R0326	Sub. Code
	91BPEL

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Integrated Marine Biology

PROFESSIONAL ENGLISH FOR LIFE SCIENCES – I

(CBCS – 2020 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. ———— glassware with care. (CO1, K3)

   (a) arrange (b) clean

   (c) handle (d) rinse

2. You ———— study for the exam. (CO1, K3)

   (a) dare (b) can

   (c) will (d) must

3. Listening is a ———— process. (CO2, K6)

   (a) passive (b) conscious

   (c) unconscious (d) low

4. ———— refers to the technique when one looks into the document or the text provided for searching some specific text such as some keywords. (CO2, K6)

   (a) reading (b) booking

   (c) scanning (d) skimming

5. Each and every participant in the group should contribute ————. (CO3, K6)

(a) knowledge (b) ideas

(c) money (d) book

6. A ———— gives a visual representation to our ideas and concepts. (CO3, K6)

(a) brain storming (b) mind map

(c) seminar (d) none of the above

7. ———— is the synonym for the word Novel. (CO4, K6)

(a) fiction (b) unique

(c) loyal (d) risk

8. Ravi wrote a letter. (Find out the sentence pattern) (CO4, K6)

(a) SVO (b) SVC

(c) SV (d) ASV

9. For a professional presentation do not have ————. (CO5, K6)

(a) designs (b) quotes

(c) pictures (d) books

10. ———— all information in your own words without looking at the text. (CO5, K6)

(a) read (b) review

(c) recite (d) reflect

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Define Imperative sentence with suitable examples. (CO1, K3)

Or

(b) Prepare a one-minute speech on your favourite book. (CO1, K3)

12. (a) What is the difference between skimming and scanning? (CO2, K6)

Or

(b) How reading description helps the reading? (CO2, K6)

13. (a) What can we develop by listening to Interviews? (CO3, K6)

Or

(b) What are the instructions to be followed during brain storing? (CO3, K6)

14. (a) Describe flowchart with symbols and functions. (CO4, K6)

Or

(b) What are the types of Voices? Define each with proper examples. (CO4, K6)

15. (a) What are the do's and don'ts while preparing a PowerPoint presentation? (CO5, K6)

Or

(b) What are the characteristics of good summary? (CO5, K6)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Explain the usage of model auxiliaries. (CO1, K3)

Or

(b) Write a conversation between teacher and student about the upcoming science exhibition. (CO1, K3)

17. (a) Write a role play between a student and scientist. (CO2, K6)

Or

(b) Explain the terms "Definition", "Single sentence definition" and "Extended Definition". (CO2, K6)

18. (a) Write an essay on Rain water harvesting. (CO3, K6)

Or

(b) What is mind mapping and prepare a mind map of your own? (CO3, K6)

19. (a) Describe the process of making a tea in flowchart. (CO4, K6)

Or

(b) What are connectives and linkers? (CO4, K6)

20. (a) Write an essay on importance on exercise for a healthy life. (CO5, K6)

Or

(b) Write a essay on note taking//note making. (CO5, K6)

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R0327	Sub. Code
	548101

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Integrated Marine Biology

PHYSICAL OCEANOGRAPHY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following.

Objective questions by choosing the correct options.

1. Who made first scientific ocean expedition? (CO1, K1)
   (a) Ferdinand Magellan
   (b) Christopher Columbus
   (c) Vasco da Gama
   (d) Captain George Strong Nares

2. When is the World Oceans Day celebrated? (CO1, K1)
   (a) 5th of June (b) 6th of June
   (c) 7th of June (d) 8th of June

3. The majority of the ocean heat flux is through (CO2, K2)
   (a) Evapo-transpiration
   (b) Advection
   (c) Evaporation
   (d) None of the above

4. The density of the sea water is (CO2, K1)

(a) 2000 kg/m^3 (b) 2057 kg/m^3

(c) 1027 kg/m^3 (d) 1000 kg/m^3

5. What is the Ekman spiral? (CO2, K1)

(a) Current (b) Waves

(c) Tide (d) Other

6. Most ocean waves are formed by (CO3, K2)

(a) Landslides

(b) Wind

(c) Impacts of cosmic bodies

(d) Earthquakes

7. Global warming also refers to as (CO3, K2)

(a) Climate change

(b) Ecological change

(c) Atmosphere change

(d) None of the above

8. The El-Nino Phenomenon occurs in (CO4, K1)

(a) Atlantic Ocean (b) Pacific Ocean

(c) Indian Ocean (d) Arctic Ocean

9. What is the unit to measure air pressure in the metric system? (CO4, K1)

(a) Millibar

(b) Bytes

(c) Gravitational force

(d) None of the above

10. Which of the following are rain bearing clouds? (CO5, K1)

(a) Cumulus (b) Alto

(c) Nimbus (d) Stratus

Part B ($5 \times 5 = 25$)

Answer **all** the questions not more than 500 words each.

