Code No.	T – 2109

Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2024

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. Who is known as the "Father of Taxonomy"?

   A. Charles Darwin
   B. Carl Linnaeus
   C. Gregor Mendel
   D. Aristotle

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2. Which scientist proposed the five-kingdom classification system?

   A. Carl Linnaeus
   B. Robert Whittaker
   C. Charles Darwin
   D. Gregor Mendel

3. Which class of Cnidarians includes jellyfish?

   A. Scyphozoa
   B. Hydrozoa
   C. Anthozoa
   D. Cubozoa

4. ———— is commonly known as sea sparkle.

   A. *Nosema*
   B. *Ceratium*
   C. *Chlamydomonas*
   D. *Noctiluca*

5. What is the symbiotic relationship between termites and *Trychonympha* protists called?

A. Commensalism
B. Mutualism
C. Parasitism
D. Competition

6. Which antimalarial drug is derived from the bark of the cinchona tree?

A. Chloroquine
B. Artemisinin
C. Quinine
D. Mefloquine

7. Match the following and choose the correct option :

(i)	*Trypanosoma gambiense*	(1)	Kala-Azar
(ii)	*Entamoeba histolytica*	(2)	African sleeping sickness
(iii)	*Plamodium vivax*	(3)	Amoebic dysentery
(iv)	*Leishmania donovani*	(4)	Malaria

A. i-2, i-3, iii-4, iv-1
B. i-4, ii-3, iii-2, iv-1
C. i-1, ii-3, iii-2, iv-4
D. i-2, ii-4, iii-3, iv-1

8. Which among the following statements given below are true for annelids :

(i) Triploblastic body, cuticular covering and setae
(ii) Bilateral symmetrical and metamerically segmented
(iii) Excretory organs are metanephridia
(iv) Body wall and gut wall are formed of mesodermal muscles

A. (i), (ii), (iii)
B. (i), (ii), (iv)
C. (ii), (iii), (iv)
D. All the above

9. ————— is commonly known as blood flukes.

A. *Schistosoma*
B. *Wuchereria*
C. *Fasciola*
D. *Taenia*

10. Number of thoracic appendages in prawn

A. 5 pairs
B. 8 pairs
C. 6 pairs
D. 7 pairs

11. The phenomenon in which larvae become sexually mature and undergo reproduction

A. Parthenogenesis
B. Pedogenesis
C. Tagmosis
D. Paedomorphis

12. Which among the following statements are correct?

(i) *Draco* is commonly known as flying lizard
(ii) *Phrynosoma* is commonly known as monitor lizard
(iii) *Ptyas* is commonly known as rat snake
(iv) *Dryophis* commonly known as green whip snake

A. (i), (ii), (iii)
B. (i), (ii), (iv)
C. (ii), (iii), (iv)
D. (i), (iii), (iv)

13. Study of fishes is called

A. Ornithology
B. Ichthyology
C. Herpetology
D. Conchology

14. The craft of arranging aquatic plants, as well as rocks, stones, cave work, or driftwood, in an aesthetically pleasing manner within an aquarium

