R8374	Sub. Code
	509201

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Zoology

ANIMAL PHYSIOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. How does food move through your digestive tract?

   (a) By gravity

   (b) By wavelike muscle contractions

   (c) By cilia

   (d) By chemical absorption

2. This plasma protein is responsible for blood coagulation

   (a) Fibrinogen (b) Globulin

   (c) Serum amylase (d) Albumin

3. Which structure carries urine from the kidneys to the bladder?

   (a) Bladder (b) Ureter

   (c) Urethra (d) Nephron

4. Smooth muscle is not to be found in the walls of

(a) veins (b) capillaries

(c) arterioles (d) venules

5. Major protein constituent of muscle fibre is

(a) Actin (b) Tropomyosin

(c) Myosin (d) Calnexin

6. Which of the following glands are present in eyes?

(a) Pituitary glands (b) Lacrimal glands

(c) Thyroid glands (d) Mucus gland

7. Which part of the brain contains the thermoregulatory centre?

(a) Cerebellum (b) Cerebral cortex

(c) Hypothalamus (d) Medulla

8. What's the name of the process that controls water levels in the body?

(a) Diffusion (b) Osmosis

(c) Osmoregulation (d) Thermoregulation

9. The sleep-wake cycle is ultimately controlled by the part of the brain called.

(a) Optic nerve

(b) Substantia nigra

(c) Suprachiasmatic nucleus

(d) Median forebrain bundle

10. A circadian cycle is about _____ long.

(a) 90–100 minutes (b) 8 days

(c) 1 year (d) 24 hours

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Illustrate the structure of villi with its role in absorption.

Or

(b) Differentiate between universal donor and acceptor in blood grouping.

12. (a) Correlate the heart beat and cardiac cycle.

Or

(b) Discuses about acid base balance in urine formation.

13. (a) How does acetyl choline act as neurotransmitter?

Or

(b) Comment of tactile response.

14. (a) Enumerate the steps taken by the animal during aestivation.

Or

(b) "Hormone control osmoregulation" Justify.

15. (a) Explicate the diseases cost by alteration of thyroid hormone.

Or

(b) What is biological clock? Explain it with example.

Part C

$(5 \times 8 = 40)$

Answer any **five** questions.

16. Classify blood cells and add note on their function.

17. Illustrate the structure of Heart and write about ECG.

18. Describe the structure of the neuron and explain the role of neurotransmitter.

19. Do Animals tolerate different temperature? Explain it with example.

20. Differentiate hormone based on chemical nature and add a note on steroid hormone action.

21. Write an essay on human nutrition.

22. Describe the structure of Nephron and the urine function.

23. Illustrate the steps involved in muscle concentration.

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R8375

Sub. Code
509202

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Zoology

IMMUNOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. The term vaccination was coined for the memory of

   (a) Robert Koch (b) Karl Landsteiner

   (c) Jules Bordet (d) Edward Jenner

2. In antiviral resistance which substance appears first to prevent viral infection

   (a) Interferon (b) antigen

   (c) Ig E (d) Ig A

3. Normal serum enhances phagocytosis through

   (a) Chemotaxis (b) Opsonization

   (c) Chemotaxis (d) none of these

4. Passive immunization is done through

   (a) Toxoid (b) Vaccine

   (c) Antiserum (d) None of these

5. In herd immunity

(a) Majority individuals among the population are immune

(b) All the individual of the population are immune

(c) Both of the above

(d) none of the above

6. B- cells are involved in

(a) cell mediated immunity

(b) Adaptive immunity

(c) Humoral immunity

(d) all the above

7. The immune system associated with the mucosal cells are called

(a) B- cell (b) T-cell

(c) MALT (d) Thymus

8. The name of the chemicals released by mast cells are called

(a) Cytokine (b) Chemokine

(c) Histamine (d) none of these

9. CD8 T cells generally called as

(a) T Cytotoxic cells (b) T helper cells

(c) null cells (d) Tumour cells

10. Failure of self-tolerance resulted in

(a) Tumour

(b) Cancer

(c) Autoimmune disease

(d) none of these

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Draw the structure of antibody.

Or

(b) Briefly discuss about the functions of Thymus.

12. (a) Give an account on haematopoiesis.

Or

(b) Briefly explain about T- helper cells.

13. (a) What is innate immunity?

Or

(b) Explain briefly about immune-prophylaxis.

14. (a) Write short note on Type I hyper sensitivity.

Or

(b) Briefly discuss about infectious diseases.

15. (a) Give a short account on immunocytochemistry.