11. (a) Explain about challenger expedition and it findings. (CO1, K2)

Or

(b) Write a note on oceanographic institutes in India. (CO1, K2)

12. (a) How do we measure depth of the ocean? (CO2, K3)

Or

(b) Discuss about properties of sea ice. (CO2, K2)

13. (a) How ocean waves behave near the coast? (CO3, K1)

Or

(b) Write a note on Geostrophic current. (CO3, K2)

14. (a) Discuss about types of estuaries. (CO4, K2)

Or

(b) Give an account on greenhouse gases. (CO4, K2)

15. (a) Write a note on the atmospheric composition. (CO5, K2)

Or

(b) Describe about tropical cyclone. (CO5, K2)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Write a note on historical review of development of Oceanography. (CO1, K2)

Or

(b) Describe in detail about modern development in ocean science. (CO1, K2)

17. (a) Explain about seawater, Temperature, Pressure and Density. (CO2, K1)

Or

(b) Give an account on dissolved and suspended properties of seawater. (CO2, K2)

18. (a) Write an essay on tidal current. (CO3, K1)

Or

(b) List out boundary currents and describe it.(CO3, K2)

19. (a) Explain about ENSO and how it affects Indian Monsoon. (CO4, K1)

Or

(b) Give an account global warming impact on marine environment. (CO4, K1)

20. (a) Write an essay on satellite oceanography. (CO5, K5)

Or

(b) Give an account on types of cloud. (CO5, K2)

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R0328	Sub. Code
	2MB1A1

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Integrated Marine Biology

Allied – GENERAL CHEMISTRY – I

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. Bronze is an alloy of (CO1, K2)

   (a) Copper and Nickel

   (b) Copper and iron

   (c) Copper and Tin

   (d) Copper and Aluminium

2. Brass is an alloy of (CO1, K2)

   (a) Copper and tin

   (b) Copper and nickel

   (c) Copper and Aluminium

   (d) Copper and zinc

3. The green colour of Plants is due to _____ Pigment. (CO2, K2)

(a) Chlorophyll (b) Haeme pigment

(c) Heparin (d) Hepatic cell

4. Among the following which are ambidentate ligands? (CO2, K2)

(i) SCN (ii) NO^3

(iii) NO^{2-} (iv) $C2O_4^{2-}$

(a) (i) and (iii) (b) (i) and (iv)

(c) (ii) and (iii) (d) (ii) and (iv)

5. What is the valency of carbon? (CO3, K3)

(a) 1 (b) 2

(c) 3 (d) 4

6. Which of the following compounds can exhibit geometrical isomerism? (CO3, K3)

(a) 1-Hexene

(b) 2-Methyl-2Penetene

(c) 3-mythyl-1-penetene

(d) 2-Hexene

7. A polypeptide chain contains two terminals-one carboxyl-terminal (C terminal) and the other amino-terminal (N terminal). Which of the following is true? (CO4, K2)

(a) N terminal is synthesized last during translation

(b) C terminal is synthesized first during translation

(c) N terminal is represented on the right side and C terminal on the right side

(d) N terminal is represented on the left side and C terminal on the right side

8. Deficiency of vitamin A causes (CO4, K2)

(a) Xeropthalmia

(b) Hypoprothrombinemia

(c) Megaloblastic anemia

(d) Pernicious anemia

9. Which of the following represents natural rubber chemically? (CO5, K2)

(a) cis 1,4-polyisoprene

(b) trans 1,4- polyisoprene

(c) cis 1,3- polyisoprene

(d) trans 1,3- polyisoprene

10. Which is a natural fibre? (CO5, K3)

(a) Silk (b) Nylon

(c) Rayon (d) All of these

Part B ($5 \times 5 = 25$)

Answer **all** questions nor more than 500 words each.

11. (a) Illustrate the general methods of Ore dressing. (CO1, K2)

Or

(b) List out the important application of alloys copper and nickel. (CO1, K2)

12. (a) Explain the following with suitable example.