A. Aquascaping
B. Aquaculture
C. Ranching
D. Simulation

15. Odd-toed mammals are coming under the order

A. Chiroptera
B. Carnivora
C. Perissodactyla
D. Artiodactyla

16. Which one of the following is not a flightless bird?

A. *Struthio*
B. Emu
C. *Cassowary*
D. *Columba*

17. Which of the following is a connecting link?

A. *Archeopteryx* B. *Limulus*

C. Dodo D. *Culex* mosquito

18. 12 pairs of cranial nerves are present in

A. Reptilia B. Birds only

C. Mammals only D. All the above

19. Where does the citric acid cycle (Krebs cycle) take place within mitochondria?

A. Mitochondrial matrix

B. Intermembrane space

C. Inner mitochondrial membrane

D. Outer mitochondrial membrane

20. Which organelle is involved in the breakdown of fatty acids and detoxification of alcohol in liver cells?

A. Lysosome B. Peroxisome

C. Endoplasmic reticulum D. Golgi apparatus

21. Which of the following is not a termination codon?

A. UAG B. UGA

C. UAC D. UAA

22. Which of the following is correct sequence of meiosis prophase I?

A. Leptotene $\rightarrow$ pachytene $\rightarrow$ zygotene $\rightarrow$ diplotene $\rightarrow$ diakinesis

B. Leptotene $\rightarrow$ zygotene $\rightarrow$ diplotene $\rightarrow$ pachytene $\rightarrow$ diakinesis

C. Leptotene $\rightarrow$ zygotene $\rightarrow$ pachytene $\rightarrow$ diplotene $\rightarrow$ diakinesis

D. None of above

23. Which of the following phases correspond to the interval between mitosis and initiation of DNA replication?

A. S phase B. G1 phase

C. M phase D. G2 phase

24. In fluid mosaic model of plasma membrane

A. Upper layer is non-polar and hydrophilic

B. Upper layer is polar and hydrophobic

C. Phospholipids form a bimolecular layer in the middle part

D. Proteins form a middle layer

25. The form of DNA with left-handed coiling is

A. ZDNA B. CDNA

C. ADNA D. BDNA

26. Length of one turn of DNA is ————— Nm.

A. 340 nm B. 34 nm

C. 3.4 nm D. 0.34 nm

27. Which of the following enzyme causes unwinding of DNA?

A. DNA topoisomerase B. DNA helicase

C. DNA polymerase D. Primase

28. The 'one-gene-one-enzyme' hypothesis was put forth by

A. Archibald Garrod B. Willard Gibbs J.

C. Antoine Lavoisier D. Beadle and Tatum

29. Genes with multiple phenotypic effects are known as

A. Hypostatic genes B. Duplicate genes

C. Pleiotropic genes D. Complementary genes

30. Sex determination by chromosomal difference in man and Drosophila is by mechanism called

A. XX-XY B. XX-XO

C. ZZ-ZW D. (A) and (B)

31. The process of removal of introns and joining of exons is called

A. Capping B. Tailing

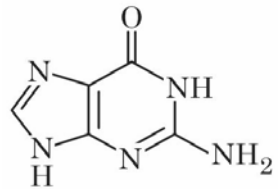
C. Initiation D. Splicing

32. What does BLAST stand for?
    A. Basic Linear Alignment Search Tool
    B. Basic Local Alignment Search Tool
    C. Biological Linear Alignment Search Tool
    D. Biological Local Alignment Search Tool

33. Which of the following is not a primary data base?
    A. EMBL
    B. DDBJ
    C. PROSITE
    D. Gen Bank

34. Which of the following statements are not correct for DNA Data Bank of Japan (DDBJ)?
    (i) One of the primary nucleotide sequence databases in the field of bioinformatics established in 1986.
    (ii) It is now hosted in National Institute of Genetics, Japan
    (iii) ARSA is a tool used to deposit data to DDBJ.
    (iv) SAKURA is used to search data from DDBJ.
    A. (i), (ii)
    B. (ii), (iii)
    C. (iii), (iv)
    D. None of the above

35. Identify the structure :



    A. Adenine
    B. Uracil
    C. Guanine
    D. None of the above

36. Characteristics of automated DNA sequencing compared to Sanger's method are given below. Find out the wrong statement :
    (i) Instead of the 4 different reactions, the automated DNA sequencing is carried out in a single tube.
    (ii) The fluorescent-labeled set of primers are used, instead of ddNTPs.
    (iii) The capillary set electrophoresis method is practiced - separates each and every single fragment precisely on the basis of size.
    (iv) More accurate, reliable and faster.
    A. (i), (ii), (iii)
    B. (i), (ii), (iv)
    C. (ii), (iii), (iv)
    D. None of the above

37. Plasmids have characteristics except

A. They are naturally occurring and autonomously replicating extra-chromosomal double-stranded circular DNA molecules. However, not all plasmids are circular in origin

B. They are present in bacteria, archaea and eukaryotes

C. They are also packaged into λ This permits the foreign DNA fragment or genes to be introduced into the host organism by the mechanism of transduction

D. The size of plasmids ranges from 1.0 kb to 250 kb

38. Sonic statements on cDNA are given. Find out the correct statements

(i) A cDNA library is produced from RNA population, mainly mRNA, by creating DNA copies of them called cDNA or complementary DNA.

