R2065	Sub. Code
	91BPEL

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Integrated Marine Biology

PROFESSIONAL ENGLISH FOR LIFE SCIENCES – I

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

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

1. The basic objective of group work is ————————. (CO1, K3)

   (a) readjustment

   (b) problem solving

   (c) members of the group

   (d) remediation

2. To develop speaking skill ———————— is the least important characteristics. (CO1, K3)

   (a) to discuss a topic

   (b) listen to what child has to say patiently

   (c) ask child to answer questions

   (d) provide full opportunity to present his/her views

3. The drawbacks of the role play method is ————————. (CO2, K6)

(a) monotonous method

(b) lapse of time

(c) slow learning process

(d) lack of concentration

4. How do you integrate comparison and contrast essays into other essays? (CO2, K6)

(a) Determine the purpose

(b) Clearly introduce

(c) Briefly inform

(d) Organize points

5. Which of these essays tell a story? (CO3, K6)

(a) descriptive essays

(b) narrative essays

(c) reflective essays

(d) argumentative essays

6. Which kind of interview includes a process in which the employability of the job applicant is evaluated? (CO3, K6)

(a) group interview

(b) stress interview

(c) screening interview

(d) behavioural interview

7. The narrator advises the reader to write in order to ————————. (CO4, K6)

(a) encourage him to become a writer

(b) earn a livelihood

(c) showoff his intelligence to others

(d) make him famous among his people

8. Which one of the following is NOT a good small talk topic? (CO4, K6)

(a) movies

(b) food

(c) religion

(d) sports

9. Which view in PowerPoint can be used to enter speaker comments? (CO5, K6)

(a) slide show

(b) slide shorter

(c) normal

(d) notes page view

10. What are the elements of creative writing? (CO5, K6)

(a) character, setting and language

(b) plot, structure and action

(c) issues, narration, dialogue and style

(d) all the above

Part B (5 × 5 = 25)

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

11. (a) Develop a story of your own by observing the below picture. (CO1, K3)

Or

(b) Do the outcomes of the pair work and small group work vary? Elucidate. (CO1, K3)

12. (a) Draw a flow chart on the process of rain water harvesting. (CO2, K6)

Or

(b) Give a brief passage on the description of a electronic gadget you prefer. (CO2, K6)

13. (a) What are the major aspects to be kept in mind while listening to an specialist's interview? (CO3, K6)

Or

(b) How to prepare for a group discussion? (CO3, K6)

14. (a) Listening to lectures helps in developing strategic competence. Explain. (CO4, K6)

Or

(b) List out the key points in writing recommendations interpreting visual inputs. (CO4, K6)

15. (a) Differentiate professional ethics and professional competence. (CO5, K6)

Or

(b) Write a passage on your Favourite Place to travel. (CO5, K6)

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

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

16. (a) Write the facts about any contemporary social issue and discuss your opinions on it. (CO1, K3)

Or

(b) Abbreviate LSRW and explain each of the skills in detail. (CO1, K3)

17. (a) Compare and contrast the usage of internet doom scrolling by kids. (CO2, K6)

Or

(b) What is free writing? What advantage does it facilitate? (CO2, K6)

18. (a) Draw a mind map on the negotiation of budget allotment for a super market. (CO3, K6)

Or

(b) List out the factors to be kept in mind while writing an essay. (CO3, K6)

19. (a) How does listening to lectures develop an efficient communication? Explain. (CO4, K6)

Or

(b) Write a short talk to be delivered on the inauguration of a sports club. (CO4, K6)

20. (a) Identify a contemporary social problem and give a solution of your own. (CO5, K6)

Or

(b) Write a motivational article on life skills. (CO5, K6)

———————

R2066

Sub. Code
548101

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

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 type questions by choosing the correct option.

1. Which expedition is considered a major milestone in the history of oceanography? (CO1, K2)

   (a) The Lewis and Clark Expedition

   (b) The Challenger Expedition

   (c) The Apollo Mission

   (d) The Mayflower Voyage

2. Which field of study focuses on the description of the physical, chemical and biological characteristics of the ocean? (CO1, K2)

   (a) Hydrology (b) Ecology

   (c) Oceanography (d) Climatology

3. What is the primary driving force behind the movement of ocean currents? (CO2, K2)

   (a) Earth's rotation (b) Solar radiation

   (c) Wind patterns (d) Water density differences

4. Which current is known as the “global conveyor belt”? (CO2, K2)

(a) Gulf Stream

(b) Kuroshio Current

(c) Antarctic Circumpolar Current

(d) Thermohaline circulation

5. In which unit the salinity of seawater is usually expressed? (CO3, K2)

(a) Percentage (%)

(b) Milligrams per liter (mg/L)

(c) Parts per thousand (ppt)

(d) Grams per liter (g/L)

