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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

First Degree Programme Under CBCSS

Zoology

Core Course VII

ZO 1542 — IMMUNOLOGY AND MIRCOBIOLOGY

(2018 Admission)

Time : 3 Hours Max. Marks : 80

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

1. Contribution of Louis Pasteur into the field of microbiology.

2. Innate immunity.

3. Plasma cells.

4. Hapten.

5. Type 1 Hypersensitivity.

6. Thermophiles.

7. Sulpur bacteria.

8. Plasmodium.

P.T.O.

9. Halophiles.

10. Name any two viral diseases in man.

(10 × 1 = 10 Marks)

II. Answer any **eight** questions of the following (Not to exceed **one** paragraph. Each carry **two** marks)

11. Artificial immunity.

12. Opsonisation.

13. Ig G

14. MHC

15. Zone phenomenon

16. AIDS

17. DNA Vaccines

18. Autoimmunity

19. Allograft

20. Prions

21. Cyanobacteria

22. Complement system

23. Any two agricultural applications of microbiology

24. Aspergillosis.

25. Botulism

26. Microbial toxin.

(8 × 2 = 16 Marks)

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

27. Trace the historical development of immunology.

28. Explain acquired immunity with examples.

29. Cell mediated immunity.

30. Agglutination.

31. Disorders of phagocytosis.

32. Hypersensitivity.

33. Structure of a bacteriophage.

34. Ecological importance of microbes.

35. Give a broad classification of virus.

36. Comment on the importance of microbiology in medical field.

37. Briefly Describe human microbiota.

38. Comment on microbes -plants interactions.

(6 × 4 = 24 Marks)

IV. Answer any **two** of the following

39. Explain tissues of immune system

40. Define immunoglobulin and describe its structure

41. Write an essay on immunodeficiency diseases

42. Give a detailed account on various types of graft. Add a note on graft rejection

43. Discuss the beneficial, harmful impact of microbes

44. Write an essay on microbial diseases in human.

(2 × 15 = 30 Marks)

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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

First Degree Programme under CBCSS

Zoology

Core Course VII

ZO 1542 : IMMUNOLOGY AND MICROBIOLOGY

(2016 and 2017 Admission)

Time : 3 Hours Max. Marks : 80

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

1. Cowpox
2. APC
3. HLA complex
4. Type I hypersensitivity
5. SCID
6. Pasteurization
7. Malaria parasites
8. Leprosy
9. Fermentation
10. *Thermus aquaticus*

(10 × 1 = 10 Marks)

P.T.O.

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

11. Distinguish haptens from epitopes.

12. Maternal antibodies in colostrum.

13. Transmission of malaria.

14. Importance of Thymus gland.

15. Role of macrophages in immunity.

16. SARS CoV-2

17. First generation vaccines.

18. Bacteria in root nodules.

19. Types of viruses based on genetic material.

20. Microbial pesticides.

21. Auto-immunity

22. Diseases caused by prions.

(8 × 2 = 16 Marks)

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

23. Briefly discuss various diseases caused by bacteria in man.

24. Define innate immunity and discuss its components.

25. Discuss myeloid and lymphoid lineages of immune cells.

26. Discuss the procedures involved in the microbial production of citric acid and ethanol.

27. Write notes on Poliomyelitis and Hepatitis.

28. Classify Eubacteria.

29. Discuss the formation of memory cells and its importance.

30. Discuss the importance of *E.coli* in biotechnology.

31. Explain the mechanism of graft rejection.

(6 × 4 = 24 Marks)

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

32. Discuss the importance of vaccines in disease control with examples.

33. Explain the mechanism of immunity in man in detail.

34. Briefly explain the application of microbes in industry, agriculture and pollution control.

35. Write an essay on symbiotic microbes.

(2 × 15 = 30 Marks)

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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Group 2(a) Botany and Biotechnology

Core Course

BB 1541 PLANT PHYSIOLOGY

(2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** the questions in a **word** or **one** or **two** sentence. Each question carries **1** mark:

1. What are quantasomes?
2. Name two antitranspirants.
3. What is vernalization?
4. Give an example for nyctinasty.
5. What is ammonification?
6. Define photorespiration.
7. Name a fatty acid.

P.T.O.