Or

(b) Explain briefly about western blot.

Part C (5 × 8 = 40)

Answer any **five** questions.

16. Discuss about the different types of cells involved in immune system.

17. Describe about the primary and secondary lymphoid organs.

18. Give a detailed account on the adaptive immunity.

19. Discuss about the HIV infection and its prevention.

20. Explain about different types of hyper sensitivity.

21. Give a detailed account on transplantation immunology.

22. Describe the mechanism of hybridoma technology.

23. Give a detailed account on different types of ELISA.

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R8376	Sub. Code
	509203

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Zoology

DEVELOPMENTAL BIOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. The rolling of endodermal and mesodermal cells from the surface of the embryo into its interior is called

   (a) Involution (b) Ingression

   (c) Epiboly (d) invagination

2. Polyspermy in the egg is blocked by

   (a) Cortical granules

   (b) Hydrolytic enzymes

   (c) Sperm mother cell

   (d) None of these

3. Embryonic stem cells are obtained from

   (a) Differentiated inner mass of embryo

   (b) Undifferentiated inner mass of embryo

   (c) Differentiated trophoblast cells

   (d) None of these

4. The cell that gave rise to a complete new organism is

(a) Unipotent (b) Bipotent

(c) Totipotent (d) Multipotent

5. In chick development the primary organizer is

(a) Henson's node (b) Dorsal lip

(c) Nieukoop centre (d) Primitive streak

6. In hydra the cut portion can regenerate the whole organism is called

(a) Morphallaxis (b) Epimorphosis

(c) Healing (d) Regeneration

7. The radial symmetry is found in the phylum

(a) Coelenterata (b) Chordata

(c) Mollusca (d) Arthropoda

8. Which of the following maternal effect gens control the anterior development

(a) Nanos (b) Caudal

(c) Frontal (d) Bicoid

9. Alveolar cells of the lung arise from which one of the following

(a) Mesoderm (b) Endoderm

(c) Ectoderm (d) All

10. During development if a cell committed to a particular fate, it is called

(a) Pluripotent (b) totipotent

(c) Determined (d) Differentiated

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain about determination and differentiation.

Or

(b) Briefly discuss about morphogenetic gradients.

12. (a) Give a short account on spermatogenesis.

Or

(b) Discuss briefly about prevention of polyspermy.

13. (a) Write short note on cell aggregation and differentiation in Dictyostelium.

Or

(b) Discuss about the factors affecting cleavage of eggs.

14. (a) Give a short account on fate maps.

Or

(b) Briefly discuss about eye lens induction.

15. (a) Write short note on differential gene activation.

Or

(b) Briefly discuss about developmental genetic detects.

Part C

$(5 \times 8 = 40)$

Answer any **five** questions.

16. Give a detail account on the fertilization of egg.

17. Explain about the cell fate and cell lineages.

18. Explain in detail about the gastrulation of chick.

19. Write in detail about the limb development and regeneration in vertebrates.

20. Describe about the presumptive organ forming areas in frog and chick.

21. Give an account on cell motility and differential cell affinity.

22. Discuss about the role of cell death in development and senescence.

23. Explain about the factors involved in teratogenesis.

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R8377	Sub. Code
	509204

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Zoology

MICROBIOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. This fungi division includes "Club fungi"
   (a) Zygomycota (b) Basidiomycota
   (c) Deuteromycota (d) Ascomycota

2. Which of the following may be called as fission algae?
   (a) Nostoc (b) Volvox
   (c) Oedogonium (d) None of these

3. Which of the following is/are correct about monkeypox?
   (a) It is a zoonotic disease
   (b) It cannot be diagnosed by PCR
   (c) Its genetic material is made up of dsRNA
   (d) It is caused by a bacterium

4. Which of the following is the genome of a virus?
   (a) DNA or RNA (b) DNA
   (c) DNA and RNA (d) RNA

5. Which of the following is a substitute for crystal violet used in gram-staining procedure?

(a) Bromocresol green (b) Methylene blue

(c) Safranin (d) Phenolphthalein

6. High BOD in a water body means

(a) Water is not polluted

(b) Water has diverse life forms

(c) Water is polluted

(d) None of the above

7. In the host cell, replication of RNA virus takes place in?

(a) Nucleolus (b) Cytoplasm

(c) Mitochondria (d) Nucleus

8. Fungi differ from algae in being

(a) Coenocytic

(b) Without chlorophyll and possessing chitinised wall

(c) Without motile spores

(d) Without unicellular forms

9. *Saccharomyces cerevisiae* is used primarily for

(a) Bleaching (b) Biofuel

(c) Baking (d) None of the above

10. Which of the following diseases are/is caused by virus?

(a) Ebola (b) UTI

(c) AIDS (d) Both (a) and (c)

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write about the structure and life cycle of viruses.