6. Which type of tide has two high tides and two low tides each day? (CO3, K2)

(a) Diurnal Tide (b) Semidiurnal Tide

(c) Mixed Tide (d) Spring Tide

7. What term is used for the mixing zone of fresh water and salt water? (CO4, K4)

(a) Lagoon (b) Delta

(c) Estuary (d) Fjord

8. Which of the following is a primary factor affecting coastal erosion? (CO4, K4)

(a) Sea level rise (b) Air pressure

(c) Cloud cover (d) Inland wind patterns

9. What does ENSO stand for in the context of meteorology? (CO5, K4)

(a) Equatorial Neutral Sea Oscillation

(b) El Niño Southern Oscillation

(c) Eastern Northern Storm Oscillation

(d) Equatorial Northern Storm Oscillation

10. What is the main effect of increased greenhouse gases in the atmosphere? (CO5, K4)

(a) Cooling of the Earth's surface

(b) Increase in volcanic activity

(c) Warming of the Earth's atmosphere

(d) Reduction in sea level

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

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

11. (a) Discuss the significance of the Challenger Expedition in the development of modern oceanography. (CO1, K2)

Or

(b) Explain the contributions of early ocean explorers to the field of oceanography. (CO1, K2)

12. (a) Describe the primary forces that drive ocean currents and their global impact. (CO2, K2)

Or

(b) Explain the role of the Coriolis effect in the formation and direction of ocean currents. (CO2, K2)

13. (a) Discuss the factors that influence the salinity of seawater in different parts of the ocean. (CO3, K2)

Or

(b) Compare and contrast the formation and characteristics of spring tides and neap tides. (CO3, K2)

14. (a) Explain the ecological importance of estuaries and their role in coastal ecosystems. (CO4, K4)

Or

(b) Discuss the impact of sea level rise on coastal wetlands and mudflats. (CO4, K4)

15. (a) Describe the El Niño Southern Oscillation (ENSO) and its effects on global weather patterns. (CO5, K4)

Or

(b) Explain how greenhouse gases contribute to global warming and the resulting climate change. (CO5, K4)

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

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

16. (a) Provide a detailed account of the major milestones in the history of oceanography, highlighting the contributions of key expeditions and scientific advancements. (CO1, K2)

Or

(b) Analyze the impact of technological advancements on the study of oceanography, from early exploration tools to modern satellite and remote sensing technologies. (CO1, K2)

17. (a) Discuss the global conveyor belt (thermohaline circulation) in detail, explaining its mechanisms, significance, and impact on global climate systems. (CO2, K2)

Or

(b) Evaluate the effects of major ocean currents, such as the Gulf Stream and the Kuroshio Current, on the climate and weather patterns of adjacent coastal regions. (CO2, K2)

18. (a) Explain the physical and chemical properties of seawater, including salinity, temperature and density, and their relevance to oceanographic studies. (CO3, K2)

Or

(b) Describe the formation, characteristics, and impact of different types of ocean waves, including wind-generated waves, tsunamis, and tidal waves. (CO3,K2)

19. (a) Discuss the processes and factors that influence the formation and development, of estuaries and coastal wetlands. (CO4, K4)

Or

(b) Analyze the impact of human activities, such as urban development and pollution, on estuaries, coastal wetlands, and mudflats, and suggest potential conservation measures. (CO4, K4)

20. (a) Describe the principles of meteorology, including the general circulation of the atmosphere. and their importance in understanding weather patterns and climate. (CO5,K4)

Or

(b) Evaluate the impact of global warming oceanic and atmospheric processes, and discuss the potential long-term effects on global climate and sea level rise. (CO5, K4)

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R2067	Sub. Code
	2MB1A1

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Integrated Marine Biology

Allied — GENERAL CHEMISTRY — I

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

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

1. Siderite is the ore of (CO1, K1)

   (a) Aluminium (b) Iron

   (c) Copper (d) Zinc

2. An example of a biodegradable polymer is (CO1, K2)

   (a) Nylon-6, 6 (b) Buna-S

   (c) Nylon-2-nylon-6 (d) Nylon-6

3. The correct combination of metal, number of carbonyl ligands, and the charge for a metal carbonyl complex $[M(CO)_x]^{z-}$ that satisfies the 18 electron rule is (CO2, K1)

   (a) M = Ti, $x = 6$, $z = 1$

   (b) M = M*o*, $x = 6$, $z = 1$

   (c) M = C*o*, $x = 6$, $z = 1$

   (d) M = V, $x = 6$, $z = 1$

4. ———————— is non-covalently bound to the globin chain of Hb and transports carbon dioxide in the blood. (CO2, K2)

(a) Oxyhaemoglobin

(b) Deoxyhaemoglobin

(c) Carbaminohaemoglobin

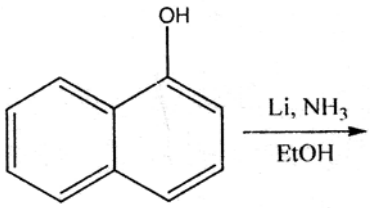
(d) Methemoglobin

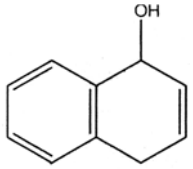
5. The hybridization of carbon in carbon dioxide is (CO3, K3)

