

Question Booklet No. :

MBPG/2022

Register
Number

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2022
PAPER – I
MARINE BIOLOGY
(P.G. Degree Standard)

Duration : Three Hours]

[Total Marks : 300

Read the following instructions carefully before you begin to answer the questions.

IMPORTANT INSTRUCTIONS

1. You will be supplied with this question booklet 15 minutes prior to the commencement of the examination.
2. This question booklet contains 200 questions. Before answering the questions, you shall check whether all the questions are printed serially and ensure that there are no blank pages in the question booklet. **If any defect is noticed in the question booklet, it shall be reported to the invigilator within the first 10 minutes and get it replaced with a complete question booklet. If the defect is reported after the commencement of the examination, it will not be replaced.**
3. Answer **all** the questions. All the questions carry equal marks.
4. You must write your register number in the space provided on the top right side of this page. Do not write anything else on the question booklet.
5. An answer sheet will be supplied to you separately by the room invigilator to shade the answers. Instructions regarding filling of answers etc., which are to be followed mandatorily, are provided in the answer sheet and in the memorandum of admission (Hall Ticket).
6. You shall write and shade your question booklet number in the space provided on page one of the answer sheet with **BLACK INK BALL POINT PEN**. If you do not shade correctly or fail to shade the question booklet number, your answer sheet will be invalidated.
7. Each question comprises of five responses (answers) : i.e. (A), (B), (C), (D) and (E). You have to select **ONLY ONE** correct answer from (A) or (B) or (C) or (D) and shade the same in your answer sheet. If you feel that there are more than one correct answer, shade the one which you consider the best. **If you do not know the answer, you have to mandatorily shade (E).** In any case, choose **ONLY ONE** answer for each question. If you shade more than one answer for a question, it will be treated as a wrong answer even if one of the given answers happens to be correct.
8. You should not remove or tear off any sheet from this question booklet. You are not allowed to take this question booklet and the answer sheet out of the examination room during the time of the examination. After the examination, you must hand over your answer sheet to the invigilator. You are allowed to take the question booklet with you only after the examination is over.
9. **You should not make any marking in the question booklet except in the sheets before the last page of the question booklet, which can be used for rough work. This should be strictly adhered to.**
10. Failure to comply with any of the above instructions will render you liable for such action as the Commission may decide at their discretion.

SEAL

SPACE FOR ROUGH WORK



1. Assertion [A] : The Peruvian Anchovies is the greatest volume capture fisheries.

Reason [R] : The primary use is for food products and fish meals as the secondary use

(A) [A] is true but [R] is false

(B) Both [A] and [R] are true, and [R] is the correct explanation of [A]

(C) [A] is false, [R] is true

(D) Both [A] and [R] are true, but [R] is not the correct explanation of [A]

(E) Answer not known

2. Shrimps are preserved by using one of the following chemicals as preservatives

(A) Sodium thiosulphate

(B) Sodium pyrophosphate

(C) Sodium tripoly phosphate

(D) Sodium trinitrate

(E) Answer not known

3. Match the correct quality standards with their corresponding quality assurance.

(a) ISO 9001

1. Production and installation

(b) ISO 9002

2. Quality assurance in design/development

(c) ISO 9003

3. Revising a quality management system

(d) ISO 9004

4. Final inspection of production

(a) (b) (c) (d)

(A) 2 1 4 3

(B) 1 3 4 2

(C) 3 1 4 2

(D) 4 3 2 1

(E) Answer not known

4. INCOIS

- (A) International Center for Ocean Information Services
- (B) Indian National Center for Ocean Information Services
- (C) Indian National Commission for Ocean Information Services
- (D) Indian National Center for Oceanographic Services
- (E) Answer not known

5. The U.S.A launched its first satellite named Landsat 1 in the year 1972, which was formerly named as

- (A) Nimbus 4 bus
- (B) Tiros N
- (C) Ertis 1
- (D) Sputnik 1
- (E) Answer not known

6. Pick up correct statements from the following :

- (i) In Remote sensing, the platform is observation place
- (ii) The increase in platform height decreases spatial resolution
- (iii) The decrease in platform height increase spatial resolution
- (iv) Platforms are mobile or stationery

- (A) (i), (ii), (iii)
- (B) (ii), (iii), (iv)
- (C) (i), (ii), (iv)
- (D) (i), (iii), (iv)
- (E) Answer not known

7. Which one of the following is correct usage of digital photographic images?

- (i) A scanner is used to print the image into a non-colour form
- (ii) A scanner is used to film or print into a digital form
- (iii) A scanner is used to edit the image into colour form
- (iv) None of the above

(A) (i) and (iii)

(B) (i)

(C) (ii)

(D) (iv)

(E) Answer not known

8. Which of the NASA's manned program took first multi-spectral photographs?

(A) Mercury

(B) Gemini

(C) Apollo

(D) Skylab

(E) Answer not known

9. Match the incorrect abbreviations from the following :

(i) GIS – Geographical Information of Society

(ii) RADAR – Radio Detection and Ranging

(iii) OMBO – One Man Bridge Orbital measurement

(iv) EEZ – Exclusive Economic Zone

(A) (iii)

(B) (i)

(C) (ii) and (iii)

(D) (i) and (iv)

(E) Answer not known

10. Which of the following are true?

- (i) A map is a representation of some part of earth surface
- (ii) A Mercator projection depicts lines on to a map perfectly without any distortions
- (iii) A chart is a representation of the earth surface but specifically for navigation

- (A) (i) only
- (B) (ii) only
- (C) (i) and (iii) only
- (D) (i) and (ii) only
- (E) Answer not known

11. Annotating charts are not used for marking following colour in navigation charts

- (A) Coloured
- (B) Red colour
- (C) Blue colour
- (D) Green colour
- (E) Answer not known

12. The C/A code sometimes referred as

- (A) Civilian/Access
- (B) Civilian/Acquisition
- (C) Coarse/Acquisition
- (D) Coarse/ Adoption
- (E) Answer not known

13. Assertion [A] : We use the north position to navigate through the latitudes

Reason [R] : The sun moves from east to west but we require north to south

(A) [A] is true but [R] is false

(B) Both [A] and [R] are true, and [R] is the correct explanation of [A]

(C) [A] is false, [R] is true

(D) Both [A] and [R] are true, but [R] is not the correct explanation of [A]

(E) Answer not known

14. Among the one – scale used to measure distance on the nautical chart is

(A) Latitude

(B) Longitude

(C) LOP

(D) Bearing

(E) Answer not known

15. Match the maps/charts with their precise meaning :

(a) Mercator projection 1. Maps that show lines connecting to points of similar elevation on land

(b) Topography 2. A cylindrical type traditional and familiar world map used in many books

(c) Physiographic maps 3. Color, shading, perspective drawing added to stimulate topography and produce visual representation or birds eye view

(a) (b) (c)

(A) 1 2 3

(B) 3 2 1

(C) 2 1 3

(D) 1 3 2

(E) Answer not known

16. Choose the right answer from the following. Which of the following fatty acids and other lipid components used in aqua feed – formulation
- (i) Linoleic acid, Linolenic acid, EPA, DHA, Cholestrol and Phospholipids
 - (ii) Linoleic acid, Cholestrol, Riboflavin, Arginine
 - (iii) EPA, DHA, Histidine, Lysine, Vitamin , Methionine
- (A) (i) only
- (B) (i) and (ii) only
- (C) (i) and (iii) only
- (D) (ii) and (iii) only
- (E) Answer not known
-
17. Melanization occurs in shrimps due to the action of
- (A) Immuno stimulants
 - (B) Hormones
 - (C) Pro-phenoloxidase
 - (D) Immunoprophylaxis
 - (E) Answer not known
-
18. After harvesting the bivalve molluscs holding in clean water for 24 Hrs helps them to cleanse themselves of contaminant and this process is called
- (A) Removal of pathogens
 - (B) Depuration
 - (C) Removal of conservative metals
 - (D) Removal of conservative Pesticides
 - (E) Answer not known

22. Reason and Assertion type :

Assertion [A] : Most Tilapia and Carp are formed using extensive Fish farms method.

