1. Darwin proposed his evolutionary ideas in

(A) Natural selection theory
(B) Malthus theory
(C) Artificial theory
(D) Lamarck theory
(E) Answer not known

2. A sudden change of a gene from one form to another produces changes in the character called

(A) Mutation
(B) Gene cloning
(C) Mitigation
(D) Syndrome
(E) Answer not known

3. Feulgen reaction involves a dye that specifically stain DNA. The dye used in this reaction is

(A) Janus Green B
(B) Neutral Red
(C) Basic Fuchsin
(D) Haematoxylin
(E) Answer not known

4. Mendels law of independent assortment was proved by

(A) Dihybrid cross
(B) Co dominance
(C) Law of random fertilization
(D) Monohybrid cross
(E) Answer not known

5. The Corpus Luteum at the earliest stage of human pregnancy secretes estrogen to support the growth of the

(A) Matured follicle
(B) Corpus Luteum
(C) Uterus and Progesterone
(D) Carpus albicans
(E) Answer not known

6. Leydig cells comprise less than 10% of the testicular volume and secrete approximately.

(A) 10-50 mg/day of testosterone
(B) 7-8 mg/day of testosterone
(C) 10-20 mg/day of testosterone
(D) 50-60 mg/day of testosterone
(E) Answer not known

7. Hormone receptors are most commonly located in the Plasma membrane, possibly on the outer surface of the

(A) Cell membrane
(B) Cell wall
(C) Bone
(D) Cytoplasm
(E) Answer not known

8. The middle piece of spermatozoa contains helical sheath called

(A) Epididymis sheath
(B) Mitochondrial sheath
(C) Cortex
(D) Vas deferense
(E) Answer not known

9. Protein deficiency diminishes the synthesis of all proteins and tissue deposition including

(A) Skeletal tissues
(B) Muscular tissues
(C) Blood tissues
(D) Nervous tissues
(E) Answer not known

10. Scurvy result from a deficiency of

(A) Ascorbic acid
(B) Cynogopalamin
(C) Libitum
(D) Citric acid
(E) Answer not known

11. The amount of creatinine in the urine has been used to measure

(A) Fundamental source
(B) Basal heat production
(C) Energy metabolism
(D) Quantitatively measured
(E) Answer not known

12. Assertion [A] : Waxes are found in animal tissue are esters of high molecular weight fatty acids with alcohols and sterols.

Reason [R] : Waxes are highly insoluble in water and are chemically inert, because they have fully reduced amino chains.

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

13. Three lac genes are induced together and lie adjacent to one another in the E.coli chromosome. They are transcribed on a

(A) Polytenchromosome
(B) Lambrush chromosome
(C) Cell cycle
(D) Polycistronic messenger RNA
(E) Answer not known

14. Transformation experiment in bacteria was performed by :

(A) Louis Pasteur
(B) Frederick Griffith
(C) Macleod
(D) Meselson and Stahl
(E) Answer not known

15. The RNA polymerase binding is blocked and transcription is prevented, when lactose is

(A) Absent
(B) Present
(C) No added
(D) Preservation
(E) Answer not known

16. Transfer of DNA from one bacterial cell to another through a virus is known as :

(A) Transduction
(B) Transformation
(C) Conjugation
(D) Reproduction
(E) Answer not known

17. A primary spermatocyte undergoes the first maturation division and forms two

(A) Primary spermatocyte
(B) Primary ovary
(C) Secondary spermatocytes
(D) Secondary ovalation
(E) Answer not known

18. During electron transport, the electrons removed from oxidized substrate release the energy that is harnessed to synthesize ATP. This process is referred to as :

(A) Oxidative dephosphorylation
(B) Oxidative Phosphorylation
(C) Terminal oxidation
(D) Hydrogen accepts
(E) Answer not known

19. The DNA responsible for the synthesis of rRNA is called

(A) $rDNA^{-}$
(B) mRNA
(C) trNA
(D) RNA
(E) Answer not known

20. As the cell wall matures, it undergoes chemical changes. One such change is the deposition of :

(A) Lignin
(B) Phenol red
(C) Subarin
(D) Sodium chloride
(E) Answer not known

21. Choose the correct dental formula of opossum

(A) $\frac{5,1,3,4}{4,1,3,4} = 50$

(B) $\frac{4,1,4,4}{3,2,3,4} = 50$

(C) $\frac{5,1,3,4}{5,1,3,3} = 50$

(D) $\frac{5,0,4,4}{4,2,3,3} = 50$

(E) Answer not known

22. Which of the following is a reptilian affinity of monotremes?

(a) T-shaped inter clavide

(b) Body covered with hair

(c) Dicondylic skull

(d) Presence of pinnae

(A) (a) and (c)

(B) (a) only

(C) (c) only

(D) (a) and (d)

(E) Answer not known

23. Choose the correct avian fauna which has fast flying with a show wing beat

(a) gulls and swam

(b) crow and eagles

(c) sparrow and pigeons

(d) owls and kingfisher

(A) (a) and (b)

(B) (a) only

(C) (b) and (d)

(D) (c) only

(E) Answer not known

24. Having ascertained whether it is poisonous or non-poisonous and if it happens to be poisonous you would proceed with other identifying marks. If the head is covered with scales and not shields, then its is

(a) Krait

(b) Viper

(c) Cobra

(d) Rat snake

(A) (a) and (b) only
(B) (b) only
(C) (b) and (c) only
(D) (d) only
(E) Answer not known

25. Partial neoteny refers to

(a) Sexual reproduction in larvae, capable of metamorphosis under suitable condition.

