

Code No.

R – 2100

**Entrance Examination for Admission to the P.G. Courses in the
Teaching Departments, 2023**

CSS

**AQUATIC BIOLOGY AND FISHERIES / ZOOLOGY
(PURE AND APPLIED) / INTEGRATIVE BIOLOGY**

General Instructions

1. The Question Paper is having 100 Objective Questions, each carrying one mark.
2. The answers are to be (✓) 'tick marked' **only** in the "**Response Sheet**" provided.
3. **Negative marking : 0.25 marks** will be deducted for each wrong answer .

Time : 2 Hours**Max. Marks : 100**

To be filled in by the Candidate									
Register Number	in Figures								
	in words								

Choose appropriate answer from the options in the questions.

(100 × 1 = 100 marks)

1. Placoid scales are present in
 - a) *Labeo*
 - b) *Scoliodon*
 - c) *Hippocampus*
 - d) *Protopterus*

DO NOT WRITE HERE

2. Tetrodon is commonly known as

- | | |
|----------------|--------------|
| a) Devil fish | b) Cow fish |
| c) Puffer fish | d) Cave fish |

3. Which of the following is known as pipe fish

- | | |
|----------------|---------------|
| a) Hippocampus | b) Syngnathus |
| c) Remora | d) Anabas |

4. Protopterus is commonly known as

- | | |
|---------------------|------------------------|
| a) African Lungfish | b) Australian Lungfish |
| c) Asian Lungfish | d) American Lungfish |

5. Catadromous migration is concerned with movement of fishes
- a) From freshwater to freshwater b) From salt water to salt water
 - c) From freshwater to salt water d) From salt water to freshwater
6. A male stickleback fish will normally become aggressive upon seeing the red belly of another male stickleback. These males will become extremely aggressive when they see a large red object. Name the stimulus?
- a) Red aggression stimulus b) Supernormal stimulus
 - c) Abnormal stimulus d) Interactive stimulus
7. Young animal develops an attraction towards an object or animal is called
- a) Learning b) Maturation
 - c) Imprinting d) Social behaviour
8. The yearly migration of Canada geese is an example of
- a) Search image b) Circannual behaviour
 - c) Kinesis d) Zugunruhe
9. Which of the following is NOT a reason for a species to migrate
- a) Food source b) Better breeding grounds
 - c) Climate change d) Global warming
10. Mnemotaxis refers to navigation using
- a) Landmark b) Light source
 - c) Chemical gradient d) Direction of wind
11. If a population is in genetic equilibrium what will be the rate of evolution?
- a) Zero b) Double
 - c) Tripe d) Half

12. Who developed the theory of acquired characteristics?
- a) Weismann
 - b) Mendel
 - c) Malthus
 - d) Lamarck
13. Which of the following are not examples of analogous structures?
- a) Wings of bat and butterfly
 - b) Wings of bat and forelimbs of cattle
 - c) Thorn and spine
 - d) Tendril of Lathyrus and tendril of Gloriosa
14. Links that represents evolutionary relationships among organisms
- a) two fossil layers
 - b) comparative embryology
 - c) phylogenetic trees
 - d) living fossils
15. Anaerobic photosynthetic bacteria appeared on the earth about
- a) 500 million years ago
 - b) 1500 million years ago
 - c) 2500 million years ago
 - d) 3500 million years ago
16. The era known as 'age of prokaryotic microbes' is
- a) Archaeozoic
 - b) Precambrian
 - c) Phanerozoic
 - d) Proterozoic
17. The ability of a population to increase under ideal environmental conditions is called
- a) Natality
 - b) Carrying capacity
 - c) Biotic potential
 - d) Absolute natality

18. What type of food chain is it?

Dead animals → blowfly maggot → maggots → frog → snake

- a) Detrital food chain
- b) Decomposer food chain
- c) Predator food chain
- d) Grazing food chain

19. During which period does the frog show aestivation

- a) Autum
- b) Spring
- c) Winter
- d) Summer

20. Neoteny refers to

- a) Retention of rudimentary organ
- b) Retention of larval characters in adults
- c) Reproduction in larval forms
- d) Metamorphosis

