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Your Roll No.

Sr. No. of Question Paper : 3010

Unique Paper Code : 32231402

Name of the Paper : Animal Physiology : Life
Sustaining Systems

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

Semester : IV, LOCF

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **FIVE QUESTIONS** in all.
3. Question no. **1** is **COMPULSORY**.
4. Draw diagrams wherever necessary.

1. (a) Define the following terms : (5)

- (i) Hematocrit
- (ii) Respiratory acidosis
- (iii) Haustral churning
- (iv) Renal threshold
- (v) Ectopic focus

P.T.O.

(b) Distinguish between the following : (10)

- (i) Bohr and Haldane effect
- (ii) PCT and DCT
- (iii) Pulmonary ventilation and pulmonary respiration
- (iv) Hemopoiesis and hemostasis
- (v) Peristalsis and segmentation

(c) Expand the following abbreviations : (2)

- (i) PCV
- (ii) EDV
- (iii) SARS
- (iv) CCK

(d) Fill in the blanks : (4)

- (i) Kupffer cells are found in _____ and play a role in _____.
- (ii) The renal corpuscle consists of the _____ and _____.

(e) State the *location* and *function* of the following
(Any **FOUR**) : (4)

- (i) Brunner's glands
- (ii) Septal cells

- (iii) Apneustic area
- (iv) JGA
- (v) Crypts of Lieberkühn

(f) Give reason/s :

(2)

- (i) Tetany does not occur in the cardiac cells.
- (ii) Digested lipids are mainly absorbed in the lacteals.

2. (a) Discuss the counter current mechanism and its role in producing concentrated urine.

(b) Explain the mechanism of GFR regulation in nephrons. (6,6)

3. (a) Discuss the basic characteristics of alveoli for gas exchange: Explain the role of various muscles involved in pulmonary ventilation.

(b) Briefly explain the factors affecting Oxygen-hemoglobin dissociation curve. (6,6)

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

(b) How is HCl formed in the stomach? (8,4)

5. (a) Define cardiac output. Describe the various factors that affect the regulation of cardiac output.
- (b) Draw a neat labelled diagram of cardiac cycle showing all the events associated with one heartbeat. (6,6)
6. (a) Describe the three phases of digestion.
- (b) Explain the factors involved in regulation of blood pressure. (6,6)
7. Write short notes on **Any Three** of the following : (3×4=12)
- (a) Pulmonary volume and capacities
- (b) Glomerular filtration
- (c) ECG
- (d) Carbon monoxide poisoning
- (e) Formed elements of blood

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Your Roll No.

Sr. No. of Question Paper : 3121

Unique Paper Code : 32231403

Name of the Paper : Biochemistry of Metabolic Processes

Name of the Course : **B.Sc. (H) Zoology, LOCF**

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **FIVE QUESTIONS** in all, question no. **1** is **COMPULSORY**.

1. Define the following : (5)

- (i) Cori cycle
- (ii) Fermentation
- (iii) Glycogenolysis
- (iv) Oxidative phosphorylation
- (v) Acidosis

P.T.O.

(b) Differentiate between the following : (2×5=10)

- (i) Catabolism and anabolism
- (ii) Inhibitors and uncouplers
- (iii) Transamination and deamination
- (iv) Hexokinase and glucokinase
- (v) Glucogenic and ketogenic amino acids

(c) Give the function(s) of the following enzymes :
(1×4=4)

- (i) Transaldolase
- (ii) Succinate dehydrogenase
- (iii) Methyl malonyl CoA mutase
- (iv) Phosphoenolpyruvate carboxykinase

(d) Expand the following : (1×5=5)

- (i) UDP Glucose
- (ii) PFK
- (iii) NADPH
- (iv) DHAP
- (v) GTP

- (e) Draw the structures of the following : (3)
- (i) α -Ketoglutarate
 - (ii) Glutamate
 - (iii) HMG CoA
2. (a) With the help of structural formulae, describe the fate of glucose under aerobic condition. (8)
- (b) Add a note on ketone bodies. (4)
3. (a) "Gluconeogenesis is not the reversal of glycolysis", justify the statement. (6)
- (b) Explain the chemiosmotic hypothesis. (6)
4. (a) Give a detailed account of urea cycle. Add a note on its link to TCA cycle. (8)
- (b) Enlist the cascade of metabolic events occur during starving condition. (4)
5. Describe the β -oxidation of palmitic acid. Discuss about fates of the end products produced in this process. (12)

6. (a) What is significance of pentose phosphate pathway? (6)
- (b) Describe the process through which glucose is stored in the body. (6)
7. Write short notes on **any three** :— (4×3)
- (i) Malate aspartate shuttle
 - (ii) Oxidative phosphorylation
 - (iii) Intermediary metabolism
 - (iv) ETC

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Your Roll No.