(b) Delayed metamorphosis due to physiological or ecological changes in environment

(c) Animal fails to hibernate

(d) Animal remains larval throughout

(A) (a), (b) and (c) only
(B) (b) only
(C) (b) and (c) only
(D) (d) only
(E) Answer not known

26. In Anabas fishes, the accessory respiratory system functions through

(A) Gill Organ
(B) Diverticular gills
(C) Labyrinthine organ
(D) Suprabranchii chamber
(E) Answer not known

27. Retrogressive metamorphosis is exhibited in

(A) Cephalochordates
(B) Urochordates
(C) Hemichordates
(D) Urodeles
(E) Answer not known

28. Which of the following best describes the type of metamorphosis seen in ascidians?

(A) Progressive metamorphosis
(B) Retrogressive metamorphosis
(C) Partial metamorphosis
(D) Complete metamorphosis
(E) Answer not known

29. One of the following is not a function of the air bladder

(A) Reproduction
(B) Respiration
(C) Hydrostasis
(D) Sound production
(E) Answer not known

30. Bony fishes have the tail for swimming that is

(A) Heterocercal tail
(B) Homocercal tail
(C) Semicercal tail
(D) Hemicord tail
(E) Answer not known

31. Oniscus is commonly known as

(A) Horse louse
(B) Wood louse
(C) Body louse
(D) Head louse
(E) Answer not known

32. Mention the intermediate phylum between protista and metazoa

(A) Parazoa

(B) Mesozoa

(C) Eumetazoa

(D) Coelomata

(E) Answer not known

33. Group of chordates showing persistent notochord, nerve cord along the entire body length, and permanent gill slits is

(A) Enteropneusta

(B) Ascidiacea

(C) Larvacea

(D) Leptocardii

(E) Answer not known

34. Parasitic crustaceans such as those in the Bomolochidae family attach to their hosts by

(A) Burrowing into the hosts tissue

(B) Secreting a glue-like substance

(C) Using clawed antennae and flattened swimming legs (Dickerson)

(D) Biting and chewing on the host's skin

(E) Answer not known

35. The part of annelids responsible for secreting coelomic fluid is

(A) Epidermis
(B) Hypodermis
(C) Peritoneum
(D) Prostomium
(E) Answer not known

36. Which one of the following is a false statements?

(P) The first eukaryotes appeared 1.5 billion years ago.

(Q) The protozoans that cause malaria in humans are sporozoans.

(R) Amoebas have a flagellated phase in their lifecycle.

(S) Ciliates differ from all other protozoans in having 2 types of nuclei.

(A) (R) only
(B) Both (Q) and (R)
(C) (Q), (R) and (S)
(D) (P), (Q), (R) and (S)
(E) Answer not known

37. Match the following :

| Column I | Column II |
|---|---|
| (a) Ctenidium | 1. Termites |
| (b) Social Insect | 2. Nereis |
| (c) Triploblastic-metamerism | 3. Taenia solium |
| (d) Trochophore larva | 4. Monopectinate gill |
| (e) Mehlis's gland | 5. Sea mouse |

| | (a) | (b) | (c) | (d) | (e) |
|---|---|---|---|---|---|
| (A) | 2 | 5 | 4 | 1 | 3 |
| (B) | 4 | 1 | 5 | 2 | 3 |
| (C) | 3 | 4 | 5 | 1 | 2 |
| (D) | 1 | 5 | 2 | 3 | 4 |

(E) Answer not known

38. Chitinous chambers in the rhomboidal body of Velella are similar to

(A) Gonopalpous
(B) Pneumatophore
(C) Rhizotoma
(D) Tubiforms
(E) Answer not known

39. Asexual reproduction in scypha occurs through

(A) Production of sperms
(B) Budding and regeneration
(C) Scyphing
(D) Pinaco cytes
(E) Answer not known

40. In the canal system of sycon, the in current canals open into the radial canals through openings called

(A) Apopyle
(B) Spongocoel
(C) Prosopyle
(D) Dermal pore
(E) Answer not known

41. The tetranucleate cyst is transmitted from one person to another through contaminated food and cause disease by entamoeba in man is called

(A) Gambia fever
(B) Filariasis
(C) Malaria
(D) Amoebiasis
(E) Answer not known

42. Match the following coelomate animals with their type of coelom

| List I | List II |
|---|---|
| (a) Nemertinea | 1. Schizocoelom |
| (b) Namatoda | 2. Acoelom |
| (c) Echinodermata | 3. Pseudocoelom |
| (d) Mollusca | 4. Enterocoelom |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 1 | 2 | 4 | 3 |
| (B) | 2 | 3 | 4 | 1 |
| (C) | 3 | 4 | 2 | 1 |
| (D) | 4 | 1 | 3 | 2 |

(E) Answer not known

43. The cavity lying between the body wall and the alimentary canal in some animals remains filled with

(A) Nematocysts
(B) Parenchyma
(C) Coelomocytes
(D) Pseudocoelomocytes
(E) Answer not known

44. Animals in which the body can be divided into two equal halves by any plane passing through the central axis from top to bottom occurs in

(A) Volvox
(B) Amoeba
(C) Sponges
(D) Annelida
(E) Answer not known

45. Identify the correct minor phyla from the following.

(1) Mesozoa, phoronida, kinorhyncha, ctenophora

(2) Nemortinea, mesozoa, cnidaria, phoronida

(3) Ectoprocta, priapulida, rotifera, brachiopoda

(4) Rotifera, pogonophora, ctenophora, nematoda

(A) (1) and (3) only (B) (1) only

(C) (2) and (4) only (D) (1) and (4) only

(E) Answer not known

46. Which of the following chlorination levels used in seafood industries are correctly matched.

(1) Glazing – 20 ppm

(2) Hand Sanitization dip – 2 ppm

(3) Foot sanitization dip – 50-100 ppm

(4) Washing of floor – 100-200 ppm

(A) (1) and (2)

(B) (2) and (3)

(C) (3) and (4)

(D) (1) and (4)

(E) Answer not known

47. Which of the following is correctly paired

(1) Codex – Agreement

(2) WTO – International trade

(3) SPS – Standards

(4) JEMRA – Micro biological risk assessment

(A) (1) and (2)

(B) (1) and (3)

(C) (2) and (4)

(D) (2) and (3)

(E) Answer not known

48. Chloramphenicol causes which of the following

(A) Gasteroenteritis (B) Aplastic anemia

(C) Nephrosis (D) Neurotoxicity

(E) Answer not known

49. The Head quarters of MPEDA is located at

(A) New Delhi (B) Cochin

(C) Mumbai (D) Kolkatta

(E) Answer not known

50. Pre-harvest test is done for which of the following prior to export

(A) Shrimp (B) Fish

(C) Crab (D) Seaweed

(E) Answer not known

51. The major form of arsenic in fish which has lower toxicity

(A) Arsenite
(B) Arsenate
(C) Arsenobetaine
(D) Arsenolipid
(E) Answer not known

52. Which enzyme plays a major role in the "gaping" of fish fillets?

(A) Collaginase
(B) Tyrosinase
(C) Tryptanase
(D) Alkalase
(E) Answer not known

53. Which two of the following break down immediately after the death of fish

(1) Carbohydrate
(2) Protein
(3) Nucleotide
(4) Lipid

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

54. Match the following

| | | | |
|---|---|---|---|
| (a) | Coagulase test | 1. | Saline Nutrient Agar |
| (b) | β glucouronidase(-ve) | 2. | Alkaline saline peptone water |
| (c) | Pre enrichment | 3. | E coli 0157 |
| (d) | Subculture | 4. | Staphylococcus |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 4 | 2 | 3 | 1 |
| (B) | 4 | 3 | 2 | 1 |
| (C) | 3 | 4 | 2 | 1 |
| (D) | 3 | 4 | 1 | 2 |

