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Test Booklet Series

T. B. C. : PGT – 4/17

TEST BOOKLET

PART – B

(ZOOLOGY)

Sl. No. 1213

Time Allowed : 2 Hours

Maximum Marks : 100

: INSTRUCTIONS TO CANDIDATES :

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET OF THE SAME SERIES ISSUED TO YOU.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C** OR **D**, AS THE CASE MAY BE, IN THE APPROPRIATE PLACE IN THE ANSWER SHEET USING BALL POINT PEN (BLUE OR BLACK).
3. You have to enter your **Roll No.** on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.
4. **YOU ARE REQUIRED TO FILL UP & DARKEN ROLL NO., TEST BOOKLET / QUESTION BOOKLET SERIES IN THE ANSWER SHEET AS WELL AS FILL UP TEST BOOKLET / QUESTION BOOKLET SERIES AND SERIAL NO. AND ANSWER SHEET SERIAL NO. IN THE ATTENDANCE SHEET CAREFULLY. WRONGLY FILLED UP ANSWER SHEETS ARE LIABLE FOR REJECTION AT THE RISK OF THE CANDIDATE.**
5. This Test Booklet contains **100** items (questions). Each item (question) comprises four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose **ONLY ONE** response (answer) for each item (question).
6. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided by **using BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.
7. All items (questions) carry equal marks. All items (questions) are compulsory. Your total marks will depend only on the number of correct responses (answers) marked by you in the Answer Sheet. **There will be no negative markings for wrong answers.**
8. Before you proceed to mark (darken) in the Answer Sheet the responses to various items (questions) in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per the instructions sent to you with your **Admission Certificate.**
9. After you have completed filling in all your responses (answers) on the Answer Sheet and after conclusion of the examination, you should hand over to the Invigilator the *Answer Sheet* issued to you. You are allowed to take with you the candidate's copy / second page of the Answer Sheet along with the **Test Booklet**, after completion of the examination, for your reference.
10. Sheets for rough work are appended in the Test Booklet at the end.

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SEAL

1. In Meiosis, recombination occurs in _____ stage.
   (A) Metaphase II
   (B) Metaphase I
   (C) Prophase II
   (D) Prophase I

2. Which of the following is used for respiration by marine gastropods ?
   (A) Lungs
   (B) Gills
   (C) Skin
   (D) Mouth

3. What are Flame cells ?
   (A) Excretory cells
   (B) Reproductive cells
   (C) Respiratory cells
   (D) Secretary cells

4. Which one of the following exhibits polymorphism in coelenterates ?
   (A) Physalia
   (B) Hydra
   (C) Sea anemone
   (D) Obelia

5. Which colour cannot be seen by insects ?
   (A) Violet
   (B) Green
   (C) Red
   (D) Blue

6. Leishmania is a _____ parasite.
   (A) Nematode
   (B) Arthropod
   (C) Human
   (D) Protozoan

7. Amphiblastula larva is present in _____ phylum.
   (A) Sponges
   (B) Insects
   (C) Worms
   (D) Echinoderms

8. Segmented annelids are _____.
   (A) Pseudocoelomates
   (B) Coelomates
   (C) Acoelomates
   (D) Bicoelomates

9. Which of the following is a nematodes parasite ?
   (A) Plasmodium
   (B) Liver fluke
   (C) Round worm
   (D) Tapeworm

10. Which of the following are the two characteristic features of chordates ?

(A) Dorsal heart and eucoleomates

(B) Triploblastic and ventral nerve cord

(C) Triploblastic and dorsal heart

(D) Triplobastic and ventral heart

11. Bipinnaria larva is an example of _____ class of echinoderms.

(A) Ophiuroidea

(B) Asteroidea

(C) Holothuroidea

(D) Crinoidea

12. Amphioxus is an example of _____.

(A) Cephalochordata

(B) Hemichordata

(C) Protochordata

(D) Echinodermata

13. Which of the following are flightless birds ?

(A) Kiwi and Sparrow

(B) Woodpecker and Ostrich

(C) Kiwi and Emu

(D) Ostrich and Sparrow

14. Which of the following is not the flight adaptation in birds ?

(A) Fusion of bones in birds makes the skeleton light and strong

(B) Fusion of bones in birds makes the skeleton light and weak

(C) Fusion of bones in birds donot make the skeleton light and strong

(D) Fusion of bones in birds makes the skeleton heavy and strong

15. Which of the following type of dentition is the rule among mammals based on the Mode of Attachment of Teeth ?

(A) Homodont

(B) Monophyodont

(C) Diphyodont

(D) Thecodont

16. Which of the following is the exclusive aquatic mammal ?

(A) Manatees

(B) Hippopotamus

(C) Rhinoceros

(D) Platypus

17. Which of the following substance that is introduced into the environment brings about recognizable biological adverse effect ?

