

2½ Hours

Total Marks: 75

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

Q.1 Select the correct alternative: (Any Fifteen)

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- 1 Dolastatins were first isolated from a sea hare _____.
 - a) *Dolabella auricularia*
 - b) *Disidea avara*
 - c) *Tethya crypta*
 - d) *Bugula neritina*
- 2 Which of the following habitats is considered highly productive?
 - a) Rocky intertidal
 - b) Estuaries
 - c) Hydrothermal vents
 - d) Mudflats
- 3 Domoic acid shows _____ property.
 - a) Anthelmintic
 - b) Anti-inflammatory
 - c) Anticoagulant
 - d) Antioxidant
- 4 Carrageenans can be used as _____.
 - a) Antibiotic
 - b) Anti-inflammatory
 - c) Anticoagulant
 - d) Antioxidant
- 5 Squalamine is used as _____.
 - a) Analgesic
 - b) Antitumor drug
 - c) Antiviral
 - d) Antibiotic
- 6 _____ is a multifunctional bioactive compound that is obtained from the polysaccharide chitin.
 - a) Eicosapentaenoic acid (EPA)
 - b) Chitosan
 - c) Docosahexaenoic acid
 - d) Carotenoids

- 7 _____ is a sulfated polysaccharide which has anticancer activity.
- Fucoidan
 - Lycopene
 - Glucosamine
 - Gelatin
- 8 A live microorganism which is beneficial for gut microflora and restricting the growth of disease causing bacteria is referred to as a _____ strain.
- prebiotic
 - pathogenic
 - probiotic
 - attenuated
- 9 The outermost layer of the epidermis is the _____, a continuous layer of protein-enriched cells embedded in an intercellular matrix enriched in non-polar lipids and organized as lamellar lipid layers.
- stratum corneum
 - hypodermis
 - dermis
 - stratum germinativum
- 10 _____ is one of the most abundant biopolymers in nature after cellulose.
- Starch
 - Alginic acid
 - Gelatin
 - Chitin
- 11 _____ is an example of open system advanced activated sludge treatment.
- Simplex
 - Unox
 - Megox
 - F3O
- 12 _____ is an example of biodegradable waste.
- Plastic bags
 - Glass Bottles
 - Vegetable peels
 - Aluminium cans
- 13 _____ is the major environmental concern associated with incineration of solid waste.
- High cost of land
 - Emission of toxic gases like dioxins and furans
 - Excessive water usage
 - Over reliance on biodegradable waste.

- Q2A) Elaborate on culture independent gene targeted methods. 8
- Q2B) Explain Marine natural products and its challenges. 7
- OR**
- Q2C) Describe the structure, mode of action and applications of Ecteinascidins. 8
- Q2D) Elaborate on antiviral substances isolated from marine microorganisms. 7
- Q3A) Target organ for cosmetics derived from marine resources and add a note on depigmenting activity of marine derived cosmetics. 8
- Q3B) Biological role of soluble calcium and fish collagen and gelatin as an ingredient in nutraceuticals. 7
- OR**
- Q3C) Anti-allergic, anti-microbial and anti-wrinkling activities of marine components of marine components in cosmetics. 8
- Q3D) Therapies based on marine resources. 7
- Q4A) Write a detailed note on Upflow anaerobic sludge blanket reactor.(UASB) 8
- Q4B) Elaborate on various microorganisms involved in aerobic and anaerobic treatment of wastewater. 7
- OR**
- Q4C) Write a note on Fluidised bed bioreactor.(FBBR) 8
- Q4D) What are different types of wastes?How is solid waste classified? 7
- Q5A) What is bioremediation? Explain in situ bioremediation in detail and add a note on Bioremediation of hydrocarbons. 8
- Q5B) Give a brief account on treatment of effluent from dairy industry & vegetable oil industry. 7
- OR**
- Q5C) Discuss phytoremediation: types, applications, and limitations. 8
- Q5D) Give a brief account on bacteriological examination of wastewater with respect to nucleic acid based, biosensor based, Immunological-based methods. 7
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