(Pages : 4) **P – 2572**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

First Degree Programme under CBCSS

Zoology

Core Course

ZO 1543: IMMUNOLOGY AND MICROBIOLOGY

(2019 Admission Onwards)

Time : 3 Hours Max. Marks : 80

I. Answer the following questions (in one or two sentences. **1** mark each)

1. Name a protozoan disease in man.
2. Mention the name of a bacterium used for controlling insect pests in agricultural crops.
3. What are halophiles?
4. What is passive immunity?
5. What is MALT?
6. What are lymphokines?
7. What are antigens?
8. Which class of antibody is found in colostrums?

9. Which antibody trigger the type I hyper sensitivity?

10. What is an epitope?

(10 × 1 = 10 Marks)

II. Answer any **eight** of the following (Not to exceed **one** paragraph. Each carries **2** marks)

11. Distinguish between viroid and prions.

12. What is type II hypersensitivity?

13. Write the difference between acquired immunity and innate immunity.

14. Distinguish between T cells and B cells.

15. What is opsonisation?

16. Define immunological memory.

17. Explain immunosuppression.

18. Mention two examples for primary immune deficiency disorders.

19. Mention two autoimmune disorders

20. Write notes on importance of

    (a) Azotobacter

    (b) Rizobium

21. Give the importance of normal gut micro biota and name a bacteria found in normal gut micro biota of man

22. Write the importance of Rickettsia.

23. Give importance of chemo-lithotrophic bacteria in biosphere.

24. Mention the names of microbial toxins

25. Name the causative organisms of

    (a) Chickenpox

    (b) Leprosy

26. What are plasma cells and null cells?

(8 × 2 = 16 Marks)

III. Answer any **six** of the following. (Not to exceed **120** words. Each question carries **4** marks)

27. Describe the structural organisation of a typical bacteria with the help of a labelled diagram.

28. Explain the mechanism involved in graft rejection.

29. Describe briefly the general features of MHC.

30. Briefly explain different antigen-antibody reactions.

31. Explain secondary immunodeficiency with suitable example.

32. What is transplant immunity? Mention different types of organ transplantations.

33. Write notes on the following

    (a) aspergillosis

    (b) candidiasis

34. Describe the different classes of immunoglobulins.

35. Describe different components forming compliment system.

36. Explain characteristic features of viruses.

37. Describe about primary lymphoid organs.

38. Explain the significances of different bacterial extremophiles.

(6 × 4 = 24 Marks)

IV. Answer any **two** of the following. (Each carries **15** marks)

39. Write an essay on important applications of microbes in environmental, agricultural, medical, biotechnological and industrial fields.

40. What is immunisation? Briefly describe different methods of vaccination used for making artificial immunity.

41. Describe the different types of cells involved in immune system.

42. What is immune response describe about humoral and cell mediated immune responses.

43. Explain the structure of immunoglobulin with a labelled diagram.

44. Write an essay on different viral and bacterial diseases of man.

(2 × 15 = 30 Marks)

(Pages : 3) P – 2571

Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

First Degree Programme Under CBCSS

Zoology

Core Course

ZO 1542 : GENETICS AND BIOTECHNOLOGY

(2019 Admission Onwards)

Time : 3 Hours Max. Marks : 80

I. Answer the following questions (In one or Two sentences. **1** mark each)

1. What is allele?
2. What is codominance?
3. What is holandric gene?
4. Define lyon hypothesis.
5. What is euploidy?
6. Comment on karyotype.
7. What is Recombinant DNA technology?
8. What are linkers?
9. What is genomic library?
10. Mention Southern blotting.

(10 × 1 = 10 Marks)

P.T.O.

II. Answer **any eight** of the following (Not to exceed **one** paragraph. **Each** carries **2** mark)

11. Differentiate test cross and backcross

12. Briefly explain complementary gene action.

13. Briefly explain the factors affecting linkage.

14. Write short notes on crossing over.

15. Comment on the chromosome mapping technique.

16. What is pleiotropism?

17. Write an account on autosomal and allosomal mutation.

18. Give an account on polygenic inheritance.

19. Write an account on cloning vectors used in Recombinant DNA technology.

20. What are the scopes of biotechnology?

21. What are the properties of an ideal vector?

22. Briefly explain bacterial transformation in Recombinant DNA technology.

23. Write an account on transgenic techniques.

24. What is gene therapy technique?

25. Comment on DNA vaccines.

26. Give an account on the application of biotechnology in medicine.

(8 × 2 = 16 Marks)

III. Answer **any six** of the following. (Not to exceed **one** paragraph **120** words). **Each** question carries **4** marks.