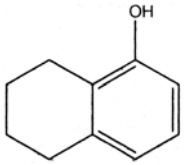
(a) sp (b) sp^3

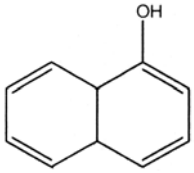
(c) sp^2 (d) None of these

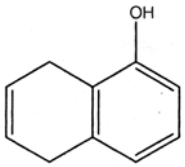
6. The product formed in the reaction will be (CO3, K3)



(a) 

(b) 

(c) 

(d) 

7. The pH at which a particular molecule carries no net electrical charge is called as (CO4, K2)

(a) Isotopic effect (b) Isoelectric point

(c) Zwitterion (d) Hydrating effect

8. Tincture of iodine is used as (CO4, K2)

(a) Antiseptic (b) Analgesic

(c) Disinfectant (d) Antidepressant

9. The monomers of Dacron are (CO5, K2)

(a) Decane and decanol

(b) Decanone and decanol

(c) Ethylene glycol and terephthalic acid

(d) Ethylene glycol and phthalic acid

10. Which of the following is a cationic detergent? (CO5, K3)

(a) Cetyl trimethyl ammonium bromide

(b) Sodium dodecylbenzene sulphonate

(c) Sodium lauryl sulphate

(d) Sodium stearate

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

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

11. (a) Discuss the different methods of metal refining. (CO1, K2)

Or

(b) Compare the alloys and amalgams. (CO1, K2)

12. (a) Write the IUPAC name of the following complexes (CO2, K2)

(i) $[CrCl_2(H_2O)_4]Cl$

(ii) $K_3[Fe(CN)_5NO]$

(iii) $[Fe(C_5H_5)_2]$

(iv) $Na_3[Ag(S_2O_3)_2]$

(v) $[Cr(C_6H_6)_2]$

Or

(b) Explain in detail about the biological roles of hemoglobin. (CO2, K2)

13. (a) Discuss the shapes of molecules by VSEPR theory. (CO3, K3)

Or

(b) Describe in detail the bond fission. (CO3, K3)

14. (a) Explain the classifications of amino acids with suitable examples. (CO4, K2)

Or

(b) Discuss the classification of carbohydrates with examples. (CO4, K2)

15. (a) Discuss the different synthesis methods of styrene-butadiene rubber and its applications. (CO5, K3)

Or

(b) Discuss the properties of bakelite and dacron. (CO5, K2)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 100 words each.

16. (a) Discuss the preparation and properties of silicones. Give its applications. (CO1, K2)

Or

(b) Discuss the preparation and application of water, natural and producer gases in detail. (CO1, K2)

17. (a) Explain various types of structural and stereoisomerism in organic compounds with suitable examples. (CO2, K2)

Or

(b) What are chelating agents? Explain the process of chelation with a suitable example. (CO2, K2)

18. (a) Explain in detail about the hybridization of orbitals in carbon. (CO3, K3)

Or

(b) (i) Compare the substitution and addition reactions.

(ii) Describe the types of organic reactions with suitable examples. (CO3, K3)

19. (a) What is chemotherapy? Explain in detail about analgesics, antivirals, anesthetics, and antibiotics with suitable examples. (CO4, K2)

Or

(b) Discuss the classification of vitamins based on solubility in oil and water with suitable examples. (CO4, K2)

20. (a) Discuss the preparation and uses of urea-formaldehyde resin. Teflon, and nylon-6,6. (CO5, K3)

Or

(b) Describe in detail the classification of surface active agents with examples. (CO5, K2)

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R2068

Sub. Code
548301

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

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. What is called as the base of marine food web? (CO1,K2)

   (a) Seagrass

   (b) Macroalgae

   (c) Phytoplankton

   (d) Zooplankton

2. Which ocean zone is characterized by the absence of sunlight and extreme pressure under the depth of 200m -1000 m? (CO1,K2)

   (a) Epipelagic

   (b) Mesopelagic

   (c) Bathypelagic Zone

   (d) Abyssopelagic Zone

3. Which type of photosynthetic bacteria also known as blue-green algae, are often the cause of algal blooms in freshwater and occasionally in marine water? (CO2, K2)

