons.) Zoology**

Name of the Paper : Comparative Anatomy of Vertebrates

Semester : IV

Time : 3 Hours ***Maximum Marks : 75***

Instructions for Candidates :

(a) Write your Roll No. on the top immediately on receipt of this question paper.

(b) Attempt **five** questions in all.

(c) Question **No. 1** is compulsory.

1. (a) Define the following terms : 5

(i) Zygodactyly

(ii) Iter

(iii) Opisthonephros

(iv) Plastron

(v) Synsacrum

P.T.O.

(b) Differentiate between the following terms : 10

(i) True horns and antlers

(ii) Monocondylic and dicondylic skull

(iii) External and internal glomeruli

(iv) Plantigrade and digitigrade

(v) Spinal and cranial nerves

(c) State exact location and function of the following : 8

(i) Preen glands

(ii) Gill raker

(iii) Meibomian glands

(iv) Jacobson's organ

(d) State whether following statements are **True/False** : 4

(i) Larynx is the voice box of birds.

(ii) Placoid scales are epidermal derivatives.

(iii) Sebacous glands of mammals are apocrine.

(iv) Reissner's membrane is not present in the mammalian ear.

2. With the help of neat diagram, discuss in detail the evolution of aortic arches in vertebrates. 12

3. Describe the evolution of male and female urinogenital system in amniotes. 12

4. Describe structure and working of respiratory organs in fishes. 12

5. (a) Classify receptors and give their functions. 6

(b) Explain the structure of vertebrate brain with labelled diagram. 6

6. (a) Compare the digestive tracts of reptiles, birds and mammals. 6

(b) Describe the types of Centrum in vertebrates. 6

7. Write short notes on any **three** :

(a) Types of feathers

(b) Jaw suspensorium in vertebrates

(c) Scales in fishes

(d) Dentition

(e) Cranial nerves in mammals

3 X 4 = 12

(13)

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Your Roll No. : .....

2019

Sl. No. of Q. Paper : **2286** **IC**

Unique Paper Code : 32231402

Name of the Course : **B.Sc. (Hons.) Zoology**

Name of the Paper : Animal Physiology : Life Sustaining Systems

Semester : IV

Time : 3 Hours ***Maximum Marks : 75***

Instructions for Candidates :

(a) Write your Roll No. on the top immediately on receipt of this question paper

(b) Attempt **five** questions in

(c) Question **No. 1** is compulsory.

(d) **Draw** diagrams where e

1. (a) Define the following terms . 5

(i) Haustral churning

(ii) Herring-Breuer reflex

(iii) Plasminolysis

(iv) Ectopic focus

(v) Antiporter

P.T.O.

(b) Differentiate between : 10

(i) Metabolic and Respiratory acidosis

(ii) Isovolumetric ventricular systole and diastole

(iii) Micelles and chylomicrons

(iv) Bohr and Haldane effect

(v) Coagulating and anti-coagulating factors

(c) Expand the following : 2

(i) ANP

(ii) JGA

(iii) ESV

(iv) EPO

(d) Give **one** word for the following : 4

(i) The clotting factor responsible for platelet aggregation.

(ii) The physiological condition when arterial pCO_2 is less than 40 mmHg.

(iii) Ion that move from the peritubular capillaries in to the tubular lumen.

(iv) The cells secreting lysozyme in the small intestine.

(e) Give the location and function (any **four**) : 4

(i) Chordae tendineae

(ii) Podocytes

(iii) K cells

(iv) Septal cells

(v) Crypts of Lieberkühn

(f) Give reasons (any **two**) : 2

(i) Facultative reabsorption of water occurs only in DCT.

(ii) A physiological condition that leads to impaired absorption of Vitamin B_{12}.

(iii) The intrapleural pressure is always subatmospheric.