(ii) The RNA to be sequenced is transcribed into a cDNA through the action of reverse transcriptase.

(iii) The cDNA are cloned in phage vectors.

(iv) This large collection of resulting cDNA clones, representing all the mRNAs expressed in a cell type is called a cDNA library.

A. (i), (ii), (iii)
B. (ii), (iii), (iv)
C. (i), (iii), (iv)
D. All the above

39. Which of the following is not an hexose sugar?

A. Psicose
B. Tagatose
C. Xylulose
D. Fructose

40. 10 Steps in de-Novo pathway for Pyrimidines biosynthesis is given below :

A - Ring closure to form dihydroorotate

B - Formation of OMP

C - Oxidation of dihydroorotate

D - Synthesis of carbamoyl phosphate

E - Decarboxylation to form UMP

F - Synthesis of carbamoyl aspartate

Arrange the steps in correct order :

A. ACBEDF
B. DFACBE
C. DFBCEA
D. DFABCE

41. Inulin is polymer of

A. Fructose
B. Glucose
C. Galactose
D. Arabinose

42. Isomeric forms of monosaccharides that differ only in their configuration about the hemiacetal or hemiketal carbon atom are called

A. Isomers
B. Anomers
C. Epimers
D. None of the above

43. The Michaelis-Menten equation describes

A. The kinetics of competitive inhibition
B. The relationship between enzyme concentration and substrate concentration
C. The relationship between substrate concentration and reaction rate
D. The effect of temperature on enzyme activity

44. Find out the steroid hormone from the following :

(i) Cortisol
(ii) Aldosterone
(iii) Insulin
(iv) Dopamine

A. (i) and (ii)
B. (i), (ii) and (iii)
C. (ii) and (iii)
D. (iii) and (iv)

45. Zymogens are

A. Active forms of enzymes
B. Inactive precursors of enzymes
C. Involved in competitive inhibition
D. Always allosteric enzymes