(i) Application of chelate formation (CO2, K2)

(ii) Classification of ligands

Or

(b) Differentiate coordination complexes with normal compounds. (CO2, K2)

13. (a) Define Homolytic bond fission. (CO3, K3)

Or

(b) Illustrate any two polymerization with specific example. (CO3, K3)

14. (a) Explain three different types of carbohydrates with examples. (CO4, K2)

Or

(b) How are vitamins classified? Explain its deficiency causes (CO4, K2)

15. (a) Differentiate cationic and anionic detergents. (CO5, K3)

Or

(b) Compare the salient features of thermoplastics and thermosetting plastics. (CO5, K3)

Part C ($5 \times 8 = 40$)

Answer **all** questions nor more than 1000 words each.

16. (a) Describe the synthesis, properties and uses of silicones. (CO1, K2)

Or

(b) Account the following: (CO1, K2)

(i) Water gas:

(ii) Producer gas

(iii) Biodegradable polymers

17. (a) Explain the following with suitable example (CO2, K2)

(i) Effective atomic number rule

(ii) Classification of ligands

Or

(b) Discuss in detail about structure and biological role of hemoglobin. (CO2, K2)

18. (a) Briefly explain with suitable example about stabilities of carbocations and carboanions.(CO3, K3)

Or

(b) Discuss about sp3, sp2 and sp hybridization of carbon with suitable example. (CO3, K3)

19. (a) Describe the following with suitable example.

(i) Analgesics

(ii) Antibacterials (CO4, K3)

Or

(b) Explain salient feature about interconversion of glucose and fructose. (CO4, K2)

20. (a) Discuss the following (CO5, K3)

(i) Nylon - 66;

(ii) Nepprene;

(iii) Shampoo

Or

(b) Differentiate Natural and synthetic rubber with suitable examples. (CO5, K3)

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R0329	Sub. Code
	548301

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Integrated Marine Biology

BIOLOGICAL OCEANOGRAPHY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. Tiny marine organisms that drift with the water currents are known as (CO1, K2)

   (a) Nekton (b) Pelagic

   (c) Benthos (d) Plankton

2. The ———————— zone refers to the water column that is not in close proximity to the bottom or shore of the sea. (CO1, K2)

   (a) Pelagic (b) Benthic

   (c) Coastal (d) Oceanic

3. The Arabian Sea generally has ———————— primary productivity compared to the Bay of Bengal due to the upwelling phenomenon. (CO2, K2)

   (a) Lower (b) Similar

   (c) Higher (d) Variable

4. Which of the following zones in the ocean is most conducive to phytoplankton growth due to adequate light penetration? (CO2, K3)

(a) Abyssal (b) Benthic

(c) Epipelagic (d) Hadal

5. The migration of zooplankton from deeper layers of water towards the surface during the night is termed as: (CO3, K1)

(a) Horizontal migration

(b) Vertical migration

(c) Diurnal migration

(d) Lateral migration

6. Copepods, a major component of zooplankton, belong to which larger group? (CO3, K2)

(a) Molluscs (b) Crustaceans

(c) Echinoderms (d) Cnidarians

7. Seagrasses are primarily found in which zone of the marine environment? (CO4, K1)

(a) Intertidal (b) Littoral

(c) Sublittoral (d) Pelagic

8. Which of the following life cycle stages is NOT associated with economically important seaweeds? (CO4, K2)

(a) Gametophyte (b) Sporophyte

(c) Tetrasporophyte (d) Saprophyte

9. Barnacles attaching to the shell of a turtle is an example of (CO5, K1)

(a) Epizoism (b) Mutualism

(c) Inquilinism (d) Endoceism

10. An organism that lives within the habitat of another organism without causing it any harm is involved in: (CO5, K1)

(a) Endoceism (b) Inquilinism

(c) Phoresis (d) Parasitism

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Assess the ecological importance of the coastal zones in supporting marine biodiversity. (CO1, K2)

Or

(b) Compare the characteristics and inhabitants of the benthic and pelagic regions of the marine environment. (CO1, K1)

12. (a) Evaluate the various methods of estimating marine primary productivity. (CO2, K5)

Or

(b) Interpret the influence of regional differences in marine primary production. (CO2, K2)

13. (a) Write a short note on the taxonomic classification of zooplankton. (CO3, K2)

Or

(b) Determine the main factors influencing zooplankton distribution in the oceans (CO3, K6)

14. (a) Evaluate the economic importance of seaweeds. (CO4, K2)

Or

(b) Determine the primary ecological roles of saltmarsh vegetation in maintaining coastal ecosystems. (CO4, K2)

15. (a) Explain the differences between mutualism and commensalism. (CO5, K2)

Or

(b) Write short notes on endoceism and inquilinism, (CO5, K2)

Part C ($5 \times 8 = 40$)

Answer **all** the questions not more than 1000 words each.