Or

(b) Write about Gram-staining.

12. (a) What are culture media? Classify their types. Write their uses.

Or

(b) Write about the various nutrient requirements for bacteria.

13. (a) Give an account on various swine bacterial diseases.

Or

(b) Make a note on various viruses that cause diseases in poultry.

14. (a) Give a short note on zoonotic diseases.

Or

(b) What are algal toxins? How are they harmful to animals?

15. (a) Define probiotic. Explain a short note on probiotic.

Or

(b) What is pasteurization? Write a note on its history and its significance.

Part C

$(5 \times 8 = 40)$

Answer any **five** questions.

16. Write a detailed note on the microbial diversity. Write about the history of microbiology.

17. Write about the isolation and identification methods used for viruses. What are the various biochemical and molecular tools used for the same?

18. Write in detail about the various viral diseases known to commonly affect ruminants, poultry and swine. Include the symptoms, history, diagnosis and control options.

19. Give in detail the history, symptoms, diagnosis and control methods for the various fungal diseases in ruminants, small ruminants, poultry and swine.

20. Write in detail about the history, production and application of probiotics. Include a note on prebiotics and symbiotics and how they differ?

21. Explain in detail on the major diseases causing fungal pathogens in ruminant, small ruminant, poultry and swine.

22. Write about the isolation and identification methods used for bacteria. What are the various biochemical and molecular tools used for the same?

23. Write in detail the importance of food microbiology.

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R8378

Sub. Code
509506

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Zoology

ANIMAL BIOTECHNOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. The first genetically modified organisms were developed by

   (a) Watson and Crick

   (b) Rudolf Jaenisch

   (c) Friedrich Miescher

   (d) Boyer and Cohen

2. How many classes of restriction enzymes are there?

   (a) 2 (b) 1

   (c) 3 (d) 4

3. Which is not a cloning vector?

   (a) Bacteriophages (b) Plasmids

   (c) YAC (d) Retroviral vector

4. In pBR322, BR stands for?

(a) Bolivar and Rodriguass

(b) Becker and Robert

(c) Bertram and Robert

(d) Bolivar and Rodriguez

5. Probes are molecules of

(a) DNA (b) RNA

(c) Protein (d) All of above

6. PCR technique was developed by

(a) Kohler (b) Altman

(c) Milstein (d) Kary mullis

7. Type of culture which is prepared by inoculating directly from tissue of an organism to culture media?

(a) Primary cell culture

(b) Secondary cell culture

(c) Cell lines

(d) Transformed cell culture

8. Father of animal tissue culture?

(a) Ross Harrison (b) Gottlieb Haberlandt

(c) Leewenhoek (d) Aristotle

9. Artificial insemination means

(a) Transfer of sperms of a healthy donor to a test-tube containing ova

(b) Transfer of sperms of unhealthy donor to a test tube containing ova

(c) Transfer of sperms of donor directly to the acceptor

(d) All of the above

10. Cryopreservation is

(a) Preservation of living cells in chemicals

(b) Preservation of living cells at very low temperature

(c) Preservation through exposure to irradiation

(d) None of the above

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a short note on the general characteristics of carbohydrate.

Or

(b) Write briefly about the scope of biotechnology.

12. (a) Explain briefly about pBR322 and its derivatives.

Or

(b) Explain in short about selection of recombinants.

13. (a) Write a short note on pyrosequencing.

Or

(b) Write in brief about Nick Translation.

14. (a) Discuss briefly about the importance of stem cell culture.

Or

(b) Write the difference between monolayer and suspension culture.

15. (a) Write the significance of gene knock out technology.

Or

(b) Write the importance of cryopreservation.

Part C

$(5 \times 8 = 40)$

Answer any **five** questions.

16. Elaborate the role of GEAC in India.

17. Write a detailed note on nucleic acid manipulating enzymes.

18. Discuss in detail Maxam and Gilbert sequencing of DNA.

19. Describe the various types of cell culture media used in animal tissue culture.

20. Write an essay on artificial insemination in cattle.

21. Write an essay on cloning in yeast saccharomyces cerevisiae.

22. Explain in detail the types of probe and its construction.

23. Write in detail about any two valuable cell culture product produced by animal tissue culture.

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