

**2021/TDC/CBCS/ODD/
ZOODSE-501T/035**

**TDC (CBCS) Odd Semester Exam., 2021
held in March, 2022**

ZOOLOGY

(5th Semester)

Course No. : ZOODSE-501T

(Immunology)

Full Marks : 50

Pass Marks : 20

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

SECTION—A

Answer the following questions in very short
(any fifteen) : 1×15=15

1. Define immunity.
2. What are the physiological barriers in innate immune system?
3. Define adaptive immune system.

(2)

4. What do you mean by phagocytosis?
5. What is haematopoiesis?
6. What are lymphoid organs?
7. Name few secondary lymphoid organs.
8. Name the site of origin of B- and T-cells.
9. What is an immunogen?
10. What are APCs?
11. What are haptens?
12. Mention the function of an adjuvant.
13. Write two functions of MHCs.
14. What is complement?
15. Name two different kinds of cytokines.
16. Define endocytosis.
17. What is autoimmunity?
18. Give example of a recombinant vaccine.

(3)

19. What are toxoids?
20. Define molecular mimicry.

SECTION—B

Answer the following questions in short (any *five*) :

2×5=10

21. What are the chemical barriers of innate immune system?
22. Differentiate between humoral and cell-mediated immune systems.
23. Write a note on the process of apoptosis.
24. Name the different types of T-cells present in the body.
25. Mention the basic properties of antigen.
26. Write about the importance of monoclonal antibodies in modern days research.
27. Define the classical pathway of complement fixation.
28. Mention the basic properties of cytokines.

(4)

29. What are epitopes?
30. What are vaccines? Give examples.

SECTION—C

Answer the following broad-type questions
(any five) : $5 \times 5 = 25$

31. Write in detail about the different components of innate immune system.
32. Name the different types of cell involved in adaptive immune response. How does it differ from the innate immune system? $3 + 2 = 5$
33. Name the primary lymphoid organs. Explain the structure and function of spleen. $1 + 2 + 2 = 5$
34. Elucidate the structure of lymph node with proper diagram.
35. What are immunoglobulins? Describe with labelled diagram the basic structure of antibody. $1 + 4 = 5$
36. What is monoclonal antibody? Discuss the process of monoclonal antibody production. $1 + 4 = 5$

(5)

37. Discuss about the classical pathway of complement fixation.
38. Enlist the chief features of MHC-I and MHC-II molecules. $2\frac{1}{2} + 2\frac{1}{2} = 5$
39. What is AIDS? Name the organism causing AIDS. Mention the preventive measures for AIDS. $1 + 1 + 3 = 5$
40. What are attenuated vaccines? Enlist the characteristics of an ideal vaccine. $1 + 4 = 5$

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**2021/TDC/CBCS/ODD/
ZOOSEC-501T/037**

**TDC (CBCS) Odd Semester Exam., 2021
held in March, 2022**

ZOOLOGY

(5th Semester)

Course No. : ZOOSEC-501T

(Aquarium Fish Keeping)

Full Marks : 50

Pass Marks : 20

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

SECTION—A

Answer any *fifteen* of the following questions (very short answer-type) : 1×15=15

1. Is aquarium industry a cottage industry?
2. Name one exotic aquarium fish.
3. Name one endemic aquarium fish.

(2)

4. Define cottage industry.
5. What is sexual dimorphism?
6. Name one freshwater aquarium fish.
7. Name one marine aquarium fish.
8. Write the scientific name of swordtail fish.
9. Are guppies omnivorous?
10. What time of day is best to feed aquarium fish?
11. Can boiled rice be used as fish feed?
12. What are the essential elements in the formulated fish feeds?
13. Are fishes being fed before transportation?
14. What is the basic principle of handling packaging and transport of live fish?
15. What types of injuries fishes may suffer from wrong handling?

(3)

16. What type of packaging bags are used to transport live ornamental fish?
17. Do aquarium need daily change of water?
18. What is the ideal pH for most of the aquarium fishes?
19. What should be the ideal nitrate level for most of the aquarium fishes?
20. Is tap water safe for aquarium fishes?

SECTION—B

Answer any *five* of the following questions (short answer-type) : 2×5=10

21. Write a short note on aquarium.
22. Write a note on exotic aquarium species.
23. Write the general characters of gold fish.
24. What do you know about sexual dimorphism in angel fish?
25. What is live fish food?

(4)

26. What type of food is preferred by guppy fish?
27. What is live fish transport?
28. What steps may be taken to minimize injury during transportation of fish?
29. What are the vital parameters required to test as part of routine aquarium water maintenance?
30. What are the maintenance steps to be checked daily?

SECTION—C

Answer any *five* of the following questions (broad answer-type) : $5 \times 5 = 25$

31. Briefly discuss the potential scope of aquarium fish industry. 5
32. Write short notes on the following : $2\frac{1}{2} \times 2 = 5$
- (a) Exotic aquarium fishes
- (b) Endemic aquarium fishes
33. Briefly discuss the sexual dimorphism in freshwater aquarium fishes. 5

(5)

34. Write two common characters each of anemone, guppy, molly, blue morph and gold fishes. $1+1+1+1+1=5$
35. What are the different live fish feed organisms? Discuss their use in an aquarium. $2+3=5$
36. Discuss the composition of formulated fish feeds. 5
37. Discuss the various steps of fish transportation. 5
38. How can age and size of fish play important role in fish transportation? 5
39. Discuss the various aspects of aquarium maintenance. 5
40. What are the advantages of aquarium fish farming? Discuss a few steps that need to be followed by the entrepreneurs of aquarium fish farming. $2+3=5$

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