16. (a) Evaluate the significance of plankton in marine food webs and their influence on marine ecosystems. (CO1, K2)

Or

(b) Justify the need for conserving marine biodiversity. (CO1, K2)

17. (a) Determine the main factors that can influence the distribution of phytoplankton within oceanic waters. (CO2, K5)

Or

(b) Compare the Red Tide phenomenon and Harmful Algal Blooms in terms of their causes and potential impacts on marine ecosystems. (CO2, K6)

18. (a) Evaluate the various methods available for estimating secondary production and discuss their respective merits and demerits. (CO3, K5)

Or

(b) Measure the influence of zooplankton as bio-indicators, especially in relation to environmental changes and pollution. (CO3, K5)

19. (a) Write short notes on the occurrence and distribution of seaweeds in India, emphasizing their economic significance. (CO4, K2)

Or

(b) Justify the need for conservation efforts targeted at mangroves and the potential consequences of their loss. (CO4, K2)

20. (a) Assess the adaptive advantages and potential drawbacks of parasitism for both host and the parasite in marine ecosystem. (CO5, K6)

Or

(b) Evaluate the ecological significance of symbiosis in marine environments and discuss how they contribute to biodiversity and ecosystem stability. (CO5, K1)

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R0330	Sub. Code
	548302

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Integrated Marine Biology

INVERTEBRATES

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions the following objective questions by choosing the correct option.

1. Which of the following is NOT a characteristic of Protozoa's life history? (CO1, K1)

   (a) Complex life cycle

   (b) Alterations of generation

   (c) Encystment

   (d) Spore formation

2. Which of the following theory suggest that coral reefs are formed by slow growth and skeleton accumulation? (CO1, K1)

   (a) Evolutionary theory

   (b) Continental drift theory

   (c) Atoll theory

   (d) Subsidence theory

3. ———————— is a unique reproductive strategy observed in Endoprocta (CO2, K2)

(a) Hermaphroditism

(b) Parthenogenesis

(c) External fertilization

(d) Viviparity

4. Brachiopoda are distinguishable from mollusks by their (CO2, K3)

(a) Bilateral symmetry

(b) Bivalve shell morphology

(c) Radial symmetry

(d) Presence of a lophophore

5. The larval form characterized by a distinct nauplius eye, in crustaceans is called (CO3, K1)

(a) Zoea (b) Mysis

(c) Copepod (d) Megalopa

6. Polychaetes occupy a wide variety of habitats that indicates (CO3, K4)

(a) Asexual reproduction

(b) Viviparity

(c) Adaptive radiation

(d) External fertilization

7. The process of torsion in gastropods involves (CO4, K2)

(a) Coiling of the shell

(b) Formation of a radula

(c) Development of a siphon

(d) Fusion of the valves

8. The embryonic stage is characterized by the development of a ciliated and free-swimming larva in mollusks is called (CO4, K2)

(a) Trochophore (b) Radul

(c) Veliger (d) Glochidium

9. Echinoderms exhibit a unique form of larval development is known as (CO5, K1)

(a) Trochophore larvae

(b) Planula larvae

(c) Bipinnaria larvae

(d) Dipleurula larvae

10. In prochordates, reproduction typically involves the release of (CO5, K3)

(a) Larvae (b) Gamete

(c) Live young (d) Asexual buds

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Discuss the classification and reproductive strategies of Protozoa. (CO1, K5)

Or

(b) Summarize the polymorphism in Coelenterates. (CO1, K1)

12. (a) Explain the evolutionary importance of Phoronida and Pogonophora. (CO2, K2)

Or

(b) Elaborate the morphology of Brachiopoda. (CO2, K6)

13. (a) Explain the general character of crustaceans. (CO3, K5)

Or

(b) Examine various feeding methods in polychaete. (CO3, K4)

14. (a) Illustrate the process of pearl formation in bivalves. (CO4, K2)

Or

(b) Discuss the evolutionary origin of the phylum Mollusca. (CO4, K5)

15. (a) List out general characters of phylum Echinodermata. (CO5, K1)

Or

(b) Demonstrate the larval metamorphosis in Prochordata. (CO5, K2)

Part C

$(5 \times 8 = 40)$

Answer ALL the questions by choosing not more than 1000 words each.