(E) Answer not known

55. The brown discoloration of tuna meat is due to

(A) Haemoglobin
(B) Myoglobin
(C) Metmyoglobin
(D) Oxymyoglobin
(E) Answer not known

56. Choose the right matches

| | | | |
|---|---|---|---|
| (1) | Discriminative test | – | Hedonic test |
| (2) | Subjective test | – | Triangle test |
| (3) | Torry scheme | – | Cooked fillet |
| (4) | QIM (Quality Index Method) | – | Species specific |

(A) (1) and (3) are correct
(B) (1) and (4) are correct
(C) (2) and (3) are correct
(D) (3) and (4) are correct
(E) Answer not known

57. Fish that has 90% of water content

(A) Tilapia
(B) Salmon
(C) Pangasius
(D) Harpodon nehereus
(E) Answer not known

58. Match correctly the specific spoilage organism and the product associated to it

| | | | |
|---|---|---|---|
| (a) | Fresh water fish | 1. | Clostridia |
| (b) | Marine fish | 2. | Yeast |
| (c) | Yoghurt | 3. | Shewanella putrefaciens |
| (d) | Cheese | 4. | Pseudomonas |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 4 | 3 | 2 | 1 |
| (B) | 3 | 4 | 2 | 1 |
| (C) | 4 | 3 | 1 | 2 |
| (D) | 3 | 4 | 2 | 1 |

(E) Answer not known

59. The most heat resistant pathogenic bacteria among non-spore formers is

(A) Clostridium botulinium
(B) Listeria monocytogenes
(C) Bacillus cereus
(D) Clostridium perfringens
(E) Answer not known

60. Typical smell of marine fish is contributed by

(A) TMA
(B) TMAO
(C) Phenolic compound
(D) ATP
(E) Answer not known

61. Activities that shall be regulated or permissible in CRZ – 1B (Inter tidal area) include.

(i) Foreshore facilities like harbours

(ii) Hatchery

(iii) Shrimp / Fish farms

(iv) Power by non conventional energy sources

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

62. Which of the following is not an objective of EIA.

(A) Consider Environmental factors in decision making process
(B) Identify potential environmental social and economical impact
(C) To prohibit the implementation of a proposed activity that causes adverse environmental impact
(D) Promote sustainable development through Environmental managemental plan
(E) Answer not known

63. In GIS, the analysis of spatial data using Raster data is used for

(1) Storage

(2) Processing

(3) Display

(4) Overlay

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

64. Choose the incorrectly matched pair:

(1) MSS – Multi Spectral Scanner

(2) ETM – Effective Thematic Mapper

(3) TM – Thematic Mapper

(4) GIS – Geological Information System

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

65. The disease caused by cadmium poisoning is

(A) Minamata
(B) Itai itai
(C) Black foot disease
(D) Foot mouth disease
(E) Answer not known

66. Correct matching of poisoning types and causative organisms includes:

| | | | |
|---|---|---|---|
| (a) | Ciguatera poisoning | 1. | Gymnodinium |
| (b) | Paralytic shellfish poisoning | 2. | Gonyaulax |
| (c) | Neuro toxic shellfish poisoning | 3. | Trichodesmium |
| (d) | Red tide by blue green algae | 4. | Gambierdiscus |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 2 | 4 | 1 | 3 |
| (B) | 4 | 3 | 2 | 1 |
| (C) | 4 | 1 | 2 | 3 |
| (D) | 4 | 2 | 1 | 3 |

(E) Answer not known

67. A region where waves, currents, and tides are regularly observed corresponds to the ————————.

(A) Supralittoral region
(B) Abyssal region
(C) Sublittoral region
(D) Littoral region
(E) Answer not known

68. Biological oxygen demand increases with

(A) Increase in organic pollutants in water
(B) Increase in dissolved oxygen levels
(C) Decrease in microbial activity
(D) Decrease in temperature of water
(E) Answer not known

69. Which of the following statements are correct about upwelling?

(i) Coastal upwelling is restricted to eastern boundaries
(ii) The speed of upwelling is about 5-10 m/day
(iii) Upwelled water is cooler than the original surface water
(iv) Upwelled water is rich in nutrients

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

70. Freezing point of seawater lowers when

(i) Salinity of seawater increases
(ii) Salinity of seawater decreases
(iii) Pressure increases
(iv) Pressure decreases

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

71. Identify the exotic fish species from the following options:

(1) Salmo trutta fario

(2) Cyprinus carpio

(3) Labeo fimbriatus

(4) Osphronemus goramy

(A) (1) and (2) only
(B) (1) and (3) only
(C) (1) and (4) only
(D) (1), (2) and (4) only
(E) Answer not known

72. Match the following types of estuaries with their correct characteristics:

| | | | |
|---|---|---|---|
| (1) | Positive estuary | – | Evaporation exceeds freshwater inflow |
| (2) | Negative estuary | – | Freshwater inflow exceeds evaporation |
| (3) | Coastal plain estuary | – | Drowned river valleys |
| (4) | Bar built estuary | – | Sand bars parallel of the coastline |

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

73. Which among the following is not the western boundary current?

(A) Gulf stream current
(B) Kuroshio current
(C) Brazil current
(D) Benguela current
(E) Answer not known

74. Western boundary current in north pacific ocean is

(A) Kuroshio current
(B) Oyashio current
(C) Gulf stream current
(D) Labrador current
(E) Answer not known

75. Assertion [A] : Potential temperature is the temperature that a water parcel would have if moved adiabatically to another pressure.

Reason [R] : When a water parcel is moved from a higher to lower pressure, it expands and its temperature decreases.