8. What is DPD?

9. Define Respiratory quotient.

10. What is Hydroponics?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Each question carries **2** marks. (Answer not to exceed one paragraph)

11. What is protoplasm streaming theory?

12. Differentiate between abscission and senescence.

13. What is osmotic adjustment?

14. Explain Donnan equillibrium.

15. What is thigmotropism? Give an example.

16. What are nif genes?

17. Distinguish between macro and micro nutrients.

18. What is TCA cycle?

19. Discuss the significance of pentose phosphate pathway.

20. Define plasmolysis.

21. List the phases of growth in plants.

22. What is chemiosmotic coupling hypothesis?

23. Explain Kranz anatomy.

24. What is 'Red drop'?

25. Brief a note on circadian rhythm.

26. What is Nitrogen cycle?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each question carries **4** marks. (Answer not to exceed **120** words)

27. What are CAM plants? What is its significance?

28. Explain beta oxidation of fats.

29. Mention the physiological effects of auxins.

30. What are the factors affecting transpiration?

31. Differentiate between cyclic and non cyclic photophosphorylation.

32. Write a note on plant response to salt stress.

33. What is glycolysis?

34. Explain the specific role of Nitrogen and Magnesium in plants.

35. What is seed dormancy? Explain various factors causing seed dormancy.

36. Explain the mechanism of active absorption of water in plants.

37. What are the major sources of nitrogen in plants?

38. Brief a note on ascent of sap giving explanations on transpiration pull theory

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Each question carries **15** marks. (Answer not to exceed **three** pages)

39. Give an account on Electron Transport System and oxidative phosphorylation.

40. What is photoperiodism? How the flowering plants are classified based on their photoperiod?

41. What is the role of phytochrome in photoperiodic response?

42. Explain the mechanism of translocation of solute in plants.

43. What is transpiration? Explain the mechanism of stomatal movement and transpiration by K+ transport theory.

44. Explain the process of symbiotic nitrogen fixation in plants. Add a note on rotation of crops.

45. Discuss the different phases of Calvin cycle in photosynthesis.

(2 × 15 = 30 Marks)

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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

First Degree Programme under CBCSS

Physics

Core Course VI

PY 1542 : STATISTICAL MECHANICS, RESEARCH METHODOLOGY AND DISASTER MANAGEMENT

(2018 and 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** the questions. **Each** carries **1** mark.

1. Define macrostates.
2. Define statistical ensemble.
3. What are fermions?
4. What do you mean by objectives of research?
5. What is research methodology?
6. Define random error.
7. Define significant figures with example.
8. What are hazards?

P.T.O.

9. On what factors do the control of communicable diseases depend?

10. Give the number of significant figures in 0.00052.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. **Each** carries **2** marks.

11. What is phase space?

12. Explain velocity distribution.

13. The radius of a thin wire is 0.24 mm. Find the area of cross section by taking significant figures into consideration.

14. Briefly describe the different steps involved in a research process.

15. Give the importance of literature survey.

16. Describe the different types of research.

17. Write down the significance of research.

18. What are random and systematic errors?

19. Differentiate between absolute and relative error.

20. Explain the importance of control of communicable diseases in emergencies and disasters.

21. What are the health consequences of radiation?

22. State Boltzmann's entropy relation.

23. Give the postulate of equal probability.

24. What do you mean by fragile natural eco-environment?

25. Explain three kinds of particles with examples.

26. Explain canonical ensemble with suitable diagram.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** carries **4** marks.

27. Write a note on indistinguishability of identical particles?

28. Calculate the Fermi energy of sodium assuming that the metal has one free electron per atom. Given h = 6.625×10^{-34} Js; mass of electron = 9×10^{-31} kg; density of sodium = 970 kg/m^3; Avogadro's number = 6.02×10^{26} and atomic weight of sodium = 22.99.

29. Explain scientific methods in research.

30. Explain the importance of estimating errors.

31. Write on thesis writing preliminary section.

32. Give the criteria for good research.

33. The length of a rod measured in an experiment is recorded as 2.51 m, 2.56 m, 2.49 m, 2.58 m, 2.48 m, 2.55 m respectively. Find the mean length, absolute error, mean absolute error.

34. Write on impact of global climate change and major natural disaster.

35. Give accounts to human's adaptability to natural disaster.

36. Explain combination of errors with equations.

37. An electron gas obeys the Maxwell-Boltzmann statistics. Calculate the average thermal energy (in eV) of an electron of the system at 300 K.

38. What is the difference between the measurements 8.00 cm and 8.0000 cm?

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** carries **15** marks.

39. Explain Bose-Einstein and Fermi-Dirac distribution function and a comparison on three statistics.

40. Give the layout of the research report writing.

41. Explain the basic ideas of error analysis and standard deviation in measurements with suitable examples.

42. What are the health consequence and measurements to prevent health emergencies due to radiation?

43. Briefly explain different types of errors.

44. Explain disaster reduction activity along with achievements and challenges.

(2 × 15 = 30 Marks)
