

**SIXTH SEMESTER (CUCBCSS—UG) DEGREE (SPECIAL) EXAMINATION
MARCH 2021**

Aquaculture

AQC 6B 17—FISH GENETICS, BICTECHNOLOGY AND BIOINFORMATICS

Time : Three Hours

Maximum : 80 Marks

Section A

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

1. Selective Hybridization.
2. GIFT.
3. Recessive Genes.
4. Genetic Drift.
5. Inbreeding Depression.
6. Pharma Genomics.
7. BLAST.
8. Gene Splicing.
9. Genetic Variance.
10. Spermatocrit Value.

(10 × 1 = 10 marks)

Section B

*Answer at least four questions.
Each question carries 2 marks.
All questions can be attended.
Overall Ceiling 8.*

11. What is Androgenesis ?
12. What is genetically modified organisms ? Write an example.
13. Define substitution mutation.
14. Expand (a) EMBL ; and (b) DDBJ.

Turn over

15. What are restriction enzymes ? Give two examples.
16. Co-Dominance.
17. Write two examples of seaweeds used in aquaculture

(4 × 2 = 8 marks)

Section C

Answer at least four questions.

Each question carries 8 marks.

All questions can be attended.

Overall Ceiling 32.

18. What is Mutation ? Explain with suitable examples.
19. Briefly discuss Bioinformatics and its use in aquaculture and fisheries.
20. Describe the uses of hybridization in aquaculture with suitable examples.
21. Explain various types of Chromosome manipulations used in finfishes and shellfishes.
22. 'What are Marine Toxins ?' Write an account of various sources of Marine Toxins.
23. Write a short description on the fisheries databases and websites.
24. What is induced breeding ? Discuss the use of synthetic hormones used in Induced Breeding.
25. What is genome ? Describe Recombinant DNA Technology.

(4 × 8 = 32 marks)

Section D

Answer any two questions.

Each question carries 15 marks.

26. Describe DNA sequencing procedure.
27. Describe the impact of probiotics and antibiotics in aquaculture.
28. What is genetic selection ? Discuss various types of genetic selection in aquaculture and fisheries.
29. Write a detailed account on monosex, super male and super female production techniques in aquaculture.

(2 × 15 = 30 marks)

**SIXTH SEMESTER (CUCBCSS—UG) DEGREE [SPECIAL] EXAMINATION
MARCH 2021**

Aquaculture

AQC 6B 19—FISHERY MICROBIOLOGY

Time : Three Hours

Maximum : 80 Marks

Section A

Answer all questions.

Each question carries 1 mark.

- In five kingdom classification, bacteria belong to the domain _____.
 - Protista.
 - Monera.
 - Animalia.
 - Fungi.
- Name an autotrophic bacteria :
- Criteria for determining the etiologic (causative) agent of an infectious disease are known as _____.
 - Pastuer's postulates.
 - Hesse's postulate.
 - Koch's postulate.
 - Griffith's postulates.
- The total magnification of a specimen viewed with 5x eyepiece and 40x objective is :
 - 40X.
 - 5X.
 - 20X.
 - 200X.
- Sabouraud dextrose agar is an example of _____ growth medium.
 - Bacterial.
 - Animal cell.
 - Algal.
 - Fungal.
- The log phase is also known as the _____.
 - Period of initial adjustment.
 - Transitional period.
 - Period of rapid growth.
 - The period where growth rate is equal to death rate.

Turn over

7. In which of the following process, the electron donor and electron acceptor are organic molecules _____.
- (a) Fermentation. (b) Anaerobic respiration.
(c) Pasteurization. (d) Autotrophy.
8. The reduction of sulphates and sulphites to hydrogen sulphide is made by which group of bacteria?
- (a) Aerobic sulfate-reducing bacteria.
(b) Photosynthetic sulphur bacteria.
(c) Anaerobic sulphate-reducing bacteria.
(d) Heterotrophic bacteria.
9. Common type of spoilage occurs in fresh meat is _____.
- (a) Souring. (b) Greening.
(c) Putrefaction. (d) Mouldy.
10. Which is NOT CORRECT about the depuration of bivalves?
- (a) Depuration is a natural filtering activity.
(b) Depuration enhances the health risk in raw or semi-cooked oyster delicacies.
(c) Depuration reduces the risk of *Vibriovulnificus* and *V. parahaemolyticus*.
(d) Depuration requires stringent handling practices to minimize recontamination.