21. Tail in scoliodon is

- a) Homocercal
- b) Heterocercal
- c) Hypocercal
- d) Hypercercal

22. Locomotory organ in *Labeo rohita* is

- a) Pelvic fins
- b) Pectoral fins
- c) Dorsal fins
- d) Tail

23. Excretion in class Osteichthyes is

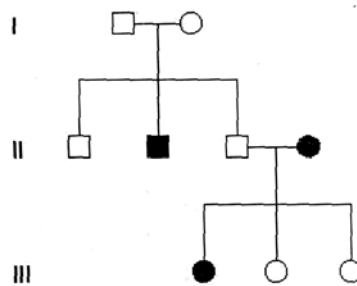
- a) Ammonotelic
- b) Aminotelic
- c) Ureotelic
- d) Uricotelic

24. *Fistularia* is commonly known as

- a) Dog fish
- b) Flute fish
- c) Saw fish
- d) Sword fish

25. Which of the following is not a function of air-bladder?
- a) Respiration
 - b) Reproduction
 - c) Hydrostasis
 - d) Sound production
26. A process in which an animal sacrifices its reproductive potential for the benefit of another organism is called
- a) Mutualism
 - b) Altruism
 - c) Commensalism
 - d) Cooperation
27. Which molecules might have formed spontaneously on the early earth according to Stanley Miller experiment
- a) oxygen, hydrogen and nitrogen
 - b) oxygen, hydrogen, ammonia and water vapour
 - c) oxygen, hydrogen and methane
 - d) hydrogen, ammonia, methane and water vapour
28. Which of the following requires maximum energy?
- a) Secondary Consumer
 - b) Decomposer
 - c) Primary Consumer
 - d) Primary Producer
29. The protozoan *Trypanosoma brucei* causes
- a) Leishmaniasis
 - b) Murine typhus
 - c) American sleeping sickness
 - d) African sleeping sickness
30. All mammals have backbones
 Humans are mammals
 Humans have backbones
 The reasoning used in the above statement is
- a) Inductive
 - b) Deductive
 - c) Both a and b
 - d) Hypothetico-deductive

31. Animal house facilities are approved by:
- CPCSEA
 - AICTE
 - PCI
 - DTE
32. Which of the following plagiarism software is available under open access?
- Turnitin
 - Urkund
 - Viper
 - None of these
33. What can be patented under Patent Act 1970?
- A computer program
 - An Invention
 - A scheme
 - A scientific theory
- I and II
 - All except II
 - Only II
 - None of the above
34. Find out the inheritance pattern depicted in the following Pedigree chart.



- Autosomal dominant
- X-linked recessive
- Y-linked recessive
- Autosomal recessive

35. Test cross involves
- a) Crossing between two dominant traits
 - b) Crossing between two recessive traits
 - c) Crossing F1 hybrid with double recessive trait
 - d) Crossing between two F1 hybrids
36. The Enzyme required for transcription is
- a) DNA ligase
 - b) RNA Polymerase
 - c) DNA Polymerase
 - d) RNAses
37. Who created the first Bioinformatic database
- a) Michael. J.Dunn
 - b) Pearson
 - c) Richard Durbin
 - d) MargaretDayhoff
38. Proteomics refers to the study of
- a) Set of proteins in a specific region of the cell
 - b) Biomolecules
 - c) Set of proteins
 - d) The entire set of expressed proteins in the cell
39. Who invented Mass spectrometer?
- a) J.J. Thompson
 - b) Goldstein
 - c) Nicolas Tesla
 - d) Aston
40. Which of the following technology used in Micro-array manufacturing.
- a) Photolithography
 - b) Ink jetting
 - c) Contact printing
 - d) All of the Above

41. The basic principle of separation of protein first dimension separation in 2D-Electrophoresis is
- a) Molecular mass
 - b) Solubility
 - c) Isoelectric point
 - d) Folding of proteins
42. A single gene that controls more than one trait is called
- a) Pleiotropy
 - b) Pseudodominance
 - c) Epistasis
 - d) None of these
43. Which of the following biomolecule has self-repair mechanism
- a) DNA
 - b) RNA
 - c) Protein
 - d) All of the above
44. The process of finding the relative location of genes on a chromosome known as
- a) Gene tracking
 - b) Genome walking
 - c) Genome mapping
 - d) Chromosome walking
45. Which disease is known as 'Mediterranean anaemia'?
- a) Thalassemia
 - b) Sickle-cell anaemia
 - c) Pernicious anaemia
 - d) None of the above
46. Who discovered circulation of blood through closed blood vessels?
- a) Karl Landsteiner
 - b) Poiseuille
 - c) William Harvey
 - d) None of the above
47. A common connective tissue layer holding together the skeletal muscle bundles is
- a) Fascia
 - b) Aponeurosis
 - c) Endomysium
 - d) Perimysium