46. Which vitamin deficiency can lead to a condition known as rickets in children?

A. Vitamin A
B. Vitamin C
C. Vitamin D
D. Vitamin E

47. Which one is the most abundant protein in the animal world?

A. Trypsin
B. Haemoglobin
C. Insulin
D. Collagen

48. Which of the following is not an aromatic amino acid?

A. Tryptophan
B. Tyrosine
C. Histidine
D. Phenylalanine

49. The first step of glycolysis, where glucose is phosphorylated at carbon atom number

A. C-1
B. C-6
C. C-2
D. C-5

50. Which one is the cofactor of carbonic anhydrase?

A. Fe
B. Mg
C. Mo
D. Zn

51. Troponin subunit with calcium-binding sites

A. Troponin C (TnC)
B. Troponin I (TnI)
C. Troponin T (TnT)
D. None of the above

52. Human dental formula is

A. 2.1.2.3/2.1.2.3
B. 3.1.4.2/3.1.4.3
C. 2.1.3.3/2.1.3.3
D. 2.1.3.3/3.1.3.3

53. The common passage for bile and pancreatic juice

A. Duct of Wirsung
B. Duct of Santorini
C. Ductus Choledochus
D. Ampulla of vater

54. Which chamber of the heart receives oxygenated blood from the lungs?

A. Right atrium
B. Left atrium
C. Right ventricle
D. Left ventricle

55. Alveolar surfactant is produced by the

A. Type I pneumocytes
B. Mucus cells of trachea
C. Type II pneumocytes
D. Both (A) and (B)

56. Haversian canal is present in

A. Muscle
B. Liver
C. Hairs
D. Bone

57. The gastrointestinal hormone which stimulates insulin secretion

A. Gastrin
B. CCK
C. Secretin
D. GIP

58. What is the functional unit of the kidney?

A. Ureter
B. Nephron
C. Renal cortex
D. Renal medulla

59. In which of the following situations, is there a risk factor for children of incurring erythroblastosis foetalis?

A. Mother is Rh -ve and father is Rh -ve
B. Mother is Rh -ve and father is Rh +ve
C. Mother is Rh +ve and father is Rh +ve
D. Mother is Rh +ve and father is Rh -ve

60. Which enzyme catalyses the conversion of carbon dioxide and water into carbonic acid in red blood cells?

A. Carbonic anhydrase
B. Carbonic synthase
C. Carbonate dehydrogenase
D. Carbonate anhydrase

61. Bleeding phase of menstrual cycle is

A. Menstrual Phase
B. Follicular Phase
C. Ovulatory Phase
D. Luteal Phase

62. Synaptic delay is due to the time taken for

A. Release of neurotransmitter
B. Passage of neurotransmitter from axon terminal to postsynaptic membrane
C. Action of the neurotransmitter to open the ionic channels in postsynaptic membrane
D. All the above

63. Of the following species concept, which one emphasizes reproductive isolation as major cause of speciation?

A. Biological species concept
B. Evolutionary species concept
C. Morphological species concept
D. Phylogenetic species concept

64. Myasthenia gravis is an example of

A. Viral disease
B. Allergic disease
C. Auto immune disease
D. Bacterial disease

65. What is the expected F2 genotypic ratio of a monohybrid cross?

A. 1:2:1
B. 2:1
C. 3:1
D. 9:3:3:1

66. Which enzyme is deficient or defective in individuals with PKU?

A. Phenylalanine synthase
B. Tyrosine hydroxylase
C. Phenylalanine dehydrogenase
D. Phenylalanine hydroxylase

67. What is the chromosomal abnormality associated with Down syndrome?

A. Trisomy 21
B. Monosomy X
C. Trisomy 18
D. Trisomy 13

68. What is euploidy?

A. A condition where there is an abnormal number of chromosomes
B. A condition where there is a normal number of chromosomes
C. A condition where there is an extra copy of a specific chromosome
D. A condition where there is a missing chromosome

69. The recapitulation theory was given by

A. Lamarck
B. Haeckel
C. Darwin
D. Hooker

70. Food chain begin with a photosynthetic plant

A. Grazing food chain
B. Detritus food chain
C. Both (A) and (B)
D. None of the above

71. What is the term for the maximum number of individuals of a species that an environment can support indefinitely?

A. Carrying capacity
B. Density-dependent factor
C. Logistic growth
D. Exponential growth

72. What is the term for the movement of individuals out of a population to other areas?

A. Immigration
B. Emigration
C. Dispersal
D. Natality

73. A species that has an effect out of all proportion to its commonness is called a

A. Dominant species
B. Umbrella species
C. Keystone species
D. Flagship species

74. Chemoautotrophic bacteria are

A. Primary consumers
B. Primary producers
C. Secondary consumers
D. Decomposers

75. Species whose status provides on the overall health of a food web or ecosystem

A. Dominant species
B. Indicator species
C. Umbrella species
D. Flagship species

76. The formation of a bare or uninhabited area for the initiation of ecological succession

A. Nudation
B. Invasion
C. Ecesis
D. Coaction

77. Which of the following is an example for sedimentary cycle?

A. Nitrogen cycle
B. Carbon cycle
C. Phosphorus cycle
D. Sulphur cycle

78. Which of the following organization publishes the Red Data Book

A. World Health Organization (WHO)
B. International Union for Conservation of Nature (IUCN)
C. United Nations Educational, Scientific and Cultural Organization (UNESCO)
D. World Wildlife Fund (WWF)