(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

76. Select the correctly matched pairs from the list below:

| | | | |
|---|---|---|---|
| (a) | Epineuston | 1. | Diatom |
| (b) | Hyponeuston | 2. | Loach fishes |
| (c) | Nekton | 3. | Water strider |
| (d) | Plankton | 4. | Back swimmer |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 3 | 4 | 1 | 2 |
| (B) | 4 | 3 | 1 | 2 |
| (C) | 3 | 4 | 2 | 1 |
| (D) | 4 | 3 | 2 | 1 |

(E) Answer not known

77. Match the following:

(1) Dimictic lake – Rarely mixed
(2) Monomictic lake – Permanently mixed; No turn over
(3) Oligomictic lake – One turnover in a year
(4) Micromictic lake – Two turnovers in a year

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

78. Clam species whose population declined due to over fishing in Ashtamudi lake is:

(A) Meretrix costa
(B) Vellorita cyprinoides
(C) Paphia malabarica
(D) Paphia textile
(E) Answer not known

79. Match the optimum level of physicochemical characteristics of productive reservoir

| | | | |
|---|---|---|---|
| (a) | pH | 1. | > 5 ppm |
| (b) | Do | 2. | > 70 ppm |
| (c) | Alkalinity | 3. | > 50 ppm |
| (d) | Hardness | 4. | 7 – 8 |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 4 | 1 | 3 | 2 |
| (B) | 4 | 1 | 2 | 3 |
| (C) | 4 | 2 | 3 | 1 |
| (D) | 4 | 3 | 2 | 1 |

(E) Answer not known

80. A temperature-depth profile showing transition from warm surface water to cold deep water typically takes the form of a _____

(A) Asigmoid curve

(B) Sigmoid curve

(C) Thermocline

(D) J curve

(E) Answer not known

81. The relationship between size and age using logistic equation is described

(A) Absolute growth rate

(B) Sinusoidal curve

(C) Von Bertallanffy growth function

(D) Relative growth rate

(E) Answer not known

82. The Indian parliament passed a comprehensive law, the wild life protection Act

(A) 1982 (B) 1972

(C) 1962 (D) 1952

(E) Answer not known

83. The live is a Sand that is used in saltwater aquarium that is populated with beneficial bacteria and

(A) Arthropoda
(B) Amphibia
(C) Reptiles
(D) Invertebrata
(E) Answer not known

84. The lakes mostly covered with ice are grouped under

(A) Oligomictic
(B) Dimictic
(C) Amictic
(D) Polymictic
(E) Answer not known

85. A water body, with the addition of sewage, urban runoff, feces etc, becomes

(A) Oligotrophic
(B) Monomictic
(C) Eutrophic
(D) Dystrophic
(E) Answer not known

86. The brain and thoracic ganglian promote egg production in prawns and crab through their

(A) GIH
(B) GSH
(C) GnTH
(D) GnLH
(E) Answer not known

87. The union of endopodite, in prawn at 1st Abdominal appendage is known as

(A) Dolium
(B) Epipodite
(C) Petasma
(D) Chaisma
(E) Answer not known

88. Match the following :

| | | | |
|---|---|---|---|
| (a) | Nemichthys | 1. | Bristle mouth |
| (b) | Synaphobranchus | 2. | Hatchet fishes |
| (c) | Gulper | 3. | Snipe eels |
| (d) | Cyclothone | 4. | Eurypharynx |
| (e) | Argyropelecvs | 5. | Cutthroat eels |

| | (a) | (b) | (c) | (d) | (e) |
|---|---|---|---|---|---|
| (A) | 1 | 3 | 2 | 4 | 5 |
| (B) | 3 | 1 | 2 | 5 | 4 |
| (C) | 3 | 1 | 2 | 4 | 5 |
| (D) | 3 | 5 | 2 | 1 | 4 |

(E) Answer not known

89. Denoting the biomass at time t by N the following equation can be obtained

(A) $\frac{dN}{dt} = kN$ (B) $\frac{Dn}{dt} = Kn$

(C) $\frac{DN}{td} = Kh$ (D) $\frac{Nd}{tb} = Kn$

(E) Answer not known

90. Many of the sea weeds are commercially valuable as they provide raw material for production of

(A) Pearl (B) Raft mussels

(C) Royal jelly (D) Agar

(E) Answer not known

91. Specify the physiological function of spleen in the following :

(A) Acts as blood reservoir
(B) Rich in B cells and T cells
(C) It is a fetal hematopoietic organ
(D) It contains macrophages and killer cells (NK cells)
(E) Answer not known

92. Chemical composition of gastric juice is

(A) 85% of water and 15% of other substance
(B) 50% of water and 50% of other substance
(C) 75% of water and 25% of other substance
(D) 99% of water and 1% of other substance
(E) Answer not known

93. The lobster is identified by its

(A) Antennule
(B) Antennal peduncle
(C) Walking leg
(D) Colour pattern
(E) Answer not known

94. The air bladder of fishes is used for the synthesis of

(A) Rose water
(B) Cooling water
(C) Isinglass
(D) Dry Fruits
(E) Answer not known

95. Prolactin acts through _____ pathway.

(A) MAPK
(B) mTOR
(C) JAK – STAT
(D) Wnt
(E) Answer not known

96. Choose the right one :

In stomiatoid fishes; a large rectal light gland is filled with luminous

(A) Virus colony
(B) Bacterial flora
(C) Fungal flora
(D) Aquatic flora
(E) Answer not known

97. Expand RFLP

(A) Restruction Fragment Local Polyplay
(B) Restriction Fragment Length Polymorphism
(C) Rebosugar Frog develop Level Process
(D) Reflection Fragment Lactos Polyp
(E) Answer not known

98. Fecundity expresses the capacity of fish in term of

(A) Sperm production per year
(B) Young one produce per year
(C) Eggs production per year
(D) Increase weight per year
(E) Answer not known

99. Chondrosteans were replaced by

(A) Holosteans
(B) Teleosteans
(C) Halecostomes
(D) Chondrictayes
(E) Answer not known

100. Which of the following was written by Peter Artedi and published by Marcus Elieser and Johann Gottlob Schneider?

(A) Systema Ichthyologiae
(B) Genera plantrum
(C) Systema Naturae
(D) Zoophylaceum
(E) Answer not known

101. A Keytone Species is one that

(1) preys heavily on a particular species
(2) is especially vulnerable to extinction
(3) is restricted to small geographic area
(4) strongly influences the structure and functioning of its ecological community

(A) (1) and (2) are correct
(B) (2) only is correct
(C) (3) and (4) are correct
(D) (4) only is correct
(E) Answer not known

102. The presence of all of the following tend to increase species diversity except

(A) Competitive exclusion
(B) Keystone predators
(C) Patchy environments
(D) Moderate disturbances
(E) Answer not known