48. Which one is an example for inhibitory neurotransmitter?
- a) Histamine
 - b) Beta – endorphin
 - c) Serotonin
 - d) Dopamine
49. Membrane phospholipids are derivatives of
- a) Dihydroxy acetone phosphate
 - b) Pyruvate
 - c) Glycerol
 - d) Phosphoenol pyruvic acid
50. In which year James Watson and Francis Crick awarded Nobel prize for their epoc making discoveries on DNA?
- a) 1962
 - b) 1960
 - c) 1953
 - d) 1952
51. Name the RNA that act as an adapter molecule during translation.
- a) mRNA
 - b) tRNA
 - c) rRNA
 - d) tRNA and mRNA
52. Uridine present in RNA is a
- a) Nucleotides
 - b) Pyrimidine
 - c) Purine
 - d) Nucleoside
53. Which of the following disease is caused by protein deficiency?
- a) Anaemia
 - b) Kwashiorkor
 - c) Pellagra
 - d) Scurvy
54. Ester bond is the bond between
- a) Phosphate and sugar
 - b) Phosphate and bases
 - c) Bases and nucleic acid
 - d) Sugar and nucleic acid
55. An amino acid yielding acetyl CoA during catabolism is
- a) ketogenic
 - b) glucogenic
 - c) essential
 - d) both glucogenic and ketogenic

56. The lipids seen in the inner mitochondrial membrane?
- a) Plasmalogens
 - b) Prostaglandins
 - c) Cardiolipin
 - d) Sulpholipid
57. Saltatory conduction occurs due to
- a) Axon hillock
 - b) Soma
 - c) Myelin sheath
 - d) Nodes of Ranvier
58. DNA replication occurs during _____ of the cell cycle.
- a) S phase
 - b) Interphase
 - c) G₂ phase
 - d) G₀ phase
59. Cellulose is degraded to cellobiose by the enzyme
- a) Cellulose dehydrogenase
 - b) Hexokinase
 - c) Beta-glucosidase
 - d) Cellulase
60. Same DNA sequence may code for more than one protein by
- a) Gene splitting
 - b) RNA splitting
 - c) Alternative splicing of RNA
 - d) None of the above
61. The best viruses that are used in gene therapy as a vector is
- a) Herpes Virus
 - b) Retrovirus
 - c) Influenza Virus
 - d) None of the above
62. Humoral immunity is mediated by
- a) B cells
 - b) Macrophages
 - c) Both a and b
 - d) Phagocytes

63. The Ig that mediates allergic reaction is
- a) IgM
 - b) IgG
 - c) IgA
 - d) IgE
64. Rheumatoid arthritis mostly occurs in individuals carrying
- a) HLA-DR4 gene
 - b) HLA-DR1 gene
 - c) HLA-DR3 gene
 - d) All of the above
65. Non-specific host defenses is a characteristics of
- a) Acquired immunity
 - b) Innate immunity
 - c) Adaptive immunity
 - d) All of these
66. Microbes that can tolerate a wide range of temperature are called
- a) Stenothermal
 - b) Eurythermal
 - c) Thermotolerant
 - d) Thermophilic
67. _____ is used by cells to interact with other cells?
- a) Cell junctions
 - b) Cell adhesions
 - c) Cell detectors
 - d) Cell tubules
68. The ability of importins and exportins to transport molecules in and out of the nucleoporins is regulated by
- a) ATPases
 - b) GTPases
 - c) AMPases
 - d) Both ATPases and GTPases
69. Who isolated *Streptococcus pneumonia* for the first time?
- a) Louis Pasteur
 - b) Edward Jenner
 - c) Antonie van Leeuwenhoek
 - d) Robert Koch
70. Name the marine organism generally known as Venus flower basket.
- a) Tapeworm
 - b) Euplectella
 - c) Oscarella
 - d) Cliona

71. Axolotl is the larva of
- a) *Ambystoma*
 - b) *Salamandra*
 - c) *Siren*
 - d) *Proteus*
72. Find the statement not true regarding the Sponges.
- a) Sponges are simple invertebrate animals that live in aquatic habitats
 - b) Asexual reproduction occurs by buds and gemmules
 - c) Contractile vacuoles are present in some freshwater forms
 - d) Excretory and respiratory organs are present
73. The minute, elongated or spherical capsular organ used for predation, defence and anchorage in Jelly fish are known as
- a) Nematocyst
 - b) Suckers
 - c) Stinger
 - d) Jacobson's organ
74. Free-living flat worms which devoid of hooks and suckers are included in
- a) Trematoda
 - b) Turbellaria
 - c) Cestoda
 - d) None of these
75. *Planaria* have high capacity of
- a) Alternation of generation
 - b) Metamorphosis
 - c) Regeneration
 - d) Bioluminescence
76. *Taenia* consists of a chain of body segments known as
- a) Glottis
 - b) Epiglottis
 - c) larynx
 - d) Proglottids
77. The excretory system of Annelids are
- a) Flame cells
 - b) Uriniferous tubules
 - c) Nephridia
 - d) Nephrostomes