(A) Nonpollutant

(B) Mitogen

(C) Morphogen

(D) Pollutant

18. Which of the following hotspot of biodiversity in India, recognized in the world and extend into the neighboring countries ?

(A) Western Ghats

(B) Andaman and Nicobar Islands

(C) National Parks

(D) Sanctuaries

19. Which of the following animal skin is devoid of glands ?

(A) Fishes

(B) Amphibians

(C) Reptiles

(D) Mammals

20. Chi-square distribution is used for the test of :

(A) Goodness of fit

(B) Hypothetical value of population variance

(C) Both (A) and (B)

(D) Neither (A) nor (B)

21. Which of the following is not the feature of a population ?

(A) Population Size and Density

(B) Population dispersion

(C) Locomotion

(D) Natality and Mortality

22. A group of interdependent organisms inhabiting the same region and interacting with each other are called _____

(A) Biotic community

(B) Non-biotic community

(C) Population

(D) Species

23. Which of the following two most abundant gases in the atmosphere exert almost no greenhouse effect ?

(A) Carbon dioxide and Methane

(B) Carbon dioxide and Nitrous oxide

(C) Carbon dioxide and Oxygen

(D) Nitrogen and Oxygen

24. Example of an jawless vertebrate _____

(A) Hagfish

(B) Rayfish

(C) Flying fish

(D) Saw fish

25. Which of the following statement is correct ?

(A) Use of morphology to study the evolution of organisms is one of the approaches of molecular evolution.

(B) Use of codon to study the evolution of organisms is one of the approaches of molecular evolution.

(C) Use of anticodon to study the evolution of organisms is one of the approaches of molecular evolution.

(D) Use of DNA to study the evolution of organisms is one of the approaches of molecular evolution.

26. Which of the following is the totality of the genes of a given population ?

(A) Gene frequency

(B) Genotype

(C) Gene pool

(D) Gene family

27. Which of the following is the random change in the frequencies of alleles within a small population ?

(A) Genetic load

(B) Genetic drift

(C) Heterosis

(D) Homeostasis

28. Who has coined the term Modern synthesis of Evolution ?

(A) Darwin

(B) Bateson

(C) Huxley

(D) Dobzhansky

29. Which of the following is the destabilizing force of Hardy-Weinberg equilibrium ?

(A) Gene isolation

(B) Gene migration

(C) Gene cloning

(D) Gene manipulation

30. "Nothing in biology makes sense except in the light of evolution" framed by :

(A) Charles Darwin

(B) Th. Dobzhansky

(C) T. H. Morgan

(D) Sewell Wright

31. A species means :

(A) A group of individuals

(B) A group of populations

(C) A group of males

(D) A group of individuals producing fertile and viable offspring

32. _____ is the process by which a genome changes in structure over time, through mutation, horizontal gene transfer and sexual reproduction.

(A) Genome evolution

(B) RNA evolution

(C) DNA evolution

(D) Protein evolution

33. _____ is a chemical produced which changes the behaviour of another animal of the same species.

(A) Pheromone

(B) Hormone

(C) Mutagen

(D) Mitogen

34. What is transduction ?

(A) Is the process by which foreign DNA is introduced into a cell by a cell.

(B) Is the process by which foreign DNA is introduced into a cell by Bacteria.

(C) Is the process by which foreign DNA is introduced into a cell by a virus.

(D) Is the process by which foreign DNA is introduced into a cell by a plasmid.