27. Briefly explain Rh group and its significance in transfusion reaction.

28. What is multiple allelism? and elaborate ABO blood group system.

29. What is sex linked inheritance and explain human sex-linked inheritance.

30. Briefly explain numerical and structural chromosomal aberrations.

31. Write an account on molecular basis of mutation.

32. Explain inborn errors of metabolism.

33. What are the tools used in Recombinant DNA technology.

34. Briefly explain patenting DNA sequences and add notes on advantages and disadvantages of DNA patenting.

35. Give an account on hybridoma technology.

36. Briefly explain blotting techniques.

37. Write notes on human cloning.

38. Elaborate on the ethical and social issues of biotechnology.

(6 × 4 = 24 Marks)

IV. Answer **any two** of the following. (**Each** carries **15** marks)

39. Write an essay on interaction of genes.

40. Write an essay on various methods of sex determination.

41. Write an essay on cytoplasmic inheritance.

42. What is PCR? Briefly explain steps and applications of PCR.

43. Write an essay on transfection methods of gene transfer techniques.

44. Write an account on practical applications of biotechnology.

(2 × 15 = 30 Marks)

(Pages : 3) **P – 2560**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

First Degree Programme Under CBCSS

Zoology

Core Course

ZO 1543 — PHYSIOLOGY AND BIOLOGICAL CHEMISTRY

(2015-2017 Admission)

Time : 3 Hours Max. Marks : 80

I. Answer the following questions (in **one** or **two** sentences **1** mark each)

1. Myopia.
2. Key enzymes.
3. Folic acid.
4. SA node.
5. Atherosclerosis
6. APNOEA
7. Acidosis
8. Gastrin

9. Isoenzymes

10. Ketoses

(10 × 1 = 10 Marks)

II. Answer any **eight** of the following (not to exceed **one** paragraph. each carries **2** marks)

11. Synapse

12. Horones of lactation

13. Calmodulin

14. Acetyl choline

15. Cephalins

16. Glomerular filtration

17. Chlorideshift

18. Calcium metabolism.

19. Myosin.

20. Gangliocides.

21. Hexokinase.

22. Biological functions of proteins.

(8 × 2 = 16 Marks)

III. Answer any **six** of the following (Not to exceed **120** words. Each carries **4** marks)

23. Photochemistry of vision.

24. Hexose monophosphate shunt.

25. Intrinsic pathway of Blood clotting.

26. Impulse transmission.

27. Krebs cycle.

28. Heteropolysaccharides.

29. Transamination.

30. Structure of proteins.

31. Reproductive hormones.

(6 × 4 = 24 Marks)

IV. Answer any **two** of the following (Each carries **15** marks)

32. Explain the mechanism of enzyme action.

33. Describe Beta oxidation.

34. Explain the mechanism of muscle contraction.

35. Describe the process of Urine formation.

(2 × 15 = 30 Marks)

(Pages : 3) **P – 2570**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

First Degree Programme Under CBCSS

Zoology

Core Course

ZO 1541 : CELL AND MOLECULAR BIOLOGY

(2019 Admission Onwards)

Time : 3 Hours Max. Marks : 80

I. Answer the following questions (In **one** or **two** sentences. **1** mark each)

1. Peroxisomes
2. Hetrochromatin
3. Endomitosis
4. Lymphoma
5. Senile dementia
6. Nucleotide
7. Replication fork
8. Conjugation
9. Wobble hypothesis
10. SOD

(10 × 1 = 10 Marks)

P.T.O.

II. Answer **any eight** of the following (Not to exceed one paragraph. **Each** carries **2** marks)

11. Chargaff's rule
12. Central dogma of molecular biology
13. Biogenesis of ribosomes
14. Smooth Endoplasmic Reticulum
15. Genetic code
16. Apoptosis
17. Cytoskeleton
18. Solenoid fibre
19. Polytene chromosome
20. Oncogenes
21. Oeteoporosis
22. RNA polymerase
23. Peptidoglycan
24. Autophagosome
25. Mitotic apparatus
26. TATA box

(8 × 2 = 16 Marks)

III. Answer **any six** of the following (Not to exceed **120** words. Each carries 4 marks)

27. Endo symbiont hypothesis
28. Clover leaf model of t. RNA

29. Types of ribosomes

30. Nucleolar organizer

31. Metaphase chromosome

32. Lamp brush chromosomes

33. Synaptonemal complex

34. One gene one enzyme hypothesis

35. Lac operon

36. Philadelphia chromosome

37. Anaphase promoting complex

38. Functions of microfilaments

(6 × 4 = 24 Marks)

IV. Answer **any two** of the following (Each carries **15** marks)

39. Write an essay on DNA replication in prokaryotes, and describe about the repair mechanism of DNA.

40. Give an account on fluid mosaic model of plasma membrane. Add a note on functions of plasma membrane.

41. Write an essay on bacterial recombination.

42. Explain the characteristics and types of cancer. Add a note on theories on the origin of cancer.

43. Write an essay on polymorphism of lysosomes. Add a note on functions of lysosomes.

44. Write an essay on cell cycle. Add a note on significance of meiosis.

(2 × 15 = 30 Marks)