Reason [R] : Tilapia and Carp doesn't require food pellets or other pellets, or other smaller fish for food.

- (A) Both [A] and [R] are true and [R] is the correct explanation of [A]
- (B) [A] is true, but [R] is false
- (C) [A] is false, [R] is true
- (D) Both [A] and [R] is true, but [R] is not the correct explanation of [A] is correct
- (E) Answer not known

23. _____ is a Indian pearl oyster.

- (A) Pinctada fucata
- (B) Crassostrea madrasensis
- (C) Perna viridis
- (D) Xancus pyrum
- (E) Answer not known

24. Find out the following is commonly referred as 'Living capsules of nutrition'.

- (A) Benthos
- (B) Nekton
- (C) Plankton
- (D) Pelagic
- (E) Answer not known

25. Trace the process and rearrange them

(i) Denitrification

(ii) Ammonification

(iii) Fixation

(iv) Nitrification

(A) (iv), (iii), (ii), (i)

(B) (i), (ii), (iii), (iv)

(C) (ii), (iii), (iv), (i)

(D) (ii), (iv), (i), (iii)

(E) Answer not known

26. Some organisms are planktonic during part of their life cycle and either nektonic or benthic at another stage. These plankton are called

(A) Phytoplankton

(B) Zooplankton

(C) Meroplankton

(D) Nekton

(E) Answer not known

27. Largest Mangrove forest located in India is in

(A) Odisha

(B) Karnataka

(C) Tamil Nadu

(D) West Bengal

(E) Answer not known

28. [A] : The deep water nutrients are made available to photosynthetic organism accounting for productivity.
[R] : Upwelling processes bring deeper nutrient rich water to the surface.
- (A) [A] is true but [R] is false
(B) [A] is false but [R] is true
(C) Both [A] and [R] are true but [R] is not correct explanation of [A]
 (D) Both [A] and [R] are true and [R] is the correct explanation of [A]
(E) Answer not known
29. Which organism live primarily by photosynthesis?
- (A) Autotrophs (B) Heterotrophs
 (C) Phototrophs (D) Phytotrophs
(E) Answer not known
30. The daily migration of Zooplankton towards the sea surface and to the depth may be as much as
- (A) 500 M (B) 1000 M
(C) 2000 M (D) 3000 M
(E) Answer not known
31. Who was the most prominent marine invertebrate biologist who left major collections to the South Australian Museum?
- (A) W.B. Carpenter (B) Charles Darwin
 (C) Sir Joseph Verco (D) John Murray
(E) Answer not known

32. Assertion [A] : Reversing bottle is made of brass and plated inside with tin or silver or coated with special lacquer.

Reason [R] : It is fitted with drain cock and an air vent to facilitate draining the trapped water samples.

(A) [A] is true but [R] is false

(B) Both [A] and [R] are true, and [R] is the correct explanation of [A]

(C) [A] is false, [R] is true

(D) Both [A] and [R] are true, but [R] is not the correct explanation of [A]

(E) Answer not known

33. The gas abundantly found in the surface water is

(A) Oxygen

(B) Carbon di oxide

(C) Nitrogen

(D) Hydrogen

(E) Answer not known

34. _____ is a term for organisms with a tolerance for a wide range of salinity conditions.

(A) Eurythermal

(B) Stenothermal

(C) Stenohaline

(D) Euryhaline

(E) Answer not known

35. With increasing salinity the temperature of sea water is

(A) Decreases

(B) Increases

(C) Equalize

(D) None of the above

(E) Answer not known

36. Match correctly the sphere of physical oceanography with their instruments.

- | | |
|-----------------------|------------------------------|
| (a) Tide gauge | 1. Measure the depth |
| (b) Viscometer | 2. Measuring the temperature |
| (c) Sacchi disc | 3. Measure the amplitude |
| (d) Bathy temperature | 4. Measuring the force |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| <input checked="" type="checkbox"/> (A) | 3 | 4 | 1 | 2 |
| (B) | 3 | 1 | 2 | 4 |
| (C) | 1 | 2 | 3 | 4 |
| (D) | 2 | 3 | 4 | 1 |
| (E) | Answer not known | | | |

37. Match the theories explaining the origin of tides and their proposers.

- | | |
|-----------------------------|-----------------------------------|
| (a) Equilibrium theory | 1. William Whemwell and G.B. Airy |
| (b) The dynamical theory | 2. Issac Newton |
| (c) Progressive wave theory | 3. R.A. Haris |
| (d) Stationary wave theory | 4. Laplace |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) | 1 | 2 | 3 | 4 |
| <input checked="" type="checkbox"/> (B) | 2 | 4 | 1 | 3 |
| (C) | 4 | 3 | 2 | 1 |
| (D) | 2 | 4 | 3 | 1 |
| (E) | Answer not known | | | |

38. Choose the right answer :

How is the following statements are true about the characters of ocean waves?

- (i) Depends only on the wavelength of the ocean waves
 - (ii) Depends only on the water depth
 - (iii) Depends on relationship between both wavelength and water depth of the waves
- (A) (i) only
- (B) (i) and (iii) only
- (C) (iii) only
- (D) (ii) and (i) only
- (E) Answer not known

39. Which of the following statements are true about the earth's crust?

- (i) It is in continual motion
 - (ii) Ocean floor is divided into plates
 - (iii) Boundaries were crust
 - (iv) Large breaks in ridges
- (A) (i) only
- (B) (i) and (iii) only
- (C) (i) and (ii) only
- (D) (i) and (iv) only
- (E) Answer not known

40. The potential fishery resources of the Indian EEZ is about

(A) 60%

(B) 45%

(C) 50%

(D) 55%

(E) Answer not known

41. Choose the correct answer.

The following is the basic means to measure the productivity of the sea

(A) Chlorella

(B) Chlorophyll

(C) Chlorophyllosis

(D) Chlorenchyma

(E) Answer not known

42. In mortality assessment, following symbols are used. Match the correct forms

(a) Z

1. Fishing mortality

(b) F

2. Total mortality

(c) M

3. Natural mortality

(d) N

4. Number of survivor

(a) (b) (c) (d)

(A) 2 3 1 4

(B) 2 1 3 4

(C) 4 1 3 2

(D) 2 1 4 3

(E) Answer not known

43. Natality includes _____ and _____, which contribute to the growth of the fish population.

(i) Spawning

(ii) Fishing mortality

(iii) Emigration

(iv) Recruitment

(A) (i) and (ii) are correct

(B) (i) and (iv) are correct

(C) (ii) and (iii) are correct

(D) (ii) and (iv) are correct

(E) Answer not known

44. _____ ensures that the highest catch possible from a fishery is taken without disturbing the equilibrium of the stock.