(a) Cyanobacteria

(b) Proteobacteria

(c) Acetobacter

(d) Agrobacterium

4. The Red tide in marine ecosystem is mainly caused by? (CO2,K2)

(a) Copepod

(b) Dinoflagellates

(c) Bacteria

(d) Virus

5. Which animal contribute to carbon sequestration through the lipid pump? (CO3, K4)

(a) Copepods

(b) Molluses

(c) Arthropods

(d) Tunicates

6. Which method is commonly used to assess zooplankton populations studies? (CO3, K4)

(a) Genetic sequencing

(b) Satellite imagery

(c) Plankton net sampling and microscopic analysis

(d) Acoustic monitoring

7. How do mangrove root systems specifically contribute to reducing coastal erosion during storm events? (CO4, K4)

   (a) By creating high water turbulence that disperses sediments

   (b) By forming a dense network of roots that physically stabilizes the shoreline

   (c) By increasing wave energy through their surface structures

   (d) By accelerating the decomposition of coastal sediments

8. Which seaweed species is the example for Phaeophyta? (CO4, K4)

   (a) Sargassum sp

   (b) Kappaphycus sp

   (c) Ulva sp

   (d) Codium sp

9. Which type of marine parasite is present in marine mammals? (CO4, K2)

   (a) Nematodes

   (b) Phytoplankton

   (c) Fungi

   (d) All of the above

10. The relationship between clownfish and sea anemones comes under? (CO4, K2)

   (a) Mutualism

   (b) Commensalism

   (c) Parasitism

   (d) Competition

Part B (5 × 5 = 25)

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

11. (a) Define plankton and nekton and describe their respective roles in marine ecosystems. (CO1, K2)

Or

(b) Explain how the pelagic and benthic zones interact, focusing on the transfer of nutrients, energy, and organisms between these zones. (CO1 ,K2)

12. (a) Give an account of the factors affecting primary productivity of Phytoplankton. (CO2, K2)

Or

(b) Explain how Harmful Algal Blooms affect marine organisms. (CO2, K2)

13. (a) Explain the methods of estimation of secondary production of zooplankton. (CO3, K4)

Or

(b) Determine the Horizontal and Vertical distribution of Zooplankton. (CO3, K4)

14. (a) Describe the key morphological features of Seagrasses. (CO4, K4)

Or

(b) Explain why Mangrove ecosystems are important to conserve, including their role in coastal protection and biodiversity. (CO4, K4)

15. (a) Define Endoecism and describe its role in marine ecosystems. (CO5, K2)

Or

(b) Analyze the broader impacts of parasitism on marine ecosystems, including potential benefits and drawbacks. (CO5, K2)

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

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

16. (a) Analyze the importance of Marine diversity for ecosystem stability, resilience, and functionality. (CO1, K2)

Or

(b) Write an essay on divisions of Marine environment. (CO1, K2)

17. (a) Discuss in detail on the factors affecting Primary productivity of phytoplankton. (CO2, K2)

Or

(b) Write an essay on Red tide phenomena and its causes. (CO2, K2)

18. (a) Describe in detail on Zooplankton as bio indicators. (CO3, K4)

Or

(b) Discuss on the regional difference in secondary production of Zooplankton with special reference to Bay of Bengal and Arabian Sea. (CO3, K4)

19. (a) Explain in detail about the biodiversity and distribution of seaweed in Indian coast. (CO4, K4)

Or

(b) Write an account on the ecological importance of Salt marsh and Sand dunes vegetation. (CO4, K4)

20. (a) Explain the interaction mechanism of Mutualistic and Commensal relationships in marine environments with one example for each association. (CO5, K2)

Or

(b) Write in detail about Endoecism and Inquilinism in Marine Environment. (CO5, K2)

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R2069

Sub. Code
548302

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Integrated Marine Biology

INVERTEBRATES

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

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

1. What are sponges primarily known for? (CO1,K2)

   (a) Filter feeding

   (b) Photosynthesis

   (c) Predation

   (d) Flight

2. What is the primary mode of nutrition for protozoa? (CO1,K2)

   (a) Autotrophy

   (b) Heterotrophy

   (c) Chemotrophy

   (d) Phototrophy

3. What is the primary diet of chaetognatha? (CO2,K2)

(a) Plankton

(b) Coral

(c) Algae

(d) Detritus

4. What type of symmetry do brachiopoda typically exhibit? (CO3,K2)

(a) Bilateral

(b) Radial

(c) Asymmetrical

(d) Spiral

5. Which of the following is a characteristic feature of crustacea? (CO3,K2)

(a) Chitinous exoskeleton

(b) Endoskeleton made of bones

(c) Soft, gelatinous body

(d) Internal shell

6. What type of appendages do polychaeta use for movement? (CO4,K3)

(a) Pseudopodia

(b) Tentacles

(c) Parapodia

(d) Siphons

7. What is the primary characteristic feature of mollusc? (CO4,K3)

(a) Segmented body

(b) Radial symmetry

(c) Mantle and shell

(d) Jointed appendages

8. What is torsion in mollusc primarily associated with? (CO5,K2)

(a) Shell formation

(b) Feeding behaviour

(c) Reproductive organs

(d) Body orientations

9. What unique feature do echinoderms possess? (CO5,K2)

(a) Exoskeleton

(b) Water vascular system

(c) Gills

(d) Suction cup feet

10. What is a characteristic feature of prochordates? (CO5,K2)

(a) Notochord

(b) Exoskeleton

(c) Endoskeleton

(d) Jointed appendages

Part B (5 × 5 = 25)

