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Booklet Code :

A

Marks : 100

Time : 120 minutes

DL-318-Zoo

Signature of the Candidate

Signature of the Invigilator

Total No. of Questions : 100]

[Total No. of Printed Pages : 24

INSTRUCTIONS TO THE CANDIDATE

(Read the Instructions carefully before Answering)

1. Separate Optical Mark Reader (OMR) Answer Sheet is supplied to you along with Question Paper Booklet. Please read and follow the instructions on the OMR Answer Sheet for marking the responses and the required data.
2. The candidate should ensure that the **Booklet Code printed on OMR Answer Sheet and Booklet Code supplied are same.**
3. **Immediately on opening the Question Paper Booklet by tearing off the paper seal, please check for (i) The same booklet code (A/B/C/D) on each page, (ii) Serial Number of the questions (1-100), (iii) The number of pages and (iv) Correct Printing.** In case of any defect, please report to the invigilator and ask for replacement of booklet with same code within five minutes from the commencement of the test.
4. Electronic gadgets like Cell Phone, Calculator, Watches and Mathematical/Log Tables are not permitted into the examination hall.
5. **There will be 1/4 negative mark for every wrong answer.** However, if the response to the question is left blank without answering, there will be no penalty of negative mark for that question.
6. Record your answer on the OMR answer sheet by using Blue/Black ball point pen to darken the appropriate circles of (1), (2), (3) or (4) corresponding to the concerned question number in the OMR answer sheet. *Darkening of more than one circle against any question automatically gets invalidated and will be treated as wrong answer.*
7. Change of an answer is **NOT** allowed.
8. Rough work should be done only in the space provided in the Question Paper Booklet.
9. **Return the OMR Answer Sheet and Question Paper Booklet to the invigilator before leaving the examination hall.** Failure to return the OMR sheet and Question Paper Booklet is liable for criminal action.

DL-318-Zoo



1. Metamerism is found in which of the following phyla ?
 - (1) Arthropoda
 - (2) Coelentreta
 - (3) Nematoda
 - (4) Trematoda
2. The site of production of steroids in a cell is
 - (1) rough endoplasmic reticulum.
 - (2) Golgi complex.
 - (3) lysosomes.
 - (4) smooth endoplasmic reticulum.
3. Which one of the following statements is **not** true for centrioles ?
 - (1) These are the small hollow cylindrical structures that occur in pairs.
 - (2) Each centriole consists of nine triplets of microtubules.
 - (3) Cells of higher plants contain a pair of centriole.
 - (4) Centrioles are made up of microtubules.
4. Identify the mismatch in the following.
 - (1) B lymphocytes - humoral immunity
 - (2) T lymphocytes - cell mediated immunity
 - (3) Neutrophils - phagocytosis
 - (4) NK cells - antibody production
5. Lymphoid follicles are the site of production of
 - (1) Eosinophils
 - (2) Neutrophils
 - (3) Lymphocytes
 - (4) Blood platelets
6. Which one of the following is a home for endemic species of caesalians ?
 - (1) Deccan plateau
 - (2) Western ghats
 - (3) Eastern Himalayas
 - (4) Gangetic plain



7. Tidal volume is
- (1) the volume of air entering or leaving the lungs during a single breath.
 - (2) the volume of air entering or leaving the lungs in one minute.
 - (3) the volume of oxygen entering the lungs in a single breath.
 - (4) the volume of oxygen entering blood in a single breath.
8. Which of the following acts as a hormone receptor as well as an enzyme ?
- (1) Adenylatecyclase
 - (2) Tyrosine kinase
 - (3) Protein kinase
 - (4) Phospholipase
9. Which of the following statements is **not correct** with reference to mechanism of muscle contraction ?
- (1) Shortening of the sarcomeres is accomplished by sliding of thin filaments over thick filaments.
 - (2) Calcium ions are released by sarcoplasmic reticulum.
 - (3) The size of A bands reduce in their length during contraction.
 - (4) Acetylcholine depolarises muscle membrane.
10. Which one of the following is **not** a tyrosine derived neurotransmitter ?
- (1) Dopamine
 - (2) Norepinephrine
 - (3) Epinephrine
 - (4) GABA
11. The juxtaglomerular apparatus is the region in each nephron where the afferent arteriole comes in contact with
- (1) glomerulus.
 - (2) the distal convoluted tubule.
 - (3) the proximal convoluted tubule.
 - (4) the loop of Henle.