35. How much silk can be produced by one Silk Moth cocoon ?

(A) 100 to 1000 feet of silk

(B) 1000 to 3000 feet of silk

(C) 3000 to 5000 feet of silk

(D) 5000 to 7000 feet of silk

36. What is the major cause for genome evolution ?

(A) Translocation

(B) Duplication

(C) Deletion

(D) Inversion

37. How many bees may occupy a hive ?

(A) Up to 70,000 bees

(B) Up to 700 bees

(C) Up to 7000 bees

(D) Up to 1700 bees

38. What is the respiratory organ of earthworms ?

(A) Lung

(B) Gill

(C) Skin

(D) Thorax

39. The cell wall of bacteria is composed of :

(A) Chitin

(B) Murien

(C) Suberin

(D) Cellulose

40. A method to introduce the desired gene into animal embryos / cells :
(A) Microinjection
(B) cDNA synthesis
(C) Gene isolation
(D) Hybridization

41. A technique is used to improve the quality of cattle :
(A) Artificial insemination
(B) Gene cloning
(C) DNA sequencing
(D) Southern blotting

42. Which of the following statement about succession is correct ?
(A) Secondary succession occurs where no soil exists.
(B) Primary succession occurs in areas where soil remains after a disturbance.
(C) Secondary succession can occur where a disturbance has left soil intact.
(D) Some cases of succession involve facilitation, a phenomenon in which local species inhibit the growth of newcomers.

43. Functional properties of mDNA :
(A) Transcription
(B) Recombination
(C) Replication
(D) Translation

44. What is Transgenesis ?
(A) Is the process of isolation of an exogenous gene
(B) Is the process of sequencing of an exogenous gene
(C) Is the process of removal of an exogenous gene
(D) Is the process of introducing an exogenous gene

45. Cell cycle is controlled by _____.
(A) Phosphatases
(B) Cyclins
(C) rRNA genes
(D) tRNA genes

46. Polytene chromosomes are found in _____.
(A) Metaphase I
(B) Prophase I
(C) Interphase
(D) Leptotene stage

47. What kind of linkage present in **Drosophila melanogaster** ?
(A) Complete in both males and females
(B) Complete in males and incomplete in females
(C) Incomplete in both males and females
(D) Complete in females and incomplete in males

48. Genic balance theory of Bridges means :

(A) Ratio of set of sex chromosomes and sets of autosomes

(B) Ratio of number of X chromosomes and set of autosomes

(C) Ratio of set of sex chromosomes and number of autosomes

(D) Ratio of number of sex chromosomes and number of autosomes

49. The correct number of human chromosome was reported by _____.

(A) Painter

(B) Boveri and Sutton

(C) Wilson

(D) Tijo and Levan

50. Which of the following is the first sequenced eukaryotic organism ?

(A) **Drosophila**

(B) Yeast

(C) Nematode

(D) Human

51. What is genetic mapping ?

(A) Determination of gene order

(B) Determination of gene distance

(C) Determination of gene order and gene distance

(D) Determination of protein sequence

52. Which of the following is an example for permanent translocation heterozygosity ?

(A) **Drosophila**

(B) Oenothera

(C) Wheat

(D) Datura

53. Meiosis occurs in :

(A) Somatic diploid cell

(B) Reproductive diploid cell

(C) Somatic haploid cell

(D) Reproductive haploid cell

54. A portion of the chromosome has broken off, turned upside down and reattached, this is known as _____.

(A) Deletion

(B) Inversion

(C) Translocation

(D) Duplication

55. Human genome project was completed in _____ years.

(A) 15

(B) 20

(C) 13

(D) 10

56. Which structure serves to facilitate the flow of signaling molecules through a series of cells ?

(A) Tight junction

(B) Gap junction

(C) Belt desmosome

(D) Lipid

57. The division of a eukaryotic cell's set of chromosomes into two sets, each identical to the original is _____.

(A) Mitosis

(B) Meiosis

(C) Amitosis

(D) Cytokinesis

58. Who demonstrated that genes are located on chromosomes ?

(A) Mendel

(B) Morgan

(C) Muller

(D) Meselson

59. Ionic balance in man is regulated by :

(A) Liver

(B) Heart

(C) Kidney

(D) Pancreas

60. Master of master gland is :

(A) Hypothalamus

(B) Pituitary

(C) Thyroid

(D) Pancreas

61. Malpighian tubules are _____ structures.

(A) Respiratory

(B) Circulatory

(C) Excretory

(D) Secretory

62. The functional unit of vertebrate excretory system is _____.

(A) Kidney

(B) Urinary bladder

(C) Neuron

(D) Nephron

63. Carbohydrate digestion is not taking place in _____.

(A) Intestine

(B) Buccal cavity

(C) Kidney

(D) Stomach

64. Nervous system consists of _____ pairs of cranial nerves.

(A) 14

(B) 8

(C) 10

(D) 12

65. Which of the following is the correct primary function of that event ?

(A) Exocytosis – the movement of macromolecules into the cell by vesicle fusion with the plasma membrane