79. Sunderlal Bahuguna is associated with

A. Narmada Bachao Andolan
B. Save Silent Valley movement
C. Chipko Movement
D. Jungle Bachao movement

80. The largest ramsar site in world is

A. Rio Negro in Brazil

B. Ngiri-Tumba-Maindombe in the Democratic Republic of Congo

C. Queen Maud Gulf in Canada

D. Sudd in South Sudan

81. Biodiversity museum set by Kerala State Biodiversity Board

A. Mangalavanam (Eranakulam)

B. Chembra Peak Wayanad

C. Vallakadavu (Thiruvananthapuram)

D. Aralam (Kannur)

82. Which of the following is not an example for diagrammatic data representation method

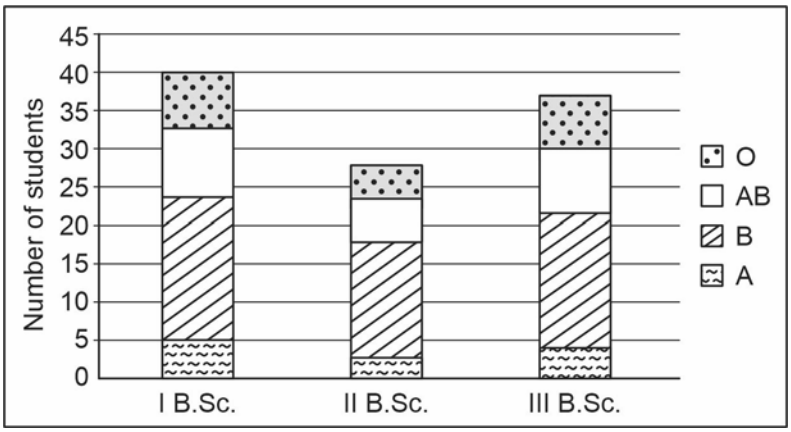
A. Line diagram

B. Bar Diagram

C. Pie Chart

D. Frequency Cure

83. Identify the type of bar diagram



A. Simple bar diagram

B. Multiple bar diagram

C. Subdivided bar diagram

D. Percentage bar diagram

84. Which of the following is example for stratified Random Sampling

A. Judgment Sampling

B. Convenience Sampling

C. Stratified Sampling

D. Quota Sampling

85. Find out the odd one

A. Mean
B. Range
C. Mode
D. Median

86. Which among the following statements are correct for standard deviation

(i) Karl Pearson introduced the concept of SD in 1893.

(ii) It is also called root mean square deviation.

(iii) It is represented by Greek symbol σ and in short form by SD.

(iv) It represents the extent to which individual values differ from the average or Mean.