103. Which among the characteristics are TRUE regarding r-selected reproduction strategies?

(1) Longer life

(2) Rapid growth

(3) Late maturity

(4) Little parental care

(A) (2) and (4) are correct
(B) (1) and (2) are correct
(C) (2) and (3) are correct
(D) (3) and (4) are correct
(E) Answer not known

104. Which one of the marine environment is termed as "Biological desert"?

(A) Deep ocean floor
(B) Intertidal shore
(C) Rock pools
(D) Sub-tidal region
(E) Answer not known

105. During the process of primary sex determination in male and the male pathways says "make testes and don't make ovaries" is due to

(1) SRY gene

(2) $\beta$-catenin

(3) SOX9 gene

(4) Y chromosome

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

106. In which animal, the neural plate does not fold; rather convergence at the midline generates a neural keel, and the neural tube is formed by the process of cavitation

(1) Zebra fish

(2) Birds

(3) Mammals

(4) Sea Urchin

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

107. Which animal eggs has recorded the slowest cleavage during development?

(A) Mammalian egg
(B) Bird egg
(C) Insect egg
(D) Frog egg
(E) Answer not known

108. Match the percentage of immunoglobulins according to the classes.

| | | | |
|---|---|---|---|
| (a) | IgG | 1. | 14 |
| (b) | IgA | 2. | 1 |
| (c) | IgM | 3. | 75 |
| (d) | IgD | 4. | 0.003 |
| (e) | IgE | 5. | 10 |

| | (a) | (b) | (c) | (d) | (e) |
|---|---|---|---|---|---|
| (A) | 3 | 1 | 5 | 2 | 4 |
| (B) | 2 | 1 | 4 | 5 | 3 |
| (C) | 3 | 1 | 2 | 5 | 4 |
| (D) | 5 | 1 | 4 | 2 | 3 |

(E) Answer not known

109. Identify the TRUE statements from the following :

(1) IgG does not cross placenta

(2) IgG enhances phagocytosis of bacteria

(3) IgA is present in various body secretions

(4) IgE does not cause allergic symptoms

(A) (2) and (3) are correct

(B) (1), (3), (4) are correct

(C) (3) and (4) are correct

(D) (1), (2), (3) are correct

(E) Answer not known

110. Antibodies which combine with surface components of bacteria is called

(A) Antitoxins
(B) Agglutinins
(C) Lysins
(D) Opsonins
(E) Answer not known

111. Majority of the Natural Killer (NK) cells expresses

(A) Low CD56 and High CD16
(B) Low CD16 and High CD56
(C) Equal amount of CD56 and CD16
(D) Low CD56 only
(E) Answer not known

112. The standard deviation is regarded as the better measure of dispersion. Based on this statement match the proper Reason [R] with Assertion [A].

Assertion [A] : The algebraic signs are ignored in the calculation of standard deviation.

Reason [R] : Standard deviation is always calculated from the arithmetic mean.

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

113. Identify the correct empirical relationship between mean, median and mode.

(1) Mean – Mode = 3 (Mean – Median)

(2) Mode = 3 Median – 2 Mean

(3) Mean – Median = 3 (Mean – Mode)

(4) Median = 3 Mode – 2 Mean

(A) (1) and (2) are correct

(B) (1) and (3) are correct

(C) (2) and (3) are correct

(D) (3) and (4) are correct

(E) Answer not known

114. Select the correct reason [R] with the given assertion [A] regarding the representation to statistical data.

Assertion [A] : "A diagram is worth a thousand words"

Reason [R] : Diagram is an statistical device for presenting statistical data in a visual form.

(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 but [R] is true

(D) Both [A] and [R] are true; and [R] is NOT the correct explanation of [A]

(E) Answer not known

115. Sequences which are dubbed as 'tags' and can be used as probes for isolation of concerned genes from genomic DNA are called

(A) Expressed Sequence Tag (EST) Sequences

(B) Genome Sequence Tag (GST) Sequences

(C) Organellar DNA sequences

(D) Genomic DNA sequences

(E) Answer not known

116. The coefficient of performance (COP) of a seawater refrigeration system used in fish preservation is defined as

(A) Ratio of compressor work to the refrigerant charge

(B) Ratio of heat removed from seawater to heat supplied to the condenser

(C) Ratio of heat extracted at the evaporator to the work input to the compressor

(D) Ratio of freezing time to total operation time

(E) Answer not known

117. The preference for vapour compression refrigeration over traditional Ice storage in fish preservation is due to

(A) Lower long-term operational costs

(B) Absence of mechanical components

(C) Better control over temperature and humidity

(D) Complete prevention of bacterial growth

(E) Answer not known

118. Refrigerant used in vapour compression cycle is

(A) Water vapour
(B) $NH_3$
(C) Methyl chloride
(D) Sulfur dioxide
(E) Answer not known

119. The work of compressor in vapour compression system is

(A) Decrease the temperature of the refrigerant
(B) Increase the volume of the refrigerant
(C) Increase the velocity of the refrigerant
(D) Increase the pressure of the refrigerant
(E) Answer not known

120. Which of the following statement is true about Four Stroke Engine

(i) Lighter flywheel
(ii) Mechanical and thermal efficiency are better
(iii) Blower is not needed for charging

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

121. International code of signal of distress indicated by _____ flags.

(A) NC
(B) NK
(C) SOS
(D) CN
(E) Answer not known

122. A properller type that allows adjusting blade angle while running, enabling thrust control without altering engine speed, is known as

(A) Fixed – pitch propeller
(B) Surface – piercing propeller
(C) Controllable – pitch propeller
(D) Ducted nozzle propeller
(E) Answer not known

123. The path followed by a fishing vessel is called

(A) Course
(B) Track
(C) Azimuth
(D) Leeway
(E) Answer not known

124. Which of the following is NOT an component of GPS

(A) Satellites
(B) Ground control stations
(C) GPS receivers
(D) GIS
(E) Answer not known

125. Which one of the electronics in a fishing vessel uses phase difference between radiowaves from two stations

(A) Loran
(B) Decca
(C) Omega
(D) Radar
(E) Answer not known

126. A fishing gear employed to catch schooling fish is

(A) Trawl net
(B) Purse seine
(C) Gill net
(D) Long line
(E) Answer not known

127. Which of the following is not the part of purse seine net?

(A) Float line
(B) Lead line
(C) Bunt
(D) Purse ring
(E) Answer not known

128. The coefficient of fishing vessel that measure the fineness of the ship is

(A) Block coefficient
(B) Prismatic coefficient
(C) Water plane area coefficient
(D) Dead weight coefficient
(E) Answer not known