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

11. (a) Explain the Structure of Ecosystem and its Formation. (CO1,K2)

Or

(b) Write a detailed note on the Coral reefs distribution. (CO1,K2)

12. (a) Discuss the Brachiopod Classification and Morphology. (CO2,K3)

Or

(b) Explain the Endoprocta and Ectoprocta. (CO2,K2)

13. (a) Write an account on the Evolution of Polychacta. (CO3,K2)

Or

(b) Explain the general characters of Crustacean. (CO3,K2)

14. (a) Give short notes on Torsion. (CO4,K3)

Or

(b) Explain the adaptive radiation of Bivalves. (CO4,K3)

15. (a) Give an detailed account on Prochordata. (CO5,K2)

Or

(b) Write the Salient features in Echinodermata. (CO5,K2)

Part C (5 × 8 = 40)

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

16. (a) Give an elaborate account on general characters of Protozoa and Cnidarians. (CO1,K2)

Or

(b) Explain the phylogenetic relationship of Protozoa and sponges. (CO1,K2)

17. (a) Explain the detailed account of the classification and distribution of Chaetognatha. (CO2,K2)

Or

(b) Give an account of general characters and morphology in Brachiopods. (CO2,K3)

18. (a) Describe in detailed about Crustacean taxonomy and morphology. (CO3,K2)

Or

(b) Explain in detailed about of classification of Polychaeta and its significant morphological characters. (CO3,K2)

19. (a) Give an elaborate account on the significance of Torsion in Molluscs. (CO4,K3)

Or

(b) Explain in detailed about of classification of Mollusca and its significant morphological characters. (CO4,K3)

20. (a) Write a detailed account on the structure and function of Echinodermata. (CO5,K2)

Or

(b) Write a detailed account on the Larval metamorphosis of Prochordata. (CO5,K2)

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R2070

Sub. Code
2MB3A1

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

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 type questions by choosing the correct option.

1. The term 'algae' was first introduced by (CO1, K1)

   (a) Hedwigs (b) Linnaeus

   (c) Hasall (d) Strasburger

2. Necridia is related to (CO1, K1)

   (a) *Polysiphonia* (b) *Ocillatoria*

   (c) *Puccinia* (d) *Usnea*

3. In *polytrichum* capsule is fully covered by (CO2, K2)

   (a) *Oprculum* (b) *Peristome*

   (c) *Calyptra* (d) Rim

4. Citrus canker is caused (CO2, K1)

   (a) *Pseudomonas* (b) *Xanthomonas*

   (c) Micrococcus (d) *Rhadopseudomonas*

5. Spore producing structures in Pteridophytes (CO3, K2)

(a) Sporangium (b) Strobilus

(c) Sporocarp (d) All the above

6. Glossopodium (CO3, K1)

(a) *Selaginella* (b) *Lycopodium*

(c) *Marsilea* (d) *Rhynia*

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

(a) Sequoia (b) Archegonium

(c) Sporophyte (d) Gemma

8. Winged pollengrain found in (CO4, K2)

(a) Cycas (b) Podocarpus

(c) Pinus (d) Taxus

9. Protoxylem towards inside (CO5, K2)

(a) Endarch (b) Exarch

(c) Mesarch (d) Hexarch

10. Scelerenchyma gives (CO5, K1)

(a) Mechanical support

(b) Transportation

(c) Conduction

(d) Evoporation

Part B (5 × 5 = 25)

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

11. (a) Explain the general characters of Lichens. (CO1, K1)

Or

(b) Discuss the thallus structure of *Ocillatoria*. (CO1, K1)

12. (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)

13. (a) List out the general characters of Pteridophytes. (CO3, K1)

Or

(b) Write about the external morphology of *Selaginella*. (CO3, K2)

14. (a) Explain the internal structure of *Pinus* needle. (CO4, K4)

Or

(b) Describe the structure of *Pinus* female cone. (CO4, K4)

15. (a) Write short notes on the simple tissues. (CO5, K2)

Or

(b) Summarize secondary thickening in dicot stem. (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** 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 life history of *Polytrichum*. (CO2, K2)

Or

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

18. (a) Write short notes on :

(i) Apogamy

(ii) Parthenogenesis

(iii) Heterospory. (CO3, K2)

Or

(b) Summarize the graphic life cycle of *Selaginella*. (CO2, K4)

19. (a) Explain the structure of *Pinus* male cone with labeled diagram. (CO4, K4)

Or

(b) Write an essay on *Pinus* life history. (CO4, K2)

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

Or

(b) Elaborate the secondary thickening in monocot stem. (CO5, K5)

R2071

Sub. Code
548501

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Fifth Semester

Integrated Marine Biology

CELL AND MOLECULAR BIOLOGY

(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. Electron Microscope can give a magnification up to _____ (CO1, K2)

