LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIO TECHNOLOGY

THIRD SEMESTER – NOVEMBER 2009

BT 3954 - MARINE BIOTECHNOLOGY

Date & Time: 12/11/2009 / 9:00 - 12:00 Dept. No. Max. : 100 Marks

PART – A
ANSWER ALL THE QUESTIONS.

I. Choose the correct answer: (5 x 1 = 5)

1. The microbial inhabitants of the bottom region of an aquatic ecosystem is called
   a) Plankton b) Benthon c) Neuston d) Nekton.
2. Coral reefs are built from the accumulated layers of
   a) $CaCO_3$ b) $CaSO_4$ c) $MgSO_4$ d) $MgCl_2$.
3. Which of the following is used for the induced breeding of fishes?
   a) ovatide b) ovatin c) ovaprim d) ovaran.
4. The tide that is produced when sun and moon are at right angles to each other is
   a) high tide b) lunar tide c) spring tide d) neap tide.
5. The agent that has a potent antimitotic activity is
   a) mycalamide b) dolastatin c) calyculins d) didemnin.

II. State whether the following are true or false, if false give reason
(5 x 1 = 5)

6. Biopolymers are repetitive units of trimers.
7. Scombrotoxic fish poisoning is also termed as histamine fish poisoning.
8. Sex-determination in fishes is normally done by cannulation.
9. The red alga *Porphyra* produces ascospores.
10. Some species of nekton find protection from predation by schooling.

III. Complete the following: (5 x 1=5)

11. The hormone that is used as spawning agent in fishes is _____.
12. In shrimp aquaculture, "PL's" refer to _____.
13. The process that carries nutrient-rich subsurface water upward to the photic zone is called _____.
14. Species of Cnidaria have special stinging cells called _____.
15. The organotin compound that is used as antifouling agent is _____.

IV. Answer the following, each within 50 words only: (5 x 1=5)

16. Differentiate thermocline and pycnocline.
17. State coriolis effect.
18. Define thermal stratification.
19. What are extremophiles?
20. List the pigments produced by microalgae.

PART B

V. Answer any five questions, each within 350 words. (5 x 8 = 40)

21. List the characteristics zonation of standing water ecosystem.
22. What are the reasons for high productivity in estuaries?
23. Write about the role of zooxanthellae on coral reef.
24. Give an account on marine invertebrates.
25. Elucidate the progress in the clinical development of marine –derived anti-cancer and antiviral compounds.
26. Explain the factors that drive the ocean in motion.
27. What are bioadhesives? Explain the mechanism of adherence with the substrate.
28. Discuss the genetic and hormonal manipulation of reproduction in fishes.

PART C

VI. Answer the following in detail, each within 1500 words. (2 x 20 = 40)

29. (a) Explain the life-cycle of penaeid shrimp and their importance of hatchery feed practices.

(**OR)**

(b) Describe the role of micro and macrofoulers in biofouling process and its cycle.

30. (a) Discuss briefly the commercial importance of marine natural products and their pharmaceutical applications.

(OR)

(b) What is bioluminescence? Explain the mechanism of adaptations and the applications of bioluminescent genes.

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