129. Which among the following are not the water based preservatives for the wood treatment

(1) Chromated copper arsenate

(2) Chromated Zinc Chloride

(3) Copper naphthanate

(4) Pentachlorophenol

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

130. The middle layer of trammel net is known as

(A) Bunt
(B) Lint
(C) Cod
(D) Log
(E) Answer not known

131. The fishing gears that employ artificial baits are

(i) Jigging line

(ii) Pole and line

(iii) Troll line

(iv) Hand line

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

132. Material used in modern gillnet floats due to light weight and high buoyancy is

(A) PVC
(B) Galvanized iron
(C) Expanded polystyrene
(D) Nylon
(E) Answer not known

133. The aquatic bird that is used for fishing

(A) Sea gull
(B) King fisher
(C) Cormorants
(D) Pelican
(E) Answer not known

134. Standing wing and running wing are the parts of

(A) Beach seine
(B) Ring seine
(C) Purse- seine
(D) Trawls
(E) Answer not known

135. Polyethylene an additive polymer of ethylene, is normally obtained by

(A) Cracking diesel
(B) Cracking petroleum
(C) Cracking water
(D) Sealing with phenol
(E) Answer not known

136. When the frequency is divided into different components in a bar diagram, it is called

(A) Bar diagram

(B) Frequency polygon

(C) Percentage divided bar diagram

(D) Divided bar diagram

(E) Answer not known

137. Match the following :

| | | | |
|---|---|---|---|
| (a) | Krishi Vigyan Kendra (KVK) | 1. | Transfers technology, from research laboratory to farmer's field |
| (b) | Rural aquaculture project | 2. | Bridges the gap b/w well-developed research system and extension system |
| (c) | Lab to land project | 3. | Imparts need based and skill- oriented vocational training in agriculture and allied sectors |
| (d) | National agricultural extension project | 4. | Demonstration of various aspects of aquaculture by providing inputs and technical know-how |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 3 | 4 | 1 | 2 |
| (B) | 2 | 4 | 1 | 3 |
| (C) | 4 | 2 | 1 | 3 |
| (D) | 1 | 4 | 3 | 2 |

(E) Answer not known

138. Choose the wrongly matched pair under PMMSY

(i) PAC – Project Accounts Committee

(ii) SLAMC – State Level Approval and Monitoring Committee

(iii) PMU – Project Monitoring Unit

(iv) DPR – Daily Progress Report

(A) (i) and (ii)

(B) (ii) and (iii)

(C) (iii) and (iv)

(D) (i) and (iv)

(E) Answer not known

139. Identify the accurate statements of extension teaching methods?

(i) Individual contact method deals with one person

(ii) Group contact method deals with large number of people

(iii) Mass contact method deals with a group of people

(A) (i) only

(B) (i) and (iii) only

(C) (i) and (ii) only

(D) (ii) and (iii) only

(E) Answer not known

140. The pie diagram is calculated by finding the degree representation of

(A) Variable Sample/Total × 360° = Sample Degree Representation

(B) Variable Sample/Total × 100 = Sample representation

(C) Variable Sample × Total/360 = Sample rep. degree

(D) Variable Sample × percentage

(E) Answer not known

141. Identify the state with the highest number of Coastal Aquaculture Authority (CAA) registered aquaculture inputs during the year 2023-24

(A) Andhra Pradesh (B) Telangana

(C) Tamil Nadu (D) Karnataka

(E) Answer not known

142. Name the end implementing agency for entrepreneur models in fisheries and aquaculture under the centrally sponsored component of PMMSY

(A) MPEDA (B) FSI

(C) NFDB (D) CAA

(E) Answer not known

143. Select the factors responsible for changes in the supply of goods and services

(i) Reduction in the relative prices of other products

(ii) Changes in technology

(iii) Tastes and preferences of consumers

(iv) Price of other related goods

(A) (i) and (iii) only

(B) (i) and (ii) only

(C) (iii) and (iv) only

(D) (ii) and (iii) only

(E) Answer not known

144. Match the following

| | |
|---|---|
| (a) Asia fish model | 1. Consumer core |
| (b) Quadratic profit function approach | 2. Trade core |
| (c) Almost ideal demand system model | 3. Producer, consumer and trade cores |
| (d) Armington approach | 4. Producer core |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 1 | 4 | 3 | 2 |
| (B) | 2 | 1 | 4 | 3 |
| (C) | 4 | 3 | 2 | 1 |
| (D) | 3 | 4 | 1 | 2 |

(E) Answer not known

145. Choose the correct expansion of HACCP.

(A) Health and Agricultural Control Certification
(B) Hazard Analysis Critical Control Points
(C) Hygiene and Contamination Control Procedure
(D) Hazardous Areas and Chemical Control Plan
(E) Answer not known

146. A major benefit of using IoT-based smart sensors in aquaculture is

(A) Manual measurement of water parameters
(B) Increased cost and complexity in farming
(C) Real-time monitoring of pH, DO and temperature
(D) Frequent shutdowns of the system
(E) Answer not known

147. Identify the most suitable method to prevent disease outbreaks in freshwater aquarium fish

(A) Frequent antibiotic application
(B) Relying only on UV sterilizers
(C) Ensuring clean water and minimal stress
(D) Keeping fish in isolation permanently
(E) Answer not known

148. Assertion [A] : An aquarium is considered an artificial ecosystem.

Reason [R] : It has both biotic and abiotic components but requires human intervention for maintenance.