Sr. No. of Question Paper : 4107

Unique Paper Code : 2232012402

Name of the Paper : DSC-Developmental
Biology

Name of the Course : B.Sc. (H) Zoology-UGCF

Semester : IV - NEP

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **any four** questions including **Question No. 1** which is compulsory.
3. Draw well-labelled diagrams wherever necessary.

1. (a) Define the following:

(4)

(i) Gray crescent

(ii) Compensatory regeneration

P.T.O.

(iii) Epiboly

(iv) Capacitation

(b) Distinguish between the following (any two):

(2×2=4)

(i) Amnion and mosaic development

(ii) Involution and invagination

(iii) Totipotency and pluripotency

(c) Match the following:

(2)

(i) Louis Brown

(a) Aristotle

(ii) Teratogen

(b) Fate maps

(iii) Walter Vogt

(c) IVF

(iv) Epigenesis

(d) Rachel Carson

(d) Expand the following abbreviations:

(3)

(i) FAS

(ii) ICSI

(iii) NIMZ

(e) Name the germ layer from which each of the following is derived: (2)

(i) Epidermis

(ii) Thyroid

(iii) Vertebrae

(iv) Pancreas

2. (a) What are three different types of regeneration and explain epimorphic regeneration in detail with the appropriate diagram. (9)

(b) Explain the effect of various chemicals and drugs on embryonic development (6)

3. (a) What is placenta and its role in embryonic development? Describe different types of placenta based on the villi distribution and histology with suitable examples and diagram. (9)

(b) Discuss the process of IVF and amniocentesis and add a note on its merits and demerits (6)

4. (a) Enumerate different morphogenetic movements involved in gastrulation. Explain the process of gastrulation in frog. (9)

- (b) Define fate map. Explain different methods of preparing a fate map. Draw well labelled diagrams of fate map of frog and chick blastula. (6)
5. (a) Describe the mechanism of fertilization in detail. Add a note on the difference between external and internal fertilization with examples. (9)
- (b) What is aging? Enumerate various causes/theories of aging. (6)
6. Write short notes on any three of the following: (3×5=15)
- (a) Embryonic induction
 - (b) Hormonal control of metamorphosis in Amphibians
 - (c) Embryonic stem cell and therapeutic cloning
 - (d) Types of eggs based on distribution and amount of yolk

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Your Roll No.

Sr. No. of Question Paper : 4145

Unique Paper Code : 2232012403

Name of the Paper : Animal Behaviour – DSC

Name of the Course : B.Sc. (H) Zoology (NEP-UGCF)

Semester : IV

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **four** questions in all including Question No. I which is compulsory.
3. **All** questions carry equal marks. **All** parts of a question should be answered together.

1. (a) Define the following : (1x5=5)

- (i) Inclusive fitness
- (ii) Stimulus filtering
- (iii) Code breakers

P.T.O.

(iv) Infanticide

(v) Sexual Dimorphism

(b) Differentiate between the following : (2x3=6)

(i) Orthokinesis and Klinokinesis

(ii) Habituation and Sensitization

(iii) Klinotaxis and Tropicaxis

(c) Give the important contributions made by the following scientists : (1x4=4)

(i) E.O. Wilson

(ii) Ivan Pavlov

(iii) Robert drivers

(iv) R. A. Fisher

2. (a) What are the characteristics of eusocial organisms?
Describe Social organization in honey bees. (10)

(b) Add a note on honeybee communication methods and the related experimental studies conducted to prove communication pattern in honey bees. (5)