78. Chromophil cells in the pharynx of earthworm are responsible for the excretion of
- a) Amylase
 - b) Lipase
 - c) Urea
 - d) Protease
79. _____ is the photosensitive part in ommatidium of insects.
- a) Rhabdom
 - b) Crystalline cones
 - c) Sensory neuron
 - d) Pigment cells
80. Waggle dance in honey bees is discovered by
- a) T. H. Morgan
 - b) Robert Koch
 - c) I. Pavlov
 - d) Karl Von Frisch
81. Octopus are included in the class
- a) Myriapoda
 - b) Aplacophora
 - c) Mollusca
 - d) Cephalopoda
82. Which of the following included in Phylum Echinodermata.
- a) Sea pen
 - b) Sea lily
 - c) Sea anemone
 - d) Sea fur
83. Snakes are sensitive to
- a) Air borne vibrations
 - b) Earth borne vibrations
 - c) Thunder
 - d) Noises made by birds
84. The study of reptiles are known as
- a) Ornithology
 - b) Osteology
 - c) Herpetology
 - d) Ichthyology
85. The arrangement and distribution of feathers on birds is known as
- a) Plumage
 - b) Pterolysis
 - c) Pterylae
 - d) Aptera

86. Pectoralis minor is a
- a) Perching muscle
 - b) Elevator muscle
 - c) Visceral muscle
 - d) Depressor muscle
87. Owls have well developed cochlea, hence they are able to
- a) See even in dark
 - b) Smell the presence of prey
 - c) Locate sound
 - d) Taste the food
88. Probable ancestors of present-day Ostrich is
- a) *Ichthyornis*
 - b) *Archaeopteryx*
 - c) *Hesperornis*
 - d) *Eleutherornis*
89. Beak in sparrow is
- a) Fruit eating type
 - b) Seed eating type
 - c) Cutting type
 - d) Tearing and Piercing type
90. The burrow of rabbit is called
- a) Form
 - b) Barrel
 - c) Warren
 - d) Barren
91. Adam's apple in human neck is
- a) Pharynx
 - b) Glottis
 - c) Larynx
 - d) Trachea
92. Under activity of _____ cause Addison's disease.
- a) Adrenal Medulla
 - b) Adrenal Cortex
 - c) Thymus
 - d) Parathyroid
93. Spiny ant eaters are included in the family
- a) Ornithorhynchidae
 - b) Tachyglossidae
 - c) Notoryctidae
 - d) Didelphidae

94. Marsupials present in America
- a) Opossum
 - b) Kangaroo
 - c) Bandicoots
 - d) Wombat
95. Mammary glands are modified
- a) Sebaceous gland
 - b) Sudorific gland
 - c) Cutaneous gland
 - d) Scent gland
96. Baleen is present in
- a) Whales
 - b) Elephants
 - c) Frogs
 - d) Lizards
97. Extra embryonic structures are formed by
- a) Latebra
 - b) Nucleus of Pander
 - c) Area opaca
 - d) Area pellucida
98. The egg-laying mammals are
- a) Prototherians
 - b) Metatherians
 - c) Eutherians
 - d) Both Prototherians and Metatherians
99. The type of placenta found in primates is
- a) Yolk sac placenta
 - b) Allantoic placenta
 - c) Chorionic placenta
 - d) Allanto-chorionic placenta
100. Bipolar neurons are found in
- a) Cornea
 - b) Conjunctiva
 - c) Lens
 - d) Retina

ANSWER SHEET

1	A	B	C	D	E
2	A	B	C	D	E
3	A	B	C	D	E
4	A	B	C	D	E
5	A	B	C	D	E
6	A	B	C	D	E
7	A	B	C	D	E
8	A	B	C	D	E
9	A	B	C	D	E
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14	A	B	C	D	E
15	A	B	C	D	E
16	A	B	C	D	E
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97	A	B	C	D	E
98	A	B	C	D	E
99	A	B	C	D	E
100	A	B	C	D	E

ROUGH WORK

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