(A) Maximum economic yield

(B) Socially optimum yield

(C) Eumetric fishing

(D) Maximum sustainable yield

(E) Answer not known

45. Ecopath is an

(A) Ecosystem modelling software suite

(B) Ecosystem modelling hardware

(C) Ecosystem fish population software suite

(D) Ecosystem estimation hardware

(E) Answer not known

46. One of the following maritime states of India has the maximum landing centre and fishing villages

(i) Tamil Nadu

(ii) Gujarat

(iii) Andhra Pradesh

(iv) West Bengal

(A) (i)

(B) (ii)

(C) (iii)

(D) (iv)

(E) Answer not known

47. The sea fishes close to sea bed are called

(A) Pelagic

(B) Demersal

(C) Neritic

(D) Benthic

(E) Answer not known

48. An animal that feeds directly on seagrasses is the

(A) Queen conch

(B) Green sea turtle

(C) Sea cucumber

(D) Mullet

(E) Answer not known

49. Which of the following statements are correct with respect to Exclusive Economic Zone (EEZ)?
- (i) EEZ is an area beyond and adjacent to the territorial waters and the limit of this zone is one hundred nautical mile from the base line.
 - (ii) In EEZ, the union has Sovereign rights for the purpose of exploration, exploitation, conservation of management of natural resources.
 - (iii) The union has exclusive jurisdiction to reserve and protect the marine environment.
- (A) (i) and (ii) only
- (B) (ii) and (iii) only
- (C) (i) and (iii) only
- (D) (iii) only
- (E) Answer not known
-
50. Choose the right role played by the following Central Institutes in India.
- (i) CIFRI – Central Inland Fisheries Research Institute Play an important role in Marine fish Production in India.
 - (ii) CIBA – Central Institute of Brackishwater Aquaculture serves as a nodal agency for marketing brackishwater fish species.
 - (iii) CMFRI – Central Marine Fisheries Research Institute Play the Major role in the detailed estimation of India's marine fish catch.
- (A) (i) only
- (B) (ii) and (iii) only
- (C) (iii) only
- (D) (i) and (iii) only
- (E) Answer not known

51. According to the study of Jawaharlal Nehru University (JNU), New Delhi report of 1993, how much area of coastal Tamil Nadu is under in undated?
- (A) 0.055 million hectares
 - (B) 0.048 million hectares
 - (C) 0.122 million hectares
 - (D) 0.067 million hectares
 - (E) Answer not known
52. Among the given data, select the pair/ pairs where the hazard are perfectly matched with their impacts or changes in culture system caused by them
- (A) Floods – Introduction of Disease/Predators
 - (B) Drought – Salinity change
 - (C) Storms – Enhanced Breeding Period
 - (D) Both (A) and (B)
 - (E) Answer not known
53. Choose the right answer. One of the following Agencies are for the preventing and reduction of marine pollution?
- (i) Oil Companies International Marine Forum (OCIMF)
 - (ii) International Chamber of Shipping (ICS)
 - (iii) International Maritime Organization (IMO)
 - (iv) International Maritime Bureau (IMB)
- (A) Only (iv) is correct
 - (B) (i), (ii) and (iii) are correct
 - (C) (i) and (iv) are correct
 - (D) (ii), (iii) and (iv) are correct
 - (E) Answer not known

54. IPCC stands for

- (A) International Governmental Panel on Climate Change
- (B) Indian Government Panel on Climate Change
- (C) Inter Governmental Panel on Climate Change
- (D) Intra Governmental Panel on Climate Change
- (E) Answer not known

55. Choose the right matches among type

- (i) Winds in a Tropical cycle produce – Wind Waves
 - (ii) Tsunamis are waves generated – Moon's Gravity
 - (iii) Tropical Storms can produce – Damage and loss of life, mainly due to floods
 - (iv) Tsunami waves can cause – Numerous Indirect Impacts
- (A) (i) and (iv) are correct
 - (B) (i) and (iii) are correct
 - (C) (ii) and (iv) are correct
 - (D) (ii) and (iii) are correct
 - (E) Answer not known

59. The following organism are not a Live feed
- (i) Roterfer
 - (ii) Daphnia
 - (iii) Cope pods
 - (iv) Yeast
- (A) (i) and (ii) are correct
(B) (iii) and (ii) are correct
 (C) (iv) only correct
(D) (ii) only correct
(E) Answer not known
60. Decapsulation of Artemia means
- (A) Removal of head of Artemia
 - (B) Removal of hard shell of Artemia cyst
 - (C) Selection of Artemia cyst
 - (D) Disinfection of Artemia cyst
 - (E) Answer not known
61. The initial source of food for many larval organisms is
- (A) Fishes
 - (B) Mollusca
 - (C) Phytoplankton
 - (D) Crustaceans
 - (E) Answer not known

62. Which one of the following procedures are used for genetic manipulation in fishes?
- (A) Hybridization
 - (B) Gene manipulation
 - (C) Chromosome manipulation
 - (D) All the above
 - (E) Answer not known
63. The Chemical used for narcotizing pearl oyster for conditioning
- (A) Quinaldine
 - (B) MS 222
 - (C) Iodine
 - (D) Menthol Crystal
 - (E) Answer not known
64. Important criteria for hatchery site selection in sea water supply contains, temperature 28°C to 32°C; Salinity 28 – 34 ppt, pH 7.7 – 8.2 and
- (A) Dissolved oxygen
 - (B) Turbidity
 - (C) Biological oxygen demand suspended solids below 20 ppm
 - (D) Suspended solids below 20 ppm
 - (E) Answer not known

65. Choose the following conditions for Artemia cyst hatching is correctly paired

- (i) Salinity – 5–35 ppt
 - (ii) Temperature – 25 – 32°C
 - (iii) pH – pH 8-9
 - (iv) Illumination – Not less than 1000 lux
- (A) (i) and (ii) are correct
(B) (ii) and (iv) are correct
(C) (iii) and (iv) are correct
 (D) (i) and (iii) are correct
(E) Answer not known

66. Choose the incorrect pairing.

- | <u>Category</u> | <u>Place of egg laying</u> |
|------------------------|--|
| (i) Pelagophils | – Water surface |
| (ii) Phytolithophils | – Submerged items including aquatic plants |
| (iii) Lithopelagophils | – Under Stone |
| (iv) Aerophils | – Water in damp soil |
- (A) (i) is incorrect
(B) (iv) is incorrect
 (C) (iii) is incorrect
(D) (ii) is incorrect
(E) Answer not known

67. Marketable larval stage of shrimp is

- (A) Rauplii
- (B) Zoea
- (C) Mysis
- (D) Post larva
- (E) Answer not known

68. Match the following type.

Match correctly the common name with match their corresponding scientific name

- | | |
|----------------------|------------------------------|
| (a) Tiger Shrimp | 1. Penaeus Vannamei |
| (b) White leg shrimp | 2. Penaeus monodan |
| (c) Banana Shrimp | 3. Penaeus Japonicus |
| (d) Kuruma Shrimp | 4. Fenneropenaeus merguensis |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| <input checked="" type="checkbox"/> (A) | 2 | 1 | 4 | 3 |
| (B) | 4 | 1 | 2 | 3 |
| (C) | 1 | 2 | 3 | 4 |
| (D) | 2 | 4 | 3 | 1 |
| (E) | Answer not known | | | |

69. (Reason and Assertion)

Assertion [A] : Chlorinated hydrocarbons are difficult to excrete and hence, they tend to accumulate in the fatty tissues of the body

Reason [R] : The Chlorinated hydrocarbons are lipid soluble, so they tend to occur in much high concentration in fatty tissues than in other tissues

(A) [A] is false , [R] is true

(B) [A] is true but [R] is false

(C) Both [A] and [R] are true, and [R] is the correct explanation of [A]

(D) Both [A] and [R] are true, but [R] is not the correct explanation of [A]

(E) Answer not known

70. Cytochrome P₄₅₀ monoxidases enzyme associated with

(A) Cytochrome B₆ monoxides

(B) Detoxification of pollutants

(C) Cytochrome P₅₇₀ oxidases

(D) Cytochrome C₅ monoxidases

(E) Answer not known

71. The Expansion of EEZ

(A) Exclusive Economic Zone

(B) Environmental Economic Zone

(C) Exploited Economic Fisheries Zone

(D) Environmental Energy Zone

(E) Answer not known

72. Assertion [A] : In marine ecosystem, mercury is taken up by marine fishes directly and it moves to humans increasing in concentration by biomagnification .

