

3 Hours

Total Marks: 100

1. Attempt **all** questions.
2. **All questions carry equal marks.**
3. Draw **neat labeled diagrams** wherever necessary.
4. Use of **log tables** and **non-programmable calculator is allowed.**

Q.1 a. Do as Directed: (Any six)**06**

1. Fill in the blank: _____ communities are those that occur in the open ocean beyond the edge of continental shelf.
2. Name any one vertical zone of sea.
3. Write any one adaptation of organisms residing in deep sea.
4. What are deposit feeders?
5. Define Estuaries.
6. Name any one antiparasitic compound isolated from marine organisms.
7. Fill in the blank: _____ microorganisms inhabiting deep-sea habitats can provide enzymes for high pressure bioreactors.
8. Give any one example of culture independent gene-targeted methods for culturing of marine bacteria.
9. Fill in the blank: _____ refers to the systematic search for novel biological products and activates with biotechnological applications in natural habitats.

Q.1 b. Answer the following questions: (Any Two)**14**

1. Describe characteristics of rocky intertidal zone and adaptations of organisms inhabiting.
2. Elaborate on toxins isolated from marine organisms.
3. Explain novel techniques for culturing of marine bacteria.

Q.2 a. Do as instructed: (Any six)**06**

1. State any one most useful feature of marine microbial enzymes.
2. Give an example of a psychrophilic marine organism producing cold adaptive enzyme.

3. State the use of Omega conotoxins poisons produced by Piscivorous cone snails.
4. Fill in the blank: Ecteinascidin alkaloids are produced by semisynthesis after controlled formation of the marine bacterium_____.
5. What is cytarabine used for?
6. _____ is a broad spectrum antibiotic.
(Kahalalide F, Squalamine, Bryostatin)
7. Name the organism producing Pfu polymerase.
8. State the application of halotolerant proteolytic enzymes.
9. Fill in the blank: Prialt is a trade name of _____ in USA and EU.

Q.2 b. Attempt the following questions: (Any Two)

14

1. Discuss the thermostability and cold adaptability of marine extremozymes.
2. Elaborate on “Marine natural product at the crossroad between functional foods in pharma”.
3. With suitable example explain the current use and status of marine microbial enzymes.

Q.3 a. Answer the following objectives as instructed: (Any six)

06

1. Write the full form of EPA.
2. What is fucoidan?
3. Give one significance of PUFA.
4. Green algae: Chlorophyceae::Red algae : _____.
5. Fill in the blank: DHA stands for _____.
6. State the significance of taurine.
7. Define nutraceutical.
8. Fill in the blank: Brown algae owe their colour to the presence of carotenoid _____.
9. State true or false: Cyanobacteria is an example of macroalgae.

Q.3 b. Explain the following questions: (Any Two) 14

1. Microalgae as marine source of functional food.
2. Biological role of fatty acids derived from any marine source.
3. Nutraceutical potential of carotenoids.

Q.4 a. Attempt the following objective questions as directed: (Any six) 06

1. What is Thalassotherapy?
2. What is cellulite?
3. Give an example of lipid from marine bioresource.
4. Give the application of marine proteins.
5. What are Excipients?
6. Name any one Colorant derived from marine resources.
7. Name any one Emulsifier obtained from marine resources.
8. Give an example of a marine organism used as a source of anti-proliferative drugs.
9. Give an example of a marine organism used as a source of Gelatin.

Q.4 b. Give an account of the following questions: (Any Two) 14

1. Major functions of marine components in cosmetics.
2. Marine secondary metabolites as a bioresource.
3. Skin as a target organ for cosmetics derived from marine resources. Add a note on depigmenting activity of marine derived cosmetics.

Q.5 Write Short notes on the following: (Any four) 20

- a. Coral reefs.
- b. Approved marine drugs as pharmaceuticals.
- c. Marine probiotics.
- d. Biological properties of proteins in functional food.
- e. Single cell analysis in marine bioprospecting.
- f. Cosmeceuticals.