

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 between the edge of continental shelf and the land sea border.
2. Name any one zone of ocean according to penetration of light.
3. Give an example of benthic organisms.
4. Write any one key characteristic of rocky intertidal zone.
5. Give an example of highly productive marine habitat.
6. Name any one antiviral substance isolated from marine organisms.
7. Fill in the blank: Hydrothermal vents comprise microorganisms with distinct metabolism based on _____.
8. Name any one novel technique for culturing of marine bacteria.
9. Name any one strategy used for screening of a metagenomic library.

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

1. Give an account on Deep sea environments.
2. Explain Dinoflagellate and Diatom-derived shellfish poisoning.
3. Elaborate on culture independent gene-targeted methods.

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

1. Cytarabine is an _____ drug.
(Antiviral, Anticancer, Antibacterial)
2. Give any one advantage of marine enzyme based industrial processes.
3. Give an example of marine organism producing thermostable extremozyme.
4. Fill in the blank: The synthetic equivalent of ω -conotoxin MVII A from conus is commercially known as _____.
5. What are Ecteinascidins?

6. What is vidarabine used for?
7. Give example of any one marine natural product in advanced clinical trial.
8. State the name of a water-soluble amino steroid that has potent bactericidal activity against both Gram-positive and Gram-negative bacteria.
9. State the application of pressure tolerant enzyme.

Q.2 b. Answer the following questions: (Any Two) 14

1. Discuss the halotolerance, organic solvent stability and barophilicity of marine extremozymes.
2. With the use of specific example elaborate on the current use of marine microbial enzyme and comment briefly on their research status.
3. Enlist the marine drugs having pharmaceutical applications and elaborate on any two.

Q.3 a. Answer the following objectives as instructed: (Any six) 06

1. Write the full form of PUFA.
2. Give any one use of laminarin.
3. Define probiotics.
4. Fill in the blank: _____ is extractable from crustaceans, being the second most abundant natural polymer.
5. Fill in the blank: EPA stands for _____.
6. Explain the term antioxidant.
7. Give one example of a pigment with anticancer property.
8. What is fucoidan?
9. State true or false: Astaxanthin is an example of polysaccharide.

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

1. Explain in detail seaweeds as potential marine source as functional food ingredients.

2. Write a note on functional foods based on incorporation of marine derived polysaccharides.
3. Elaborate on the role of collagen and gelatin obtained from marine source in nutraceuticals.

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

1. Define Cosmetics.
2. Define Cosmeceuticals.
3. What are Excipients?
4. Give an example of lipid from marine bioresource.
5. Give the application of marine proteins.
6. Name any one pigment 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 Chitin.

Q.4 b. Discuss the following questions: (Any Two) 14

1. Components of cosmetics.
2. Treatment based on Marine resources.
3. Anti-allergic, anti-microbial and anti-wrinkling activities of marine components in cosmetics.

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

- a. Salt marsh ecosystem.
- b. Depigmenting activity of marine derived components of cosmetics.
- c. Challenges faced in isolation of marine natural products.
- d. Nutraceutical potential of COS.
- e. Future trends in functional foods.
- f. Skin as a target organ for cosmetics derived from marine resources.