Reason [R] : Mercury Settles to the bottom of ocean, where it is acted on bacteria and change into a form that can be absorbed by planktons and moves along food chain to human beings where it gets biomagnified.

- (A) [A] is false but [R] is true
- (B) [A] is true but [R] is false
- (C) Both [A] and [R] are true; but [R] is not the correct explanation of [A]
- (D) Both [A] and [R] are true; and [R] is the correct explanation of [A]
- (E) Answer not known

73. Paralytic Shell fish Poisoning (PSP) is caused by saxitoxin produced by

- (A) Gonyaulax sp and Pyrodinium Sp
- (B) Gambierdiscus toxicus
- (C) Gymnodinium breve
- (D) Phacocytis Sp
- (E) Answer not known

74. High level of organic waste in the sea lead to over production of phytoplanktons, resulting in oxygen depletion and deterioration of the ecosystem. These phenomena are known as
- (A) Enrichment
 - (B) Eutrophication
 - (C) Stratification
 - (D) Oligotrophic
 - (E) Answer not known
75. The toxicity of methyl mercury can cross the barrier from blood vessels in the brain into the nervour tissue, it cause progressive and irreversible brain damage is called
- (A) Minamata disease
 - (B) Itai - Itai
 - (C) PSP
 - (D) NSP
 - (E) Answer not known
76. Crude oil is a complex mixture of Hydrocarbons with
- (A) 4-26 (or) more carbon atoms in the molecule
 - (B) 4-26 (or) more hydrogen atoms in the molecule
 - (C) 4-48 (or) more carbon atoms in the molecule
 - (D) 4-26 (or) more Nitrogen atoms in the molecule
 - (E) Answer not known

77. Choose the incorrect abbreviation.

- (i) ITCZ – Inter Tropical Convergence Zone
- (ii) IUSS – Integrated Undersea Surveillance system
- (iii) MLD – Mixed Layer Depth
- (iv) ENSO – Exclusive Northern surface of Ocean

- (A) (ii) and (iii)
- (B) (i) only
- (C) (iv) only
- (D) (i) and (iv) only
- (E) Answer not known

78. How is the following statements are true (or) false?

- (i) Strati form clouds indicated a stable atmosphere
- (ii) Strati form clouds indicate an unstable atmosphere
- (iii) Cumuli form clouds indicate an unstable atmosphere

- (A) (i) and (ii) are correct
- (B) (i) and (iii) are correct
- (C) (ii) and (iv) are correct
- (D) (i) only is correct
- (E) Answer not known

79. In Condensation of clouds LCL is related to

- (i) Low condensation level
- (ii) Lifting condensation level
- (iii) Light condensation level
- (iv) Cauliflower shaped upper parts

- (A) (i) and (ii)
- (B) (ii) and (iii)
- (D) (ii) and (iv)
- (C) (i) and (iv)
- (E) Answer not known

80. Choose the right answer

Which among the following solar constant is correct at Earth's distance from the sun

- (A) 1.08 kwm^{-2} (B) 0.08 kwm^{-2}
 (C) 1.38 kwm^{-2} (D) 0.38 kwm^{-2}
(E) Answer not known

81. Choose the right answer among type:

Find out the following statements are true about wide range of changing climatic variables.

- (i) River discharge of water and sediments
(ii) Temperature low
(iii) Rainfall, magnitude and frequency, both increase and decrease

- (A) (i) only
 (B) (i) and (iii) only
(C) (i) and (ii) only
(D) (ii) and (iii) only
(E) Answer not known

82. The approximate temperature of Dry Adiabatic Lapse Rate (DALR) is

- (A) 8.9 degree celcius/ Km
(B) 9.9 degree celcius/ Km
 (C) 10 degree celcius/ Km
(D) 8.8 degree celcius/ Km
(E) Answer not known

83. Choose the correct order of water cycle.

(i) Precipitation, Condensation, Evaporation

(ii) Evaporation, Precipitation, Condensation

(iii) Condensation, Evaporation, Precipitation

(iv) Evaporation, Condensation, Precipitation

(A) (i) and (ii) only

(B) (iii) only

(C) (iv) only

(D) (ii) and (iv) only

(E) Answer not known

84. Match the types of clouds with the respective form of clouds.

- | | | |
|--------------------|----|---|
| (a) Cumulus clouds | 1. | a form of white wispy cloud at high altitude |
| (b) Nimbus clouds | 2. | a continuous horizontal sheet of clouds |
| (c) Cirrus clouds | 3. | a cloud formation consisting of rounded masses heaped on each other |
| (d) Stratus clouds | 4. | a bright cloud, which is rain bearing |

(a) (b) (c) (d)

(A) 1 3 4 2

(B) 3 4 1 2

(C) 2 1 3 4

(D) 4 2 1 3

(E) Answer not known

85. India has been divided in _____ Seismic.

(A) 3

(B) 5

(C) 7

(D) 10

(E) Answer not known

86. The muscular system of marine mammal is rich in an oxygen containing compound called

- (A) Haemoglobin
(B) Myoglobin
(C) Haemocyanin
(D) Haemoerythrin
(E) Answer not known

87. Match the gradation of water as per pH range :

- | | | |
|---------------------|----|-------------|
| (a) Strong acidic | 1. | 5.5 to 6.5 |
| (b) Low acidic | 2. | below 4.5 |
| (c) Low alkaline | 3. | 9.5 to 10.5 |
| (d) Strong alkaline | 4. | 7.5 to 8.5 |

(a) (b) (c) (d)

- (A) 2 1 4 3
(B) 1 3 2 4
(C) 4 1 2 3
(D) 2 3 1 4
(E) Answer not known

88. Assertion [A] : Nurse sharks obtain plenty of oxygen from the water without swimming.

Reason [R] : Nurse sharks are often found resting on the ocean bottom.

- (A) [A] is true [R] is false
 (B) Both [A] and [R] are true and [R] is the correct explanation of [A]
(C) [A] is false [R] is true
(D) Both [A] and [R] are true, but [R] is not the correct explanation of [A]
(E) Answer not known

89. Cephalopods foot possess a

- (A) Arms and Tentacles
(B) Only Arms
(C) Tentacle with Chromatophores
 (D) Series of sucker bearing Arms
(E) Answer not known

90. Among the following, the important source of nutrients for sharks embryos is

- (A) Reproductive tract (B) Digestive tract
(C) Circulatory system (D) Urinary tract
(E) Answer not known

91. Scientific name of blue whale

- (A) Balaenoptera bonaerensis (B) Balaenoptera edeni
 (C) Balaenoptera musculus (D) Balaenoptera brydei
(E) Answer not known

92. Fishes are cold blooded animals typically with

- (A) Invertebrates (B) Shell fish
 (C) Back bones (D) Shrimps
(E) Answer not known

93. Match the following :

- | | |
|----------------------------|----------------------------|
| (a) Electric organ | 1. Swim blader |
| (b) Light producing organ | 2. Devil Rays |
| (c) Second producing organ | 3. Membrane depolarization |
| (d) Poison producing organ | 4. Pigmented Layer |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) | 2 | 3 | 4 | 1 |
| (B) | 3 | 1 | 4 | 2 |
| <input checked="" type="checkbox"/> (C) | 3 | 4 | 1 | 2 |
| (D) | 1 | 2 | 4 | 3 |
| (E) | Answer not known | | | |