   (a) 400,000X (b) 100,000X

   (c) 15,000X (d) 100X

2. Which of the following theories explain that plasma membrane is selectively permeable? (CO1, K2)

   (a) Unit membrane theory

   (b) Cascade theory

   (c) Sandwich theory

   (d) Fluid Mosaic theory

3. The term chromosome was introduced by _____. (CO2, K3)

   (a) W. Waldeyer (b) Bridges

   (c) Balbiani (d) Flemming

4. Ribosome helps in (CO2, K3)

(a) Lipogenesis (b) Cellular digestion

(c) Protein synthesis (d) Photosynthesis

5. The spindle fibers attach chromosomes with (CO3, K2)

(a) Chromo center (b) Centriole

(c) Kinetochore (d) Telocentric

6. The proper sequence of the cell cycle is (CO3, K2)

(a) S, M, G1, G2 (b) M, G1, G2, S

(c) S, G1, G2, M (d) G1, S, G2, M

7. What role does RNA polymerase play in transcription? (CO4, K4)

(a) Synthesizing DNA strands

(b) Binding to the promoter region

(c) Splicing out introns

(d) Unwinding the DNA helix

8. Who proved the chemical basis of transformation? (CO4, K4)

(a) Hershey and Chase

(b) Griffith

(c) Avery, Macleod, and Mc Carty's

(d) Watson and Crick

9. Which process directly follows transcription in the central dogma of molecular biology? (CO5, K4)

(a) Replication (b) Translation

(c) Protein folding (d) DNA repair

10. Which of the following statements about the lac operon is true? (CO5, K4)

(a) It is involved in the regulation of DNA replication

(b) It is a repressible operon

(c) It is controlled by a repressor protein.

(d) It regulates the synthesis of ribosomes

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

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

11. (a) What is micrometry? Enumerate the steps of using a micrometre for measurement. (CO1, K2)

Or

(b) Explain different methods of staining. (CO1, K2)

12. (a) Explain the structure of the polytene chromosome with a diagram. (CO2, K3)

Or

(b) List out the types of lysosomes. (CO2, K3)

13. (a) Describe the importance of mitotic cell division. (CO3, K2)

Or

(b) Add a note on cytokinesis. (CO3, K2)

14. (a) Explain the bi-directional mode of replication in DNA. (CO4, K4)

Or

(b) Describe the role of telomere in the replication. (CO4, K4)

15. (a) Discuss Watson and Crick's model of DNA. (CO5, K4)

Or

(b) Justify the reason for the arrangement of many prokaryotic genes in operons. (CO5, K4)

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

Answer all the questions not more than 1000 words each.

16. (a) Write an essay on the structure, working and application of SEM and TEM. (CO1, K2)

Or

(b) Discuss in detail the structure, types, and function of Golgi complex. (CO1, K2)

17. (a) Give an account of Giant chromosomes. (CO2, K3)

Or

(b) Justify - Ribosomes are protein factories. (CO2, K3)

18. (a) Explain in detail the cell cycle. (CO3, K2)

Or

(b) Give an account of the meiotic type of cell division. (CO3, K2)

19. (a) Discuss in detail the types of RNA. (CO4, K4)

Or

(b) Discuss in detail the life cycle of bacteriophage. (CO4, K4)

20. (a) Describe the translation process, emphasizing the roles of tRNA, mRNA, and ribosomes. (CO5, K4)

Or

(b) Explain the various mechanisms of the process of splicing. (CO5, K4)

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R2072

Sub. Code
548502

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Fifth Semester

Integrated Marine Biology

DEVELOPMENTAL BIOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct answer.

1. In ———————— process blastocoel cavity is transformed into archenteron. (CO1, K2)

   (a) Cleavage (b) Gastrulation

   (c) Exo-Gastrulation (d) Blastulation

2. What prevents more than one sperm from fertilizing an egg? (CO1, K2)

   (a) Fertilization (b) Cortical reaction

   (c) Zona pellucida (d) Sperm lysins

3. Bones of vertebrates are derived from embryonic ———————— (CO2, K3)

   (a) Ectoderm (b) Embryonic mesoderm

   (c) Mesoderm (d) Endoderm

4. The embryonic membrane which is helpful in the removal of waste material (CO2, K3)

   (a) yolk sac (b) amnion

   (c) chorion (d) allantois

5. Regeneration is similar to ———————— (CO3, K4)

(a) autotomy (b) differentiation

(c) cleavage (d) division

6. In amphibians, metamorphosis is done by ———————— (CO3, K4)

(a) Pituitary gland (b) Thyroid gland

(c) Adrenal gland (d) Pineal gland

7. In amphibians, thyroxine brings about the process of ———————— (CO4, K2)

(a) ecdysis (b) egg laying

(c) metamorphosis (d) growth

8. Another word for metamorphosis is ———————— (CO4, K2)

(a) Survival (b) Evolution

(c) Modelling (d) Change

9. ———————— forms the placental barrier in mammals. (CO5, K4)