(10 × 1 = 10 marks)

Section B

Answer at least four questions.

Each question carries 2 marks.

All questions can be attended.

Overall Ceiling 8.

11. Write down the contributions of Winogradsky.
12. Bacterial endospores.
13. What are the phases of the bacterial growth curve?
14. What is 'total plate count'? What is its significance?

15. Write a brief note on the 'lifecycle of lytic bacteriophage'.
16. Explain the autotrophic microbial flora involved in carbon sequestration in aquaculture ponds.
17. Explain two techniques to preserve highly perishable seafood.

(4 × 2 = 8 marks)

Section C

*Answer at least **four** questions.*

Each question carries 8 marks.

All questions can be attended.

Overall Ceiling 32.

18. Mention the contributions of Robert Koch ?
19. Write down the general characteristics of viruses.
20. Briefly explain the types of bacteriological culture media.
21. Write the working principle and uses of dark field microscopy.
22. Explain the ultrastructure of the bacterial cell wall.
23. Differentiate autochthonous and allochthonous flora of culture ponds.
24. Write a brief note on the proximate composition of finfish.
25. *Aeromonashydrophila.*

(4 × 8 = 32 marks)

Section D

*Answer any **two** questions.*

Each question carries 15 marks.

26. Write an essay on the cultural characteristics, biology and epidemiology of *Salmonella spp.*
27. Briefly explain the intrinsic and extrinsic factors affecting spoilage of seafood.
28. Describe the role of microorganisms in biogeochemical cycles and nutrient regeneration for a sustainable aquaculture practice.
29. With a suitable diagram, explain the working principle of the electron microscope.

(2 × 15 = 30 marks)

**SIXTH SEMESTER (CUCBCSS—UG) DEGREE [SPECIAL] EXAMINATION
MARCH 2021**

Aquaculture

AQC 6B 18—FISH PATHOLOGY AND HEALTH MANAGEMENT

Time : Three Hours

Maximum : 80 Marks

Section A

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

1. Fish are the most primitive vertebrates to possess adaptive immune system which includes lymphocytes, immunoglobulins, T cell receptor (TCR) and products of major histocompatibility complex (MHC) to allow the clonal selection of B and T cells.
 - a) True
 - b) False.
2. Liming of aquaculture pond DO NOT _____.
 - a) Increases pH.
 - b) Reduces bacterial breakdown of organic matter.
 - c) Supplies calcium for bone growth.
 - d) Serves as a fertilizer.
3. Black gill disease is caused by _____.
 - a) Lagenidium sp.
 - b) Fusarium sp.
 - c) Aflatoxicosis.
 - d) None of the above.
4. _____ is not an ecto parasite of fish.
 - a) *Vibrio cholerae*.
 - b) *Aeromonas salmonicida*.
 - c) *Clostridium sp.*
 - d) *Agrobacterium sp.*
5. Brachiomyxosis is _____ rot.
6. Commercial formulations of probiotics include :
 - a) *Bacillus spp.*
 - b) Lactic Acid Bacteria (LAB).
 - c) Yeast.
 - d) All of the above.
7. Which statement is/are correct about Edwardsiellosis ?
 - a) Is an emphysematous putrefactive disease.
 - b) Causative agent is *E. tarda*.
 - c) Results in mass mortality in stocks of Indian major carps and Asian catfish.
 - d) All of the above.

Turn over

24. Control of aquatic plants in ponds.
25. Write on 'quality assurance of seed stock'.

(4 × 8 = 32 marks)

Section D

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

26. Write an essay on prevention and control of viral infectious diseases of fish.
27. Briefly explain the pathology, diagnosis and treatment strategies for bacterial diseases aquacultured fishes.
28. Explain : a) Nutritional pathology ; b) Describe various diagnostic tools to detect pathogens in aquaculture.
29. Write an essay on principles of good pond management systems.

(2 × 15 = 30 marks)

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