97. Which of the following are correctly match?

- (i) A system with a faceted mirror that is rotated by an electric motor and a horizontal rotation alignment-cross-track scanning
- (ii) A system with a scan motor and a mirror mounted on a vertical axis of rotation-circular scanning system
- (iii) A system with individual detector for each cell across the ground-side scan system
- (iv) A system that transmit pulses of microwave energy from one and records on the other-along-track scan system

- (A) (i) and (ii) are correct
- (B) (ii) and (iii) are correct
- (C) (iii) and (iv) are correct
- (D) (i) and (iv) are correct
- (E) Answer not known

98. Point out the following fisheries management practice is not in vogue in India?

- (A) Mesh size regulation
- (B) Closed area
- (C) Closed season
- (D) Quota system
- (E) Answer not known

99. The Fishery Cooperative Movement in India was established in

- (A) 1913
- (B) 1910
- (C) 1911
- (D) 1934
- (E) Answer not known

100. When a small change in fish price causes big change in quantity is called as

- (A) Perfectly inelastic demand
- (B) Relatively elastic demand
- (C) Relatively inelastic demand
- (D) Unit elasticity of demand
- (E) Answer not known

101. Match the following :

Radio	Uses
(a) Single Side Band (SSB)	1. Routine communication
(b) Satellite phones	2. Distress boat, a life boat in water to sumon help offshore
(c) Very High Frequency (VHF) radio	3. Data communications, voice fax and e-mails
(d) Emergency position indicating radio Becon	4. Ship to ship

- | | | | | |
|---|------------------|-----|-----|-----|
| | (a) | (b) | (c) | (d) |
| (A) | 4 | 1 | 2 | 3 |
| (B) | 4 | 3 | 2 | 1 |
| <input checked="" type="checkbox"/> (C) | 4 | 3 | 1 | 2 |
| (D) | 4 | 2 | 3 | 1 |
| (E) | Answer not known | | | |

102. The spectral range, which is known as the photographic UV region is

- (A) $0.5 - 5 \mu m$
- (B) $1 - 3 \mu m$
- (C) $0.3 - 0.4 \mu m$
- (D) $3 - 4 \mu m$
- (E) Answer not known

103. In the question given below are two statements labelled as Assertion [A] and Reason [R]. In the context of the two statements, which of the following is correct?

Assertion [A] : The sky appears blue during the day because of a phenomenon called Rayleigh scattering.

Reason [R] : Small particle such as dust or nitrogen and oxygen molecules cause Rayleigh scattering and the shorter wavelengths of energy are scattered much more than longer wavelengths.

- (A) Both [A] and [R] are true and [R] is correct explanation to [A]
- (B) Both [A] and [R] are true but [R] is not the correct explanation of [A]
- (C) [A] is true but [R] is false
- (D) [A] is false but [R] is true
- (E) Answer not known

104. Important Sensors-Passive Sensors (PS) and Active Sensors (AS) Consider the following statement about the correct of the Passive Sensors (PS)

- (A) Sensors which sense natural radiation, either emitted or reflected from the earth are called Passive Sensors
- (B) Sensors which sense artificial radiation, either emitted or reflected from the earth are called Passive Sensors
- (C) Produce their own electromagnetic radiations are called Passive Sensors
- (D) Produce their artificial electromagnetic radiations are called Passive Sensors
- (E) Answer not known

105. A smooth surface reflects all the incident radar energy with the angle of reflection equal and opposite to the angle of incidence

- (A) Koppen's Law (B) Snell's Law
(C) Kepler's Law (D) Plank's Law
(E) Answer not known

106. Radar principle is used to

- (A) Detect aircraft (B) Telephon
(C) Electronic microscope (D) None of the above
(E) Answer not known

107. The acronym for RADAR is

- (A) Radio Detection and Rules
(B) Radio Detection and Rumble
 (C) Radio Detection and Ranging
(D) Radio Device and Ring
(E) Answer not known

108. For fishing boats which article _____ is followed for vessels light and rule of the road.

- (A) Article III (B) Article I
(C) Article IV (D) Article X
(E) Answer not known

109. Reason and Assertion type :

Assertion [A] : The United States and France built the TOPEX satellite and launched for

Reason [R] : TOPEX was launched for observing the vegetation status on the earth

- (A) [A] is true but [R] is false
- (B) Both [A] and [R] are true and [R] is the correct explanation of [A]
- (C) [A] is false, [R] is true
- (D) Both [A] and [R] are true but [R] is not correct explanation of [A]
- (E) Answer not known

110. Choose the correct ship borne transponde system capable of broad casting continuously the information about the ship?

- (A) Automatic Information System
- (B) Automatic Intercelestial System
- (C) Automatic Identification System
- (D) Automatic Interaction System
- (E) Answer not known

111. Choose the correct matches among the following scale charts and what they indicate?

- (i) 1 : 20,000 – Wider boating region
- (ii) 1 : 10,000 – a specific harbour
- (iii) 1 : 80,000 – local waters
- (iv) 1 : 1,20,000 – Small scale

- (A) (i) and (ii) are correct
- (B) (ii) and (iii) are correct
- (C) (ii) and (iv) are correct
- (D) (iii) and (iv) are correct
- (E) Answer not known

112. Uses of sextant for finding the following terms

- (A) Fov – Field of view
- (B) Lop – Light observing
- (C) Cop – Circle of position
- (D) FTe – Rain cluster
- (E) Answer not known

113. The early ocean voyages/in search of new navigable routes. Among the informations of a coastal and ocean navigation

- (i) The early ocean voyages by Frobisher, Daris and many others were undertaken primarily for geographical exploration and in search of new navigable routes. To gathered information about the ocean, its currents, sea ice and other physical and biological phenomena was more or less incidental.
- (ii) To gathered the informations about terrestrial lands
- (iii) To gathered the informations about lakes.

- (A) (i) only
- (B) (ii) and (iii) only
- (C) (i) and (ii) only
- (D) (i) and (iii) only
- (E) Answer not known

114. The nutrient efficiency causes dark coloration in fishes is

- (A) Thiamine
- (B) Retinal
- (C) Folic acid
- (D) Riboflavin
- (E) Answer not known

115. Choose the right matches among the following commercially important ornamental fish with its respective class

- (i) Echeineidae – Sucker fish
- (ii) Chaetodontidae – Rabbit fishes
- (iii) Scaridae – Parrot fishes
- (iv) Siganidae – Butterfly fishes

- (A) (i) and (iv) are correct
- (B) (ii) and (iii) are correct
- (C) (i) and (iii) are correct
- (D) (ii) and (iv) are correct
- (E) Answer not known

116. The culture of crow fish is Basically associated with

- (A) Sea water management
- (B) Estuarine management
- (C) Brackish water management
- (D) Pond management
- (E) Answer not known

117. CCV stands for

- (A) Channel Catfish Virus
- (B) Catfish Channel Virus
- (C) Channel Catfish Vibrios
- (D) Catfish Channel Vibrios
- (E) Answer not known

118. Major portions of ornamental fishes from India are _____ fishes.

- (A) Marine
- (B) Brackish
- (C) Fresh water
- (D) All of the above
- (E) Answer not known

119. Choose the incorrect matches type :

One of the following is incorrectly paired?