(a) endoderm (b) chorionic villi

(c) amnion (d) allantois

10. The repair by cell division in the damaged tissue is called ———————— (CO5, K4)

(a) Exponential growth

(b) Deaccelerating growth

(c) Epimorphosis regeneration

(d) Morphallaxis regeneration

Part B (5 × 5 = 25)

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

11. (a) Explain the basic structure of the ovum. (CO1, K2)

Or

(b) What type of metabolic changes happen during cleavage? (CO1, K2)

12. (a) Explain about exogenous and endogenous induction. (CO2, K3)

Or

(b) List out the function of the placenta. (CO2, K3)

13. (a) What are two basic types of metamorphosis? Explain retrogressive metamorphosis. (CO3, K4)

Or

(b) Explain the role of the organizer in embryonic development. (CO3, K4)

14. (a) Add a note on the purpose of the placenta. (CO4, K2)

Or

(b) Classify Placentae According to the Mode of Implantation. (CO4, K2)

15. (a) Explain the phenomenon of regeneration in animals. (CO5, K4)

Or

(b) Explain the terms (CO5, K4)

(i) autotomy and

(ii) metaplasia

Part C (5 × 8 = 40)

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

16. (a) Outline the various phases of the period of growth during Oogenesis and mention its importance in embryonic development. (CO1, K2)

Or

(b) Distinguish between internal and external fertilization. (CO1, K2)

17. (a) Write in detail about the development of the heart in frogs. (CO2, K3)

Or

(b) Give an account on the types of placenta. (CO2, K3)

18. (a) Explain epimorphosis regeneration with suitable example. (CO3, K4)

Or

(b) Discuss the morphological, anatomical, and biochemical changes involved in the metamorphosis of the tadpole of the frog. (CO3, K4)

19. (a) Classify Placentae According to the Distribution of Villi on Chorion. (CO4, K2)

Or

(b) Discuss the role of various hormones that control metamorphosis in a frog. (CO4, K2)

20. (a) Distinguish between physiological regeneration and reparative regeneration. (CO5, K4)

Or

(b) Discuss in detail the concept and mode of regeneration in amphibians. (CO5, K4)

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R2073

Sub. Code
548503

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Fifth Semester

Integrated Marine Biology

FISH AND FISHERIES

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

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

1. ———————— scales are found in rays and sharks? (CO1, K2)

   (a) Placoid (b) Cycloid

   (c) Ganoid (d) Ctenoid

2. What is the major group of Cartilaginous fishes? (CO1, K2)

   (a) Chondrichthyes (b) Osteichthyes

   (c) Actinopterygii (d) Sarcopterygii

3. Which organ in fish is primarily responsible for buoyancy? (CO2, K2)

   (a) Liver (b) Swim bladder

   (c) Gills (d) Heart

4. Which of the following is oviparous fish? (CO2, K2)

   (a) Shark (b) Seahorse

   (c) Katla (d) All the above

5. The process of decay in the organic matter through microorganisms which results in the production of foul smell is known as ———————— (CO3, K4)

(a) Putrefaction (b) Oxidation

(c) Rancidity (d) Fermentation

6. Fishing nets are made of? (CO4, K4)

(a) Cotton (b) Rayon

(c) Jute (d) Dacron

7. What is the most common food associated with foodborne gastroenteritis by *Vibrio parahaemolyticus*? (CO4, K4)

(a) Chicken (b) Fish

(c) Oysters (d) Rice

8. Fishing catch limits is otherwise known as ————————? (CO5, K4)

(a) Quota (b) Restocking

(c) Closed season (d) By catch

9. What is the fishery regulation regarding size limits? (CO5, K4)

(a) Minimum (b) Maximum

(c) Average (d) Daily bag

10. What is an impoundment of resources in a fisheries reservoir? (CO5, K4)

(a) Artificial (b) Natural

(c) Estuary (d) Marine

Part B (5 × 5 = 25)

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

11. (a) Explain the major groups of fishes. (CO1, K2)

Or

(b) Write a detailed note on the classification of fishes. (CO1, K2)

12. (a) Discuss the basic anatomy of a fish. (CO2, K2)

Or

(b) Explain the migration patterns of fishes. (CO2, K2)

13. (a) Provide a detailed account of the fishery resources. (CO3, K4)

Or

(b) Explain the methods of fish tagging and marking. (CO3, K4)

14. (a) Give short notes on microbial disease in fish. (CO4, K4)

Or

(b) Explain the identification of pathogens and disease control in fishes. (CO4, K4)

15. (a) Give a detailed account on fisheries administration. (CO5, K4)

Or

(b) Write a detailed note on the fishery regulation. (CO5, K4)

Part C (5 × 8 = 40)

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

16. (a) Give an elaborate account of general morphology of fishes. (CO1, K2)

Or

(b) Explain the identification of fish in Indian waters. (CO1, K2)