(B) Lactation – production of milk during pregnancy

(C) Osmosis – passive movement of small solutes across a membrane

(D) Testosterone – hormone needed for the normal growth of female

66. The RNA that is covalently bonded to amino acid is _____.

(A) mRNA

(B) rRNA

(C) tRNA

(D) snRNA

67. Introns are the _____.

(A) Coding sequence

(B) Non coding sequence

(C) Antisense sequence

(D) Flanking sequence

68. Enzyme that joins okazaki fragment is _____.

(A) DNA polymerase I

(B) DNA Ligase

(C) DNA polymerase III

(D) Topoisomerase

69. During transcription activation, binding of _____ prevents inhibitor binding.

(A) TFIIA to the TFIID-promoter complex

(B) TFIID to the TATA box

(C) TFIIF and RNA polymerase II

(D) TFIIH and THIIE

70. Termination codon is _____.

(A) UGG

(B) GUG

(C) UAG

(D) AUG

71. What is a triplet codon ?

(A) A sequence of three nitrogen bases in a tRNA

(B) A sequence of three bases in rRNA

(C) The presence of only three bases in mRNA

(D) A sequence of three nitrogen bases on mRNA

72. Hydrolytic enzymes of lysosomes mainly function at _____.

(A) Acidic PH

(B) Neutral PH

(C) Basic PH

(D) Any PH

73. Most of the mature eukaryotic mRNAs have _____.

(A) G at 5′ end and poly A tail at 3′ end

(B) G at 3′ end and poly A tail at 5′ end

(C) Poly A tails at both the ends

(D) Do not have any such sequence at both the ends

74. Tools of Genetic Engineering :

(A) Vector DNA, Metabolic enzyme, Host cell and DNA of interest

(B) Vector DNA, Restriction enzyme, Host cell and DNA of interest

(C) Vector DNA, Esterase enzyme, Host cell and DNA of interest

(D) Vector DNA, Hydrolase enzyme, Host cell and DNA of interest

75. Proteins are glucosylated in _____.

(A) Ribosome

(B) Lysosome

(C) Golgi complex

(D) Plasma membrane

76. Choose the appropriate typical structure of a 5′ → 3′ eukaryotic gene _____.

(A) 5′ UTR → Promoter → Exons → Introns → 3′ UTR

(B) Promoter → 3′ UTR → Exons → Introns → 5′ UTR

(C) 5′ UTR → Exons → Introns → 3′ UTR → Promoter

(D) Promoter → 5′ UTR → Exons → Introns → 3′ UTR

77. Which one of the following germ layer forms the sex organs ?

(A) Ectoderm

(B) Epidermis

(C) Mesoderm

(D) Endoderm

78. Vaccines contain :

(A) Cytokines

(B) Enzymes

(C) Attenuated microbes

(D) Virulent microbes

79. Which of the following component not involved in animal development ?

(A) Determination

(B) Differentiation

(C) Auxin and Cytokinin

(D) Morphogenesis

80. Monoclonal antibodies are used to detect _____.

(A) Antigen

(B) Gene mutation

(C) Chromosomal deletion

(D) Mitogen

81. Choose the correct match :

Category I	Category II
(i) IgA	(1) Basophils
(ii) IgE	(2) δ heavy chain
(iii) IgG	(3) Secretory component
(iv) IgM	(4) Pentamer
	(5) Cross placenta

(A) (i) – (3), (ii) – (1), (iii) – (5), (iv) – (4)

(B) (i) – (3), (ii) – (5), (iii) – (2), (iv) – (1)

(C) (i) – (2), (ii) – (3), (iii) – (5), (iv) – (4)

(D) (i) – (2), (ii) – (1), (iii) – (3), (iv) – (5)