2. (a) How is the blood pressure regulated ? Explain. 7

(b) Describe the blood clotting pathways. 5

3. (a) Draw and explain portal triad. Briefly discuss the functions of the liver. 8

(b) Describe how HCl is formed in the stomach ? 4

4. (a) Draw the detailed structure of a nephron. 3

(b) Describe the various mechanisms of tubular absorption and tubular secretion in PCT. 7

(c) Why glomerular capillary pressure is higher than the pressure in normal blood capillaries ? 2

5. (a) Define pulmonary ventilation. Discuss the various factors affecting it. 6

(b) Elucidate the changes in partial pressures of oxygen and carbon dioxide during external and internal respiration. 6

6. (a) Define cardiac output. Add a note on the factors that regulate stroke volume. 6

(b) Discuss the unique features of action potential and contraction of cardiac muscle fibers. 6

7. Write short notes on any **three** of the following : 3×4=12

(i) Absorption of carbohydrates in the small intestine.

(ii) ECG

(iii) Countercurrent exchange mechanism

(iv) Coronary circulation

(v) Pulmonary volumes and capacities.

(14)

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Your Roll No. : .....

2019

Sl. No. of Q. Paper : **2287** **IC**

Unique Paper Code : 32231403

Name of the Course : **B.Sc. (Hons.) Zoology**

Name of the Paper : Biochemistry of Metabolic Processes

Semester : IV

Time : 3 Hours ***Maximum Marks : 75***

Instructions for Candidates :

(a) Write your Roll No. on the top immediately on receipt of this question paper.

(b) Attempt **five** questions in **all**.

(c) Question **NO.1** is compulsory.

(d) Attempt all parts of a question together.

1. (i) Define the following : 5

(a) Reducing Equivalent

(b) Phophorylation

(c) Amphibolic Pathway

(d) Protein Motive Force

(e) Ketosis

P.T.O.

(ii) Differentiate between : 8

(a) Bisphosphate and diphosphate

(b) Ureotelic and Urecotelic Organism

(c) Glycogenesis and Glycogenolysis

(d) Anabolism and Catabolism

(iii) Name the enzyme responsible for following chemicals reaction (with structural formulae) : 4

(a) Glutamine to Glutamate

(b) Succinyl CoA to Succinate

(c) Alanine to Pyruvate

(d) Lactate to pyruvate

(iv) Expand the following : 3

(a) EMP

(b) NADPH

(c) DHAP

(d) PEP

(e) LDH

(f) AST

(v) Give structural formulae for following : 4

(a) A C-18 saturated fatty acid

(b) Oxaloacetate

(c) Fructose 1,6 Bisphosphate

(d) Ornithine

(vi) Fill in the blanks : 3

(a) ..... is an acyl group carrier that transports fatty acids into and out of mitochondrial matrix.

(b) The Pyruvate dehydrogenase complex has ..... number of coenzymes.

(c) The three carbon unit produced at the end of Oxidation of odd chain fatty acids is .....

2. (a) Describe the three thermodynamic barriers of glycolysis that need to be overcome by different enzymes and reactions in gluconeogenesis. 8

(b) Describe the Malate –Aspartate shuttle. 4

3. (a) Give detailed pathway of Tricarboxylic acid cycle along with the structural formulae. How many ATPs are produced per cycle ? 8

(b) Describe coupled reactions using suitable examples. 4

4. (a) Describe Urea cycle in detail clearly indicating which reactions take place in mitochondria and in cytosol. 8

(b) Describe oxidative deamination. 4

P.T.O.

5. Describe the sequence of reactions involved when one molecule of C-16 fatty acid is to be oxidized. Add a note on energetic involved. 12

6. (a) Discuss the various components of mitochondrial respiratory chain. 8

   (b) Discuss the activation and transport of fatty acid across the mitochondria during β -oxidation. 4

7. Write short notes on any **three** of the following : 4×3

   (a) Glycogenesis
   (b) Cori cycle
   (c) Pentose Phosphate Pathway
   (d) Inhibitors and Uncouplers of ETC
   (e) Carnitine Shuttle