17. (a) Explain the detailed account of the fin fishes and shell fishes. (CO2, K2)

Or

(b) Give an account on food and feeding habits in fish. (CO2, K2)

18. (a) Describe in detail the population analysis of fishes. (CO3, K4)

Or

(b) Explain in detail about the Theory of fishing. (CO3, K4)

19. (a) Give an elaborate account of methods of isolation in fishing. (CO4, K4)

Or

(b) Explain in detail about the spoilage of seafood. (CO4, K4)

20. (a) Write a detailed account on the principle of conservation and management of fisheries. (CO5, K4)

Or

(b) Explain in detail about on protection and preservation of fisheries. (CO5, K4)

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R2074	Sub. Code
	548504

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Fifth Semester

Integrated Marine Biology

COASTAL AND BRACKISH WATER AQUACULTURE

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

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

1. Which of the following is a potential consequence of overfishing in aquaculture? (CO1, K2)

   (a) Improved fish stock health

   (b) Enhanced biodiversity in the aquaculture system

   (c) Increased risk of ecological imbalance and habitat degradation

   (d) Decreased economic costs for fish farmers

2. Which of the following is a primary advantage of coastal aquaculture compared to open-sea aquaculture? (CO1, K2)

   (a) Greater accessibility for management and harvesting

   (b) Reduced susceptibility to environmental variability

   (c) Lower infrastructure and operational costs

   (d) Greater potential for large-scale production

3. The Open sea farming is also known as ————— (CO2, K2)

(a) Sea Farming

(b) Nearshore aquaculture

(c) Onshore aquaculture

(d) Offshore aquaculture

4. ————— is constructed to prevent the flow of floodwaters into the aquaculture land. (CO2, K2)

(a) Dyke (b) Inlet

(c) Outlet (d) Cages

5. What is the other name for the seaweed species *Ulva* which belongs to Chlorophycaea family? (CO3, K3)

(a) Kelp (b) Sea Lettuce

(c) Nori (d) Wakame

6. What is the most effective approach for managing parasites in aquaculture? (CO3, K3)

(a) Integrated Pest Management

(b) Stress Reduction

(c) Disease management

(d) Pest Control

7. Which Marine Molluscans are majorly used for Hatchery Culture? (CO4, K4)

(a) Tusk shells (b) Mussels and Oysters

(c) Snails (d) Clams

8. In Broodstock Hatcheries, they focus on breeding and maintaining broodstock, which are mature fish or other aquatic organisms used for ———— ? (CO4, K4)

(a) Producing juveniles

(b) Seeds stock

(c) Producing eggs

(d) All of the above

9. The fisheries Extension methods are classified into? (CO4, K3)

(a) Three categories (b) Two categories

(c) Four categories (d) Six categories

10. BFFDA stands for? (CO5, K3)

(a) Brackish Water Fisheries Farmers for Development Agency

(b) Brackish Fish Forum for Development Association

(c) Brackish Water Fisheries Farmers for Development Association

(d) Brackish Water Fish Farmers Development Agency

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

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

11. (a) Write about the impacts of overfishing. (CO1, K2)

Or

(b) Explain about the importance of coastal aquaculture. (CO1, K2)

12. (a) Give an account on topography and technical considerations in farm design. (CO2, K2)

Or

(b) Explain about Construction and maintenance of farm design. (CO2, K2)

13. (a) Give a short note on Stocking and feeding schedules. (CO3, K3)

Or

(b) Explain about the economic importance of seaweeds. (CO3, K3)

14. (a) Discuss about the collection and maintenance of broodstock. (CO4, K4)

Or

(b) Give an overview of Crustaceans with suitable examples. (CO4, K4)

15. (a) What is Fisheries extension? Write the Principles and approaches of fisheries extension. (CO5, K3)

Or

(b) Give a brief account of the development agencies in fisheries development. (CO5, K3)

Part C (5 × 8 = 40)

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

16. (a) Explain in detail about the importance of coastal aquaculture and the socio-economic problems. (CO1, K2)

Or

(b) Write an essay on Natural stock, overfishing, and Depletion. (CO1, K2)

17. (a) Discuss in detail about the types of Ponds and their soil characteristics and water supply. (CO2, K2)

Or

(b) Write an essay on Open sea farming and raceway culture practices. (CO2, K2)

18. (a) Describe in detail about the Pond, Nursery and water quality management. (CO3, K3)

Or

(b) Discuss the Control of predators, parasites, and disease management in aquaculture. (CO3, K3)

19. (a) Explain in detail about the hatchery management with its types and components. (CO4, K4)

Or

(b) Describe the overview of Fin fishes and molluscan culture with suitable diagrams in hatchery production. (CO4, K4)

20. (a) Give a detailed account of feed formulation and fisheries extension with its extension methods. (CO5, K3)

Or

(b) Describe in detail about farmer's developmental agency of governmental and non-governmental sectors. (CO5, K3)

———————