3. (a) Describe the principles of classical and operant conditioning in associative learning, providing examples for each, and discuss how these processes contribute to behavior modification and learning in animals? (8)
- (b) Describe courtship behaviour in animals and its significance. Discuss in detail the courtship behaviour of any bird/insect with help of well-labelled diagram. (7)
4. (a) Explain the different modes of communication used by animals by giving suitable examples. Analyze the advantages and drawbacks of each mode in terms of their functional relevance. (10)
- (b) Explain the importance of Tinbergen's four questions in modern study of animal behaviour by giving suitable examples. (5)
5. (a) What mechanisms drive sexual selection in the animal kingdom, and how do they influence the evolution of traits related to mating success? Explain with suitable examples. (10)
- (b) Explain altruism? With suitable example describe how Hamilton's rule provides the evolutionary significance of altruism. (5)

6. Write short notes on any **three** of the following :
(3×5=15)

(a) Parental care

(b) Imprinting

(c) FAP

(d) Courtship behaviour in 3-spine stickleback

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Your Roll No.

Sr. No. of Question Paper : 4261

Unique Paper Code : 2233012008

Name of the Paper : DSE-8, Parasitology

Name of the Course : B. Sc. (H) Zoology, (NEP)

Semester : IV, (DSE-8)

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **any five** questions in all including **question No.1**, which is compulsory.

1. (i) Define any five of the following: (5)

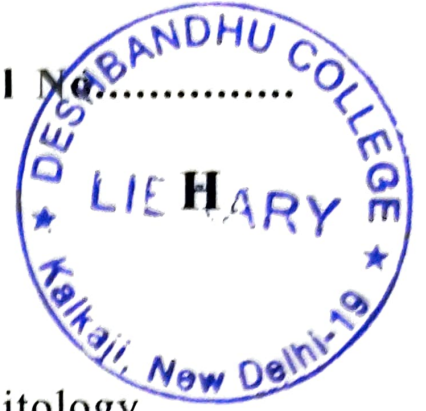
(a) Definitive Host

(b) Reservoir Host

(c) Chromatid bars

(d) Ectoparasite

P.T.O.



- (e) Cysticercosis
- (f) Mechanical vector
- (g) Parasitism

(ii) Differentiate between the following: (10)

- (a) Infection and infestation
- (b) Epidemic and Endemic disease
- (c) Anthroponosis and Zoonosis
- (d) Trophozoite and Cyst
- (e) Facultative and obligatory parasite

(iii) Fill up the following blanks: (5)

- (a) Smallest tape worm infecting the human is _____
- (b) The cercaria larva of _____ has bifid tail for penetration.
- (c) Presence of _____ in liver cells cause relapse in Malaria.
- (d) _____ is the infective stage of *Entamoeba histolytica*.

(e) Egg stage of *Pediculus humanus* is known as _____

(iv) Draw well labelled diagrams of the following: (5)

(a) Polymorphic forms of *Trypanosoma gambiense*.

(b) Internal anatomy of *Fasciolopsis buski*

(v) Match the following: (5)

A

B

(a) *Entamoeba histolytica*. (i) ventral sucker

(b) *Plasmodium vivax* (ii) copulatory spicules

(c) *Trichinella spiralis* (iii) chromatoid bodies

(d) *Schistosoma haematobium* (iv) signet ring stage

(e) *Ascaris lumbricoides* (v) claspers

2. (a) Describe the life cycle and medical importance of *Pediculus humanus*. (7)

(b) Explain the parasitic adaptation, diagnosis and cure of disease caused by *Taenia solium*. (8)

3. Describe the life cycle of the malaria parasite with a schematic diagram and add a note on the control strategies of the vector to prevent the disease. (15)
4. Describe the morphology, life cycle, laboratory diagnosis and treatment of *Ascaris lumbricoides*. (15)
5. What is African sleeping sickness? How is it transmitted? Describe its pathogenesis, diagnosis and treatment. Give some important control measures to prevent the disease. (15)
6. (a) Discuss in detail the life cycle, medical importance and control measures of *Schistosoma haematobium*. (9)
(b) Write the epidemiology of *Ancylostoma duodenale*. (6)
7. Write short notes on **any three** of the following: (3×5=15)
 - (a) Pathogenicity of *Wuchereria bancrofti*
 - (b) Amoebiasis
 - (c) Parasite as evolutionary response
 - (d) Hooklet shark
 - (e) Biology of *Xenopsylla cheopis*