A. (i) (ii) (iii)
B. (i) (iii) (iv)
C. (ii) (iii) (iv)
D. All the above

87. Which statistical test is used to compare the means of two independent groups?

A. T-test
B. Chi-square test
C. ANOVA
D. Mann-Whitney U test

88. Central Drug Research Institute (CSIR-CDRI) is located at

A. Pune
B. Lucknow
C. Delhi
D. Kolkata

89. Which of the following is used as a spraying agent in paper chromatography

A. Copper Sulphate solution
B. NaCl solution
C. Ninhydrin solution
D. None of the above

90. What happens to absorbance as concentration increases according to Beer-Lambert Law?

A. Absorbance decreases
B. Absorbance increases
C. Absorbance remains constant
D. None of the above

91. Headquarter of ICAR-Central Institute of Fisheries Technology in Kerala is at

A. Cochin
B. Vizhinjam
C. Calicut
D. Kollam

92. Project tiger in India was started in the year

A. 1973
B. 1988
C. 1970
D. 1984

93. Which type of immunoglobulin is involved in allergic reactions?

A. IgA
B. IgD
C. IgE
D. IgM

94. Which of the following is a primary lymphoid organ?

A. Thymus
B. Spleen
C. Tonsils
D. Lymph nodes

95. Monoclonal antibodies were first developed by

A. Snell, Dausset and Benacerraf
B. Porter and Edelman
C. Kohler and Milstein
D. Thomas and Murray

96. Hybridoma technology is used for the production of

A. Plasma cells
B. Immunoglobulins
C. Monoclonal antibodies
D. Interleukins

97. Tissue transplant between genetically different individual is known as

A. Isograft
B. Allograft
C. Autograft
D. Xenograft

98. The Immunoglobulin class that can cross placental barrier is

A. IgA
B. lgG
C. IgD
D. lgE

99. The type of eggs that contain limited quantities of yolk are called

A. Microlecithal
B. Mesolecithal
C. Macrolecithal
D. Polylecithal

100. World Ozone Day is celebrated on

A. June 5
B. April 21
C. September 16
D. July 24

ANSWER SHEET

1	A	B	C	D	E	26	A	B	C	D	E	51	A	B	C	D	E	76	A	B	C	D	E
2	A	B	C	D	E	27	A	B	C	D	E	52	A	B	C	D	E	77	A	B	C	D	E
3	A	B	C	D	E	28	A	B	C	D	E	53	A	B	C	D	E	78	A	B	C	D	E
4	A	B	C	D	E	29	A	B	C	D	E	54	A	B	C	D	E	79	A	B	C	D	E
5	A	B	C	D	E	30	A	B	C	D	E	55	A	B	C	D	E	80	A	B	C	D	E
6	A	B	C	D	E	31	A	B	C	D	E	56	A	B	C	D	E	81	A	B	C	D	E
7	A	B	C	D	E	32	A	B	C	D	E	57	A	B	C	D	E	82	A	B	C	D	E
8	A	B	C	D	E	33	A	B	C	D	E	58	A	B	C	D	E	83	A	B	C	D	E
9	A	B	C	D	E	34	A	B	C	D	E	59	A	B	C	D	E	84	A	B	C	D	E
10	A	B	C	D	E	35	A	B	C	D	E	60	A	B	C	D	E	85	A	B	C	D	E
11	A	B	C	D	E	36	A	B	C	D	E	61	A	B	C	D	E	86	A	B	C	D	E
12	A	B	C	D	E	37	A	B	C	D	E	62	A	B	C	D	E	87	A	B	C	D	E
13	A	B	C	D	E	38	A	B	C	D	E	63	A	B	C	D	E	88	A	B	C	D	E
14	A	B	C	D	E	39	A	B	C	D	E	64	A	B	C	D	E	89	A	B	C	D	E
15	A	B	C	D	E	40	A	B	C	D	E	65	A	B	C	D	E	90	A	B	C	D	E
16	A	B	C	D	E	41	A	B	C	D	E	66	A	B	C	D	E	91	A	B	C	D	E
17	A	B	C	D	E	42	A	B	C	D	E	67	A	B	C	D	E	92	A	B	C	D	E
18	A	B	C	D	E	43	A	B	C	D	E	68	A	B	C	D	E	93	A	B	C	D	E
19	A	B	C	D	E	44	A	B	C	D	E	69	A	B	C	D	E	94	A	B	C	D	E
20	A	B	C	D	E	45	A	B	C	D	E	70	A	B	C	D	E	95	A	B	C	D	E
21	A	B	C	D	E	46	A	B	C	D	E	71	A	B	C	D	E	96	A	B	C	D	E
22	A	B	C	D	E	47	A	B	C	D	E	72	A	B	C	D	E	97	A	B	C	D	E
23	A	B	C	D	E	48	A	B	C	D	E	73	A	B	C	D	E	98	A	B	C	D	E
24	A	B	C	D	E	49	A	B	C	D	E	74	A	B	C	D	E	99	A	B	C	D	E
25	A	B	C	D	E	50	A	B	C	D	E	75	A	B	C	D	E	100	A	B	C	D	E

ROUGH WORK

ROUGH WORK

ROUGH WORK