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

149. Match the following ornamental fish diseases and their causative agents.

| | | | |
|---|---|---|---|
| (a) | White spot disease | 1. | Chondrococcus columnaris |
| (b) | Velvet disease | 2. | Saprolegnia sp. |
| (c) | Columnaris disease | 3. | Ichthyophthirius sp. |
| (d) | Cotton-wool disease | 4. | Oodinium sp. |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 3 | 4 | 1 | 2 |
| (B) | 2 | 4 | 1 | 3 |
| (C) | 4 | 2 | 1 | 3 |
| (D) | 1 | 4 | 3 | 2 |

(E) Answer not known

150. Match the following :

| | | | |
|---|---|---|---|
| (a) | Nematode | 1. | Clonorchi sinensis |
| (b) | Cestode | 2. | Entamoeba histolytica |
| (c) | Trematode | 3. | Anisakis simplex |
| (d) | Protozoan | 4. | Diphyllobothrium latum |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 4 | 3 | 1 | 2 |
| (B) | 4 | 3 | 2 | 1 |
| (C) | 3 | 4 | 1 | 2 |
| (D) | 3 | 4 | 2 | 1 |

(E) Answer not known

151. Match the following :

| | | | |
|---|---|---|---|
| (a) | Gill fluke | 1. | Branchiomyces demigrans |
| (b) | Black-spot disease | 2. | Myxosoma |
| (c) | Cull rot disease | 3. | Dactylogyrus vastator |
| (d) | Whirling disease of rainbow trout | 4. | Cryptocotyle lingua |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 3 | 4 | 1 | 2 |
| (B) | 3 | 4 | 2 | 1 |
| (C) | 1 | 2 | 4 | 3 |
| (D) | 1 | 2 | 3 | 4 |

(E) Answer not known

152. Which bacterial fish disease is characterized by the accumulation of yellow fluid in the body cavity?

(A) Deformation
(B) Inflammation
(C) Infectious dropsy
(D) Hemorrhagic ulcers
(E) Answer not known

153. Which of the following parasites is not an ectoparasite?

(A) Costia necatrix
(B) Piscicola geometra
(C) Gyrodactylus sp.
(D) Ligula intestinalis
(E) Answer not known

154. Identify the cultivable seaweed species

(i) Gracilaria edulis
(ii) Hypnea valentiae
(iii) Kappaphycus alvarezii
(iv) Sargassum wightii

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

155. Correctly match the scientific names of aquarium fishes.

| | | | | |
|---|---|---|---|---|
| (a) | Gold fish | - | 1. | Helostoma temminckii |
| (b) | Fighter | - | 2. | Poecilia reticulata |
| (c) | Kissing gourami | - | 3. | Betta splendens |
| (d) | Guppy | - | 4. | Carassius auratus |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 4 | 3 | 1 | 2 |
| (B) | 3 | 4 | 2 | 1 |
| (C) | 2 | 3 | 1 | 4 |
| (D) | 1 | 2 | 4 | 3 |

(E) Answer not known

156. Agar yielding algae

(A) Alginophytes
(B) Agarophytes
(C) Bryophytes
(D) Macrophytes
(E) Answer not known

157. Which of the following is correctly paired?

| | | | |
|---|---|---|---|
| (1) | Live bearer | - | Angel fish |
| (2) | Egg layer | - | Koi carp |
| (3) | Egg depositor | - | Danio sp. |
| (4) | Mouth Brooders | - | Cichlids |

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

158. Paradise fish belongs to the genus _____

(A) Colisa
(B) Macropodus
(C) Belontia
(D) Helostoma
(E) Answer not known

159. Which of the following institute has developed the cultured marine pearl production technology in India?

(A) CMFRI
(B) CIFT
(C) CIFE
(D) CIFRI
(E) Answer not known

160. The seaweed that commonly farmed in India for carrageenan production is

(A) Gracilaria spp.
(B) Sargassum spp.
(C) Kappaphycus alvarezii
(D) Ulva Lactuca
(E) Answer not known

161. A hatchery unit for golden Mahseer was designed and established by

(A) DCFR
(B) CIFRI
(C) CIFA
(D) NBFGR
(E) Answer not known

162. The Bhasabhadha fish culture is practiced in which state of India?

(A) Assam
(B) Bihar
(C) Uttarpradesh
(D) West Bengal
(E) Answer not known

163. Which of the following scheme ensures antibiotic-free and superior quality shrimp production in India?

(A) SHAPHARI scheme

(B) KCC scheme

(C) Pradhan Mantri Fasal Bima Yojana (PMFBY)

(D) SMAM (Sub-Mission on Agricultural Mechanization)

(E) Answer not known

164. In a sewage fed pond Culture, Catla, Rohu and Mrigal are cultured in the ratio of _____ with a stocking density of 2000/ha.

(A) 1 : 2 : 3

(B) 1 : 1 : 2

(C) 3 : 1 : 2

(D) 1 : 2 : 1

(E) Answer not known

165. Traditional culture method of Bheries is most commonly practiced in India.

(A) Tamil Nadu

(B) Kerala

(C) West Bengal

(D) Orissa

(E) Answer not known

166. Write the larval development stages of shrimp in chronological order.

(A) Nauplius, Zoea, Mysis, Post larva, Juveniles

(B) Mysis, Zoea, Nauplius, Juveniles, Post larva

(C) Zoea, Nauplius, Mysis, Juveniles, Post larva

(D) Mysis, Nauplius, Zoea, Post larva, Juveniles

(E) Answer not known

167. Method of culturing Oysters in rectangular floating wooden frames is called

(A) Rack culture
(B) Bottom culture
(C) Long line culture
(D) Raft culture
(E) Answer not known

168. Consider the following statement about controlling high Carbon-di-Oxide concentration in aquaculture.

(A) Increasing the pH of water by hydrated lime controls the high $CO_2$
(B) Aeration of water to be minimised
(C) Increase the stocking rate
(D) Fertilization to be increased
(E) Answer not known

169. Choose the right matches

(1) Cyprinus Carpio Var. Communis – Scale carp
(2) Cyprinus Carpio Var. Nudus – Mirror carp
(3) Hypophthalmichthys Nobilis – Big head carp
(4) Cyprinus Carpio Var. Specularis – Mud carp

(A) (1) and (2) are correct
(B) (2) and (3) are correct
(C) (3) and (4) are correct
(D) (1) and (3) are correct
(E) Answer not known

170. Which of the following institute has developed the portable Fibre Reinforced Plastics (FRP) carp hatchery?

(A) CIFE
(B) CIFRI
(C) CMFRI
(D) CIFA
(E) Answer not known

171. The porosity of pond bottom is corrected through application of

(1) Liming
(2) Bentonite
(3) Organic manure
(4) Fertilizer

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

172. What is the level of available nitrogen for poor fish production in Indian aquatic systems?

(A) Below 25 mg N/100 gm soil
(B) 25 – 50 mg N/100 gm soil
(C) 50 – 75 mg N/100 gm soil
(D) Above 75 mg N/100 gm soil
(E) Answer not known

173. The most suitable range of water pH for Aquaculture is

(A) 5.0 – 5.5
(B) 5.5 – 10.5
(C) 6.0 – 9.5
(D) 6.5 – 8.5
(E) Answer not known

174. The optimum level of dissolved oxygen in a fish pond for the normal growth of fishes is

(A) 1 ppm
(B) 3 ppm
(C) 5 ppm
(D) 7 ppm
(E) Answer not known

175. While selecting the fish farm based on technical and socio-economic criteria, which among the following is not an important criteria?