12. Select the **mismatch** pair.

- (1) Parietal cells - HCl
- (2) Chief cells - pepsinogen
- (3) Bile salts - lipids
- (4) Amylase - peptide digestion

13. The circulation of blood in the heart muscles is termed

- (1) coronary circulation.
- (2) systemic circulation.
- (3) pulmonary circulation.
- (4) renal circulation.

14. Which one of the following region of the eye helps in supply of blood to eyelids ?

- (1) Cornea
- (2) Choroid
- (3) Uvea
- (4) Iris

15. Which of the following is true for amphibian eggs ?

- (1) Mesolecithal and non-cleidoic.
- (2) Mesolecithal and cleidoic.
- (3) Microlecithal and cleidoic.
- (4) Micrilecithal and non-cleidoic.

16. In frog's egg the cleavage is

- (1) holoblastic
- (2) radial
- (3) discoidal
- (4) superficial



17. Choose the **wrong** combination with reference to development.
- (1) Ectoderm - epidermis
 - (2) Endoderm - pancreas
 - (3) Mesoderm - vertebral column
 - (4) Mesoderm - brain
18. The autotrophs which convert inorganic compounds into nutrients without using sunlight are called
- (1) Chemoautotrophs
 - (2) Photoautotrophs
 - (3) Phagotrophs
 - (4) Osmotrophs
19. Ammonification process is found in
- (1) Nitrogen cycle.
 - (2) Phosphorous cycle.
 - (3) Sulphate cycle.
 - (4) Carbon cycle.
20. The association between sucker fish and shark is an example for
- (1) obligative mutualism.
 - (2) facultative mutualism.
 - (3) commensalism.
 - (4) symbiosis.
21. The succession which is initiated with the establishment of pioneer communities on base rocks is known as
- (1) lithosere
 - (2) psammosere
 - (3) halosere
 - (4) hydrosere



22. A species whose numbers are so small, that the species is at risk of extinction is known as
- (1) endangered species.
 - (2) rare species.
 - (3) vulnerable species.
 - (4) threatened species.
23. Which one of the following is an example for *in situ* conservation of biodiversity ?
- (1) Botanical gardens
 - (2) Zoo
 - (3) Gene banks
 - (4) Sacred grooves
24. Particulate matter is in diameter -
- (1) solid particles which are less than 10 microns.
 - (2) solid particles which are about 1000 μm .
 - (3) solid or liquid dispersed matter which are smaller than about 500 μm .
 - (4) solid or liquid particles formed when vapour condenses.
25. According to Lamarck, a Giraffe has a long neck because -
- (1) the creator designed it that way.
 - (2) catastrophes eliminated short necked forms.
 - (3) its ancestors stretched their neck to get food.
 - (4) ancestral Giraffes with slightly longer necks than others left more surviving offspring.
26. Genetic drift occurs when a few individuals of a species colonize an island. This particular phenomenon is known as -
- (1) The bottleneck effect.
 - (2) The founder effect.
 - (3) Assortative mating.
 - (4) Random mating.



27. Pre-zygotic isolating mechanism prevents successful -
- (1) Gamete formation.
 - (2) Fertilization.
 - (3) Development of zygote.
 - (4) Reproduction of hybrids.
28. Select the mismatch with reference to major excretory product and the animal group -
- (1) Frog - uric acid
 - (2) Insects - uric acid
 - (3) Mammals - urea
 - (4) Bird - uric acid
29. The small, circular, extra-chromosomal genetic element present in bacterial cell is called
- (1) Nucleoid
 - (2) Plasmid
 - (3) Lysosome
 - (4) Vesicles
30. Choose the **wrong** statement with reference to plasma membrane.
- (1) According to fluid mosaic model, the plasma membrane contains a lipid bilayer.
 - (2) Protein molecules are interspersed in the lipid layers.
 - (3) The membrane is hydrophobic in nature.
 - (4) Molecules that stick on the outer surface contain chains of glycolipids.
31. Independent assortment of genes occurs due to the orientation of chromosomes at
- (1) Metaphase of mitosis.
 - (2) Metaphase I of meiosis.
 - (3) Metaphase II of meiosis.
 - (4) Any phase of the cell division.



32. Recombination percentage in a diploid cell cannot exceed
- (1) 100
 - (2) 50
 - (3) 25
 - (4) 75
33. In a diploid organism, the genes A, B and C are present on the same chromosome in that order. The AB interval is 10 map units and BC interval is 20 map units. In ABC/abc heterozygous individual, what will be the proportion of gametes that carry the genotype AbC ?
- (1) 1%
 - (2) 10%
 - (3) 20%
 - (4) 30%
34. With reference to genetic syndromes, choose correct statements.
- (A) Cri-du-chat syndrome is due to