(i) PD – Peripheral Dyke

(ii) SD – Secondary Dyke

(iii) MS – Master Sluice

(iv) SS – Secondary sluice

(A) (i) and (ii) are correct

(B) (i) and (iii) are correct

(C) (ii) and (iv) are correct

(D) (iii) and (iv) are correct

(E) Answer not known

120. How the mitotic gynogenesis achieved?

(A) Preventing the extrusion of 2nd polar body

(B) Preventing the extrusion of 1st polar body

(C) Blocking of the 2nd cleavage

(D) Blocking the 1st cleavage

(E) Answer not known

121. If one species benefits and the other is harmful, the relationship is called

(A) Mutualism

(B) Commensalism

(C) Symbiont

(D) Parasitism

(E) Answer not known

122. Choose the wrong answer :

Matches the following Incorrectly paired :

(i) DO – Haemoglobin

(ii) CO₂ – Reduce Blood pH

(iii) NH₃ – Non toxic

(iv) pH – Variations in Estuaries

(A) (i) and (iii) are incorrect

(B) (ii) and (iii) are incorrect

(C) (ii) only incorrect

(D) (iii) only incorrect

(E) Answer not known

123. Choose the following correct

Cube law of length-weight relationship

(A) $W = KL^2$

(B) $W = L^2$

(C) $W = KL^3$

(D) $W = KL$

(E) Answer not known

124. Choose the right matches among proximate composition (range) of edible portion of fish (% by weight of fresh tissue)

Component	Percentage
(i) Moisture	28 – 90
(ii) Protein	6 – 28
(iii) Oil	2 – 6
(iv) Ash	4 – 15

(A) (i) and (ii) are correct

(B) (i) and (iii) are correct

(C) (ii) and (iv) are correct

(D) (ii) and (iii) are correct

(E) Answer not known

125. Match the following type :

Match correctly concerning the sea grasses and mangrove.

- | | |
|---------------------|-----------------------------|
| (a) Sea grasses | 1. <u>Zostera marina</u> |
| (b) Eel grass | 2. Mid intertidal region |
| (c) Mangrove Forest | 3. <u>Rhizophora mangle</u> |
| (d) Red mangrove | 4. Mangal |

- | | (a) | (b) | (c) | (d) |
|----------------|------------------|-----|-----|-----|
| (A) | 1 | 2 | 3 | 4 |
| (B) | 2 | 1 | 4 | 3 |
| (C) | 3 | 4 | 2 | 1 |
| (D) | 4 | 3 | 2 | 1 |
| (E) | Answer not known | | | |

126. Choose the right answer among type

- (i) Fringing reefs grow close to shore and consist of an inner reef flat and an outer reef slope
- (ii) Barrier reefs are very close to shore which may not have a fringing reef by relatively deep lagoon
- (iii) Atolls are rings of reefs, with steep outer slopes, that enclose a shallow lagoon

- (A) (iii) only
- (B) (i) and (ii) only
- (C) (ii) and (iii) only
- ~~(D)~~ (i) and (iii) only
- (E) Answer not known

127. Choose the right answer :

Some bacteria use chemical process different from those used by photosynthetic plant and this process is called

- (A) Chemosynthesis (B) Chromosynthesis
(C) Biosynthesis (D) Nucleic acid synthesis
(E) Answer not known

128. Concentration of chloride in sea water is

- (A) 19.20 g (B) 10.62 g
(C) 12.66 g (D) 11.28 g
(E) Answer not known

129. The major source of salt in sea water is through

- (A) Weathering (B) Rivers
(C) Hydro thermal vent (D) Rain and snow
(E) Answer not known

130. Choose the following correct statements with regard to the distribution of surface salinity in the ocean.

- (A) Maximum at about 20° latitude
(B) Maximum in isolated region (Lagoons) where the rate of precipitation is greater than evaporation
(C) Increase towards higher latitude
(D) Maximum at equator
(E) Answer not known

131. Match the following type :

Match correctly the division of the marine environment with their corresponding depth in metres.

- | | |
|---------------------|------------------|
| (a) Epipelagic | 1. 0 – 200 m |
| (b) Mesopelagic | 2. 200 – 1000 m |
| (c) Bathy pelagic | 3. 1000 – 4000 m |
| (d) Abyssal pelagic | 4. 4000 – 6000 m |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) | 2 | 3 | 1 | 4 |
| (B) | 4 | 3 | 2 | 1 |
| (C) | 3 | 4 | 1 | 2 |
| <input checked="" type="checkbox"/> (D) | 1 | 2 | 3 | 4 |
| (E) | Answer not known | | | |

132. Tides are generated through a combination of gravity and motion among earth, the moon and the sun

- | | |
|--|-------------------|
| <input checked="" type="checkbox"/> (A) Newton's law | (B) Beer's law |
| (C) Stoke's law | (D) Lambert's law |
| (E) Answer not known | |

133. Choose the following physical factor has an important influence on the motions of the world ocean and its life forms.

- | | |
|-----------------------------|--|
| (A) Chlorinity of sea water | <input checked="" type="checkbox"/> (B) Viscosity of sea water |
| (C) Salinity of sea water | (D) Temperature of sea water |
| (E) Answer not known | |

134. Kurushio and California currents comes under which ocean currents?
- (A) The Atlantic Ocean Currents
 - (B) The Indian Ocean Currents
 - (C) The Pacific Ocean Currents
 - (D) East Greenland Currents
 - (E) Answer not known
135. Choose the right matches among the types
- (i) Intermediate layer of ocean – 1600 m
 - (ii) Bottom Layers of ocean – 5,000 m
 - (iii) Surface layer of ocean – Above 200 m
- (A) (i) and (iii) are correct
 - (B) (ii) and (iii) are correct
 - (C) (i) and (ii) are correct
 - (D) All are incorrect
 - (E) Answer not known
136. The amount of heat energy required to increase the temperature of 1 g of substance by 1°C is termed as
- (A) Latent heat
 - (B) Boiling point
 - (C) Specific heat
 - (D) Heat capacity
 - (E) Answer not known

137. Which of the following statement is true about the report of Inter Governmental Panel on Climate Change (IPCC) between 1961 and 2003?

- (i) The average temperature of the upper 70 m of the ocean water increased by 0.2° Celsius
- (ii) The ocean acidity has increased by 30% over the past century
- (iii) Arctic sea ice volume has Shrunt by 75% over the last decade
- (iv) Warm water is not efficient as absorbing CO₂

- (A) (i) only
- (B) (i) and (ii)
- (C) (i) and (iii)
- (D) (i) and (iv)
- (E) Answer not known

138. Assertion and Reasoning

[A] : About 90% of the marine catch is taken from continental shelves and overlying Neritic water, a region representing less than 8% of the total oceanic area.

[R] : The nutrient rich water sustains very high summertime primary production due to coastal upwelling.

- (A) Assertion [A] is correct, Reason [R] is wrong
- (B) Assertion [A] is wrong, Reason [R] is correct
- (C) Both Assertion [A] and Reason [R] are correct but [R] is not the correct explanation
- (D) Both Assertion [A] and Reason [R] are correct and [R] is correct explanation
- (E) Answer not known

139. The United Nations Convention on the Law of the Sea (UNCLOS) was formed during the year

(A) 1991

(B) 1994

(C) 1995

(D) 1984

(E) Answer not known

140. One of the following comprises the maximum non-conventional fisheries resources in the Indian Exclusive Economic Zone (EEZ).