16. (a) Explain the life cycle and distribution of corals. (CO1, K2)

Or

(b) Discuss morphology and reproductive behavior of Cnidarians. (CO1, K6)

17. (a) Assess embryonic development of Chaetognaths and its significance. (CO2, K2)

Or

(b) Explain the phylum Brachiopoda and classify up to class. (CO2, K5)

18. (a) Explain the appendages types of crustaceans. (CO3, K5)

Or

(b) Elaborate adaptive radiation in polychaetes with examples. (CO3, K6)

19. (a) List out the general characteristics of the phylum Mollusca and Classify it up to class with one example of each. (CO4, K1)

Or

(b) Illustrate the process of torsion and detorsion in gastropods. (CO4, K2)

20. (a) Demonstrate the water vascular system of Echinoderms. (CO5, K2)

Or

(b) Distinguish morphology of Urochordata and Cephalochordata. (CO5, K4)

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R0331	Sub. Code
	2MB3A1

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Integrated Marine Biology

Allied – BOTANY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. The female sex organ in Polysiphonia (CO1, K1)
   (a) Carpogonium (b) Sapermatium
   (c) Archegonium (d) Gynophore

2. Member of basidiomycetes (CO1, K1)
   (a) Polyporus (b) Agaricus
   (c) Ganoderma (d) All the above

3. Venter is a part of (CO2, K2)
   (a) Antheridium (b) Archegonium
   (c) Sporophyte (d) Gemma

4. Bunchy top of Banana is a (CO2, K2)
   (a) Viral disease (b) Bacterial disease
   (c) Fungal disease (d) None of the above

5. Pteridophyte plant (CO3, K2)

(a) Amphibions (b) Vascular cryptogams

(c) Land plants (d) Both (b) and (c)

6. Resurrection Plant (CO3, K2)

(a) Selaginella (b) Lycopodium

(c) Marsilea (d) Rhynia

7. Tallest tree species of a gymnosperm (CO4, K2)

(a) Sequoia (b) Archegoniurn

(c) Sporophyte (d) Gernma

8. Winged pollengrain found in _____. (CO4, K2)

(a) Cycas (b) Podocarpus

(c) Pinus (d) Taxus

9. An elongated cell with tapering end is termed (CO5, K2)

(a) Collenchyma (b) Sclerenchyma

(c) Vessel (d) Tracheid

10. Study of annual rings (CO5, K2)

(a) Palyontology (b) Dendrochronology

(c) Palynology (d) Pterology

Part B ($5 \times 5 = 25$)

Answer **all** the questions not more than 500 words each.

11. (a) Discuss the general characters of Algae. (CO1, K1)

Or

(b) Explain the *Usnea* apothecium. (CO1, K1)

12. (a) Describe the life history of *Polytrichum*. (CO2, K2)

Or

(b) Give an account of Bunchy top banana disease. (CO2, K2)

13. (a) Write about the external features of Selaginella. (CO3, K2)

Or

(b) Draw and describe the internal structure of Selaginella stem. (CO3, K2)

14. (a) Explain the internal structure of *Pinus* needle. (CO4, K2)

Or

(b) Discuss the xerophytic features of *Pinus*. (CO4, K2)

15. (a) Write short notes on: (CO5, K2)

(i) Parenchyma

(ii) Sclerenchyma

Or

(b) Summarize secondary thickening in monocot stem. (CO5, K2)

Part C ($5 \times 8 = 40$)

Answer **all** the questions not more than 1000 words each.

16. (a) Discuss the life history of *Polysiphonia*. (CO1, K1)

Or

(b) Write an essay on reproduction and nutrition of *Usnea*. (CO1, K1)

17. (a) Describe the *Polytrichum* sporophgyte with neat labeled diagram. (CO2, K2)

Or

(b) Explain the causal organism, symptoms and control measures of Citrus canker. (CO2, K2)

18. (a) List out the general characters of Pteridophytes. (CO3, K2)

Or

(b) Summarize the life history of Selaginella. (CO3, K2)

19. (a) Explain the structure of *Pinus* male cone. (CO4, K2)

Or

(b) Write an essay on reproduction of *Pinus*. (CO4, K2)

20. (a) Give an elaborate account on Permanent tissues. (CO5, K2)

Or

(b) Summarize secondary thickening in Dicot stem. (CO5, K2)

———————