82. The antigen of blood group 'A' is :

(A) AB

(B) O

(C) A

(D) B

83. Embryonic stem cells are derived from _____.

(A) Inner cell mass of blastula

(B) Gastrula cells

(C) Cleavage cells

(D) Neurula cells

84. Interferons are glycoproteins which stimulate the synthesis of :

(A) Antibacterial proteins

(B) Antifungal proteins

(C) Anti T-cell proteins

(D) Antiviral proteins

85. Metamorphosis is a :

(A) Developmental phenomena

(B) Degradation phenomena

(C) Regeneration Phenomena

(D) Reproductive phenomena

86. The Ig that can cross placenta to provide passive immunity to the developing fetus is :

(A) IgD

(B) IgM

(C) IgG

(D) IgE

87. Transfer of DNA from gel to membrane is called _____.

(A) Northern Blotting

(B) Southern Blotting

(C) Western Blotting

(D) Eastern Blotting

88. Human RBC is with :

(A) 46 chromosomes

(B) 23 chromosomes

(C) 48 chromosomes

(D) No chromosomes

89. In Honey bees, daughters share _____ of their genes.

(A) $\frac{3}{4}$

(B) $\frac{1}{2}$

(C) $\frac{1}{4}$

(D) $\frac{1}{8}$

90. At what temperature the extension of DNA stands takes place in PCR :

(A) 92° C

(B) 82° C

(C) 72° C

(D) 52° C

91. A common fixative ratio used for fixing chromosomes is _____

(A) 2 : 2 – alcohol and acetic acid

(B) 3 : 1 – alcohol and acetic acid

(C) 1 : 3 – alcohol and acetic acid

(D) 1 : 2 – alcohol and acetic acid

92. _____ analytical technique for separating and identifying mixtures that are or can be coloured, especially pigments.

(A) Gas chromatography

(B) Liquid chromatography

(C) Paper chromatography

(D) Columns chromatography

93. The human genome size is _____

(A) 3.2×10^8

(B) 1.2×10^6

(C) 3.2×10^4

(D) 4.8×10^2

94. Biometrician proposed the variation as :

(A) Large

(B) Discontinuous

(C) Small

(D) Continuous

95. Which is the device using beam of electrons instead of rays of light to take us down to nanodimensions ?

(A) Liquid chromatopgraphy

(B) Electron microscope

(C) Fluorescent microscope

(D) Spectrophotometry

96. Where the notochord is present in the larva of Urochordates ?

(A) Head region

(B) Tail region

(C) Trunk region

(D) Throughout

97. Which of the following is the most primitive jawed, oldest extant lineage, living lungfishes ?

(A) Dipnoi

(B) Shark

(C) Rays

(D) Skates

98. Which of the following combination is not the poisonous snakes of India ?

(A) Russell's Viper, Indian Krait, Sea snake and King Cobra

(B) Russell's Viper, Bangarus Krait, Coral snake and King Cobra

(C) Pit Viper, Indian Krait, Python and King Cobra

(D) Saw Scaled Viper, Indian Krait, Sea snake and King Cobra

99. Match the statistical concepts with appropriate example :

Group – A	Group – B
(i) Tabulation of data	(1) Regression
(ii) Dispersion of data	(2) Pie chart
(iii) Distribution of data	(3) Mean
(iv) Statistical test	(4) Standard deviation
	(5) Binomial Poisson

(A) (i) – (5), (ii) – (4), (iii) – (2), (iv) – (1)

(B) (i) – (4), (ii) – (6), (iii) – (5), (iv) – (3)

(C) (i) – (2), (ii) – (4), (iii) – (5), (iv) – (1)

(D) (i) – (1), (ii) – (4), (iii) – (7), (iv) – (1)

100. Match the hormones to the glands producing them :

Group – A	Group – B
(i) Oxytocin	(1) Ovary
(ii) Insulin	(2) Pitultary
(iii) Calcitocin	(3) Testes
(iv) Estrogen	(4) Pancreas
(v) Epinephrine	(5) Thyroid
(vi) Testosterone	(6) Pineal
	(7) Adrenal

(A) (i) – (5), (ii) – (4), (iii) – (2), (iv) – (1), (v) – (6), (vi) – (3)

(B) (i) – (4), (ii) – (6), (iii) – (5), (iv) – (3), (v) – (7), (vi) – (1)

(C) (i) – (2), (ii) – (4), (iii) – (5), (iv) – (1), (v) – (7), (vi) – (3)

(D) (i) – (1), (ii) – (4), (iii) – (7), (iv) – (1), (v) – (6), (vi) – (5)

SPACE FOR ROUGH WORK


SEAL