(i) Oceanic squid

(ii) Deep sea Myctophids

(iii) Jelly fish

(iv) Marine Macro Algae

(A) (i)

(B) (ii)

(C) (iii)

(D) (iv)

(E) Answer not known

141. Which among the following is incorrectly paired?

(i) GIFT – Genetic Improvement Farmed Tilapia

(ii) ICLARM – International Centre for Living Aquatic Resources Management

(iii) AFLP – Alternate Fragment Length Polymorphism

(iv) GFSI – Global Food Safety Initiative

(A) (i) only

(B) (ii) and (iv)

(C) (iii) only

(D) (iii) and (i)

(E) Answer not known

142. The treaty which allowed countries to take control of offshore of 200 Nautical Miles (EEZ) is

- (A) Coastal zone treaty
- (B) Law of sea treaty
- (C) International sea law
- (D) Law of sea convention
- (E) Answer not known

143. Choose the right matches among type.

- (i) Neriti zone – More productive
- (ii) Oceanic zone – Less productive
- (iii) Red tide – No blooming
- (iv) No mortality – Red tide

- (A) (iii) and (iv) are correct
- (B) (i) and (ii) are correct
- (C) (i) and (iv) are correct
- (D) (ii) and (iii) are correct
- (E) Answer not known

144. Oceanic plant life is restricted to the euphotic upper layer of the sea also called as _____ zone.

- (A) Epipelagic
- (B) Mesopelagic
- (C) Bathypelagic
- (D) Abyssopelagic
- (E) Answer not known

145. All India coordinated research project on composite fish culture was started in

- (A) 1961
(B) 1971
(C) 1981
(D) 1978
(E) Answer not known

146. Chelating agent used in shrimp hatchery is

- (A) Sodium thiosulphate
(B) EDTA
(C) Oxytetracycline
(D) Chlorine
(E) Answer not known

147. Choose incorrectly matched statement :

- (i) Designed for only entry of fish – Beam trawl and not let it out
(ii) Almost invisible net laid out – Gill net
to catch fish, made of
a monofilament
(iii) Net is spread using a long – Trap net
support horizontally placed
and dragged
(iv) Net that is placed encircling – Purse seine
School of fish that is pulled out

- (A) (i) and (iii) are correct
(B) (ii) and (iv) are correct
(C) (i) and (ii) are correct
(D) (ii) only is correct
(E) Answer not known

148. Lampreys and Hagfish Lack

- (A) Paired fins
- (B) Tails
- (C) Mouth
- (D) Gills
- (E) Answer not known

149. Choose the correct formula for find out the rearing area of brood fish

- (A) $ABRP = BR \times \frac{1}{SD}$
- (B) $ABRB = BR \times SD$
- (C) $ABRB = SD \times \frac{1}{BR}$
- (D) $ABRB = BR[1 + SD]$
- (E) Answer not known

150. Incorrect Abbreviation of the following.

- (i) HDI – Human Development Index
 - (ii) NMSA – National Intesr Mapping Service Agreement
 - (iii) DNF – Digital Navigation Framework
 - (iv) GMES – Global Monitoring for the Environment and Security
- (A) (iii) and (iv)
 - (B) (ii)
 - (C) (iv)
 - (D) (iii)
 - (E) Answer not known

151. Choose the right answer among types of floods.

- (A) Dam floods, River floods and Coastal floods
- (B) Flash floods, River floods and Coastal floods
- (C) Estuarine floods, Coastal floods and Dam floods
- (D) Coastal floods, Riverine floods and inland floods
- (E) Answer not known

152. The Combination of Management techniques Enforced by a Monitoring Control and Surveillance system

- (A) Population Management
- (B) Agriculture Management
- (C) Fisheries Management
- (D) Flood Management
- (E) Answer not known

153. Love waves are denoted by LQ where

- (A) L for long waves and Q for Liewellyn
- (B) L for long waves and Q for Quality
- (C) L for longitudinal waves and Q for Quality
- (D) L for Lateral waves and Q for Quality
- (E) Answer not known

154. How does reduction in fishing mortality in majority of fisheries, which are currently fully exploited or over exploited reduce the impacts of climate change. Choose the option that doesn't answer the above question.

- (A) Minimizing Sustainable yields
- (B) Reduces green house gas emission by fishing boats
- (C) Helps adaption of marine Ecosystem and fish stocks to climate impacts
- (D) Both (A) and (B)
- (E) Answer not known

155. Assertion [A] : Risk Management Includes risk assessment and Evaluation. Prevailing Ignorance constitute major risk factor

Reason [R] : Natural Hazards offer less potential for prevention

- (A) Both [A] and [R] are true, [R] is the correct explanation of [A]
- (B) [A] is true, [R] is false
- (C) [A] is false, [R] is true
- (D) Both [A] and [R] are true, but [R] is not correct explanation of [A]
- (E) Answer not known

156. Choose the best answer

The post Disaster management given the first proactive action is

- (A) Rehabilitation
- (B) Mitigation measures
- (C) Effectively with an Emergency
- (D) Risk Transfer to finance
- (E) Answer not known

157. Tsunami producing earthquakes have magnitudes greater than _____ on the Richter scale.

- (A) 2.5 (B) 3.0
 (C) 6.5 (D) 4.0
(E) Answer not known

158. The name given to the extensive tropical cyclones by Australia is

- (A) Baguia (B) Typhoons
 (C) Willy willy (D) Cyclones
(E) Answer not known

159. Choose the right answer for an example of permeating cryoprotectant

- (A) Dimethyl sulfoxide (B) Glucose
(C) Sucrose (D) Polyvinyl Pyrrolidone
(E) Answer not known

160. Assertion [A] and Reasoning [R]

Assertion [A] : In the construction of hatchery, The surface water from streams, Rivers Lakes and open sea are preferred as compared to ground water.

Reason [R] : They are comparatively cheap and the well water has excess gas leading to gas bubble disease

- (A) [A] is true, [R] is false
(B) [A] is false, [R] is true
 (C) [A] and [R] are true, [R] is correct explanation of [A]
(D) [A] and [R], Both are false
(E) Answer not known

161. Which among the following is the defined stage of growth in the fingering feed stage between metamorphosis to the growth?

(A) 10 – 20 g

(B) 5 – 10 g

(C) 10 – 30 g

(D) 20 – 40 g

(E) Answer not known

162. Suitable media for culture of microalgae especially in chlorella Sp.

(A) Schreiber's medium

(B) Conway's medium

(C) Walne's medium

(D) TMRC medium

(E) Answer not known

163. Choose the Incorrectly matched.

(i) Gonadotropin Release

– Thalamus

(ii) Maturation and Ovulation in fishes

– HCG

(iii) Acceleration in vitellogenesis

– Eye stalk ablation

(iv) Controls the reproduction function

– Pituitary Gland

(A) (i) and (ii) are correct

(B) (iii) and (iv) are correct

(C) (i) and (iv) are correct

(D) (ii) and (iii) are correct

(E) Answer not known

164. Which of the following statements are True about Hatchery production?
- (i) Labour is generally the largest cost in Hatchery production making up more than 50% of costs
 - (ii) Hatchery designs do not require species production and geographic location
 - (iii) The settling phase of shellfish in Hatchery production can undergo metamorphosis, if the condition is unsuitable
- (A) (i) only
- (B) (i) and (iii) only
- (C) (i) and (ii) only
- (D) (ii) and (iii) only
- (E) Answer not known
-
165. Choose the right matches
- (i) Hatching pits – Fertilised eggs
 - (ii) Nursery pond – Fingerlings to marketable size
 - (iii) Rearing pond – Fry to Fingerlings size
 - (iv) Growing/stocking pond – Newly hatched fry
- (A) (ii) is correct
- (B) (ii) and (iv) are correct
- (C) (i) and (iv) are correct
- (D) (i) and (iii) are correct
- (E) Answer not known

166. The first larval form of bivalve molluscs is

- (A) Veliger
- (B) Trochophore
- (C) Zoea
- (D) Nauplius
- (E) Answer not known

167. "Mizukawari" A summer phytoplankton kill is caused by

- (A) Rotifers
- (B) Artemia
- (C) Daphnia
- (D) Cyclops
- (E) Answer not known

168. Among the given statements, pick out the ones that are true about mangroves

- (i) Mangroves are flowering terrestrial plants
 - (ii) Mangroves can establish themselves in significant wave action
 - (iii) The species diversity of mangroves are largest in Asia and Indonesia
 - (iv) Mangrove reproduces through seeds
- (A) Only (i)
 - (B) (i) and (ii)
 - (C) (i) and (iii)
 - (D) (ii) and (iv)
 - (E) Answer not known