(A) Electricity
(B) Road connection
(C) Water
(D) Sandy and lime stone
(E) Answer not known

176. Which among the following are the methods used for production of fish protein concentrate?

(i) Dry rendering process
(ii) Wet rendering process
(iii) Canadian process
(iv) Viobin process

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

177. The acetylated form of chitin is known as

(A) Chitosan
(B) Chitin powder
(C) N-acetylglucosamine
(D) Hydrolytes
(E) Answer not known

178. Ambergris is formed in the intestinal tract of a sperm whale, when it foods on :

(A) Shrimp
(B) Lobster
(C) Fish
(D) Cuttle fish
(E) Answer not known

179. Choose the correctly paired :

(1) Trepang – Processed sea cucumber
(2) Fish maws – Liver
(3) Edible fish meal – Fish protein concentrate
(4) Shark liver oil – Vitamin E

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

180. Choose the amino acid that is lacking in gelatin.

(A) Lysine
(B) Histidine
(C) Methionine
(D) Tryptophane
(E) Answer not known

181. Dry ice is

(A) Solid Carbondioxide
(B) Liquid Carbondioxide
(C) Liquid Nitrogen
(D) Water Cool to – 4°C
(E) Answer not known

182. Micro Organisms, that cannot grow without salt are called

(A) Holophiles
(B) Stenohaline
(C) Euryhaline
(D) Halophiles
(E) Answer not known

183. Identify the statements that describe the characteristics of an ideal container for canned fish :

(i) Heavy enough for economical handling

(ii) Imparts toxicity to the contents

(iii) Readily opened

(iv) Pleasing and sanitary appearance

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

184. The technique that replaces the air with a mixture of gases in the packaging of fish and fish products is

(A) Vacuum packaging
(B) Air packaging
(C) Modified atmosphere packaging
(D) Active packaging
(E) Answer not known

185. Which of the following freezer is classified as cryogenic freezers?

(A) Air blast freezer
(B) Horizontal plate freezer
(C) Vertical plate freezer
(D) Spray freezer
(E) Answer not known

186. Match the following :

| | | | |
|---|---|---|---|
| (a) | Freezer burn | 1. | Vaccum thawing |
| (b) | Glycolysis | 2. | Microwave thawing |
| (c) | Conductive thawing method | 3. | Chalky white |
| (d) | Non-Conductive thawing method | 4. | Fall in pH |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 1 | 3 | 4 | 2 |
| (B) | 3 | 1 | 2 | 4 |
| (C) | 2 | 4 | 1 | 3 |
| (D) | 3 | 4 | 1 | 2 |

(E) Answer not known

187. What is the type of freezing, when water-ice phase transition is depressed under pressure from $0^{o}$ to $-21^{o}C$?

(A) Pressure shift freezing
(B) Impingement freezing
(C) Cell alive system freezing
(D) Cryogenic freezing
(E) Answer not known

188. What is the type of gas used in the cryogenic freezing at –196°C?

(A) Liquid carbon
(B) Liquid carbon di-oxide
(C) Liquid nitrogen
(D) Liquid nitrogen peroxide
(E) Answer not known

189. Match the following :

| | | | |
|---|---|---|---|
| (a) | SR lacquer | 1. | Round shaped can |
| (b) | Freezing point of fish | 2. | Improper storage |
| (c) | Picnic can | 3. | Fish can |
| (d) | Stack burn | 4. | –1°C to – 2°C |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 2 | 3 | 4 | 1 |
| (B) | 1 | 2 | 3 | 4 |
| (C) | 3 | 4 | 1 | 2 |
| (D) | 2 | 1 | 4 | 3 |

(E) Answer not known

190. Major spoilage organism producing histamine in fish is

(A) Hafnia alvei
(B) Staphylococcus aureus
(C) Klebsiella sp
(D) Shewanella sp
(E) Answer not known

191. Match the following problems commonly associated with canned fishery products :

| | | | |
|---|---|---|---|
| (a) | Blackening | 1. | Canned crabmeat |
| (b) | Struvite | 2. | Iron sulphide |
| (c) | Blue discolouration | 3. | Canned tuna meat |
| (d) | Honeycombing | 4. | Magnesium ammonium phosphate hexahydrate |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 3 | 4 | 1 | 2 |
| (B) | 2 | 4 | 1 | 3 |
| (C) | 4 | 2 | 1 | 3 |
| (D) | 1 | 4 | 3 | 2 |

(E) Answer not known

192. The decomposition of fish is due to

(A) Bacterial, Enzymatic and oxidative changes
(B) Oxidative changes only
(C) Enzymatic changes only
(D) Food and feeding habits
(E) Answer not known

193. The process in which fishes are immersed in boiling brine solution and immediately cooled is

(A) Coding
(B) Filling
(C) Blanching
(D) Clinching
(E) Answer not known

194. When fatty fish is salted, which of the following should be excluded during burning to reduce the rancidity?

(A) Air
(B) Water
(C) Salt
(D) Sugar
(E) Answer not known

195. The steps in canning process that impart firm and proper texture to the fish flesh making it easy to handle, are

1. Blanching
2. Handling
3. Selection
4. Precooking

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

196. The vitamin present in the fish liver oil that required for absorption and metabolism of calcium is

(A) A
(B) D
(C) E
(D) B Complex
(E) Answer not known

197. High content of Non-Protein Nitrogen (NPN) is found in

(A) Teleosts
(B) Elasmobranchs
(C) Crustaceans
(D) Cephalopods
(E) Answer not known

198. Method used to determine the quantity of malondialdehyde in fish

(A) Peroxide value
(B) K-value
(C) Thiobarbituric Acid (TBA) value
(D) Hypoxanthine
(E) Answer not known

199. Identify the compound, which is responsible for the bitter taste in spoiled fish :

(A) Adinosine triphosphate (ATP)
(B) Inosine
(C) Hypoxanthine
(D) Adinosine monophosphate (AMP)
(E) Answer not known

200. When the fish swims, which muscle protein is broken down rapidly?

(A) Red muscle protein
(B) White muscle protein
(C) Green muscle protein
(D) Yellow muscle protein
(E) Answer not known