169. Hatcheries can produce 1-2 million seeds per year called

- (A) Small Scale hatcheries
- (B) Medium Scale hatcheries
- (C) Backyard hatcheries
- (D) Large Scale hatcheries
- (E) Answer not known

170. The United Nations environment programme mapped the impact of stressors such as

- (A) Climate changes
- (B) Pollution
- (C) Exotic species
- (D) All of the above
- (E) Answer not known

171. The following eco system face threats due to global climate change

- (i) Coastal wetland
- (ii) Estuary
- (iii) Mangroves
- (iv) Marine ecosystem
- (A) (i) and (iii) only
- (B) (i) and (ii) only
- (C) (ii) and (iii) only
- (D) None of the above the statement
- (E) Answer not known

172. Marpol Act is related to prevention of pollution from

- (A) Ships
- (B) industries
- (C) Household
- (D) Pipelines
- (E) Answer not known

173. The Maritime zones acts on

- (A) 1976
- (B) 1978
- (C) 1981
- (D) 1975
- (E) Answer not known

174. Point out the following is incorrect about National acts on marine science

- (A) The coast guard Act, 1981
- (B) The Maritime zones Act, 1979
- (C) The Radiation protection Rules, 1971
- (D) The water Act, 1981
- (E) Answer not known

175. Activated Sludge undergoes

- (A) Primary Treatment
- (B) Secondary Treatment
- (C) Tertiary Treatment
- (D) Treatment
- (E) Answer not known

176. The oil extracted from the Seabed invariably contains some water (production Water):

- (A) Which must be extracted before the oil is transported to the refinery
- (B) To minimise the oil content of waste water discharged to sea from ships
- (C) Oil refineries are to minimize the oil content of waste water discharged to sea
- (D) Which disappeared in the sea with almost no effect
- (E) Answer not known

177. Assertion [A] and Reason[R]

Assertion [A] : In Brown pelican (*Pelicanus Occidentalis*) the successful breeding virtual disappeared in the Late 1960's and the early 1970's.

Reason [R] : High levels of DDT in tissues interfered in the calcium deposition in the eggshell, making it fragile while incubation.

- (A) [A] is true, [R] is false
- (B) [A] is false, [R] is true
- (C) Both [A] and [R] are true, [R] is not the correct explanation for [A]
- (D) Both [A] and [R] are correct, [R] is the correct explanation for [A]
- (E) Answer not known

182. Choose the right matches among type

- | | | |
|---|---|---|
| (i) Cooler air from over the sea towards land | - | Sea Breeze |
| (ii) Frontal storms | - | Temperature and current associated |
| (iii) Large tropical cyclones | - | Hurricanes |
| (iv) Polar front | - | Northern and southern hemisphere region |
- (A) (i) and (iv) (i) and (iii)
(C) (iii) and (iv) (D) (ii) and (iv)
(E) Answer not known

183. Earth cross section shows _____ major layers.

- (A) Four (B) Two
(C) Six (D) Eight
(E) Answer not known

184. Unsaturated air cools at the dry adiabatic rate of

- (A) $12^{\circ}\text{C}/\text{Km}$ (B) $12.5^{\circ}\text{C}/\text{Km}$
(C) $10.5^{\circ}\text{C}/\text{Km}$ (D) $10^{\circ}\text{C}/\text{Km}$
(E) Answer not known

185. Which of the following is a true statement according to Rayleigh atmospheric scattering?

- (A) Size of effective atmospheric particles are smaller than the wavelength of the radiation
(B) Size of the particles are larger than the wave length
(C) Particle size is equal to the wavelength
(D) Doesn't depends on the particle size
(E) Answer not known

186. The laminar layer exists in

- (A) Mesosphere (B) Troposphere
(C) Stratosphere (D) Ionosphere
(E) Answer not known

187. The approximate value of the solar constant is:

(A) 1348 W/m²

(B) 1358 W/m²

(C) 1368 W/m²

(D) 1378 W/m²

(E) Answer not known

188. _____ classification is based on precipitation effectiveness and thermal efficiency.

(A) Koppen's

(B) Trewartha's

(C) Thornthwaite's

(D) Strahler climate classification

(E) Answer not known

189. Character/s of black body radiation:

(i) The total intensity emitted from the surface of an ideal radiator is proportional to the square of power of absolute temperature.

(ii) The intensity is not uniformly distributed over all wave lengths.

(iii) The shape of distribution function is the same for all temperatures.

(A) (i) only

(B) (i) and (iii)

(C) (ii) only

(D) (ii) and (iii)

(E) Answer not known

190. The Change in temperature when a warm air mass moves into a cool region is called

(A) Conduction

(B) Evaporation

(C) Convection

(D) Advection

(E) Answer not known

191. UV Radiation may also Stimulate

- (A) Testogenesis
- (B) Ovariogenesis
- (C) Spermogenesis
- (D) Gynogenesis
- (E) Answer not known

192. The type of reef that is separated from its associated landmass by a lagoon is called

- (A) A barrier Reef
- (B) An Atoll
- (C) A fringing Reef
- (D) A Table Reef
- (E) Answer not known

193. X-organ since gland complex reported in

- (A) Fish
- (B) Shrimp
- (C) Mollusca
- (D) Marine Mammals
- (E) Answer not known

194. Choose the Right Answer

Marine fishes contain high concentration following one component in Blood to maintain the Osmotic Concentration in sea

- (A) Uric acid
- (B) Urea and Uric acid
- (C) Non Protein Nitrogen
- (D) Urea
- (E) Answer not known

195. Choose the right answer One of the following fertilised eggs are develop into Veliger Larvae.

- (A) Fishes
- (B) Crabs
- (C) Shrimps
- (D) Oysters
- (E) Answer not known

196. Reason and Assertion type.

Assertion [A] : Modern cetaceans have adaptations to live in water but traces of land Ancestry still present in Embryo.

Reason [R] : Cetaceans have evolved from terrestrial ancestors.

- (A) [A] is true but [R] is false
- (B) [A] is false but [R] is true
- (C) [A] and [R] are true and [R] is correct explanation of [A]
- (D) [A] and [R] are true [R] is not correct explanation of [A]
- (E) Answer not known

197. Assertion [A] : The Meroplankton spend part of their life cycle as plankton.

Reason [R] : Meroplanktons after a period of time switch over to benthic or nectonic forms.

- (A) [A] is true but [R] is false
- (B) Both [A] and [R] are true and [R] is the correct explanation of [A]
- (C) [A] is false [R] is true
- (D) Both [A] and [R] are true, but [R] is not the correct explanation of [A]
- (E) Answer not known

198. Lateral line system is present in

- (A) Fish (B) Marine Mammal
(C) Mollusca (D) Crustacean
(E) Answer not known

199. Choose the correct match of the following :

- (i) Plocoid scale – Bony fishes
(ii) Ctenoid scale – Sharks
(iii) Cosmoid scale – Sturgeon fish
(iv) Ganoid scale – Lung fish
(A) (i) and (iv) are correct
(B) (ii) and (iii) are correct
(C) (i) and (ii) are correct
 (D) None of the above
(E) Answer not known

200. Match the following taxonomic classification of marine arthropods common name with its order.

	Common Name	Order
(a)	Horse Shoe Crab	1. Decapoda
(b)	Shrimp	2. Euphausiacea
(c)	Mantis Shrimp	3. Xiphosura
(d)	Krill	4. Stomatopoda

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| <input checked="" type="checkbox"/> (A) | 3 | 1 | 4 | 2 |
| (B) | 3 | 4 | 2 | 1 |
| (C) | 4 | 3 | 2 | 1 |
| (D) | 3 | 2 | 4 | 1 |
| (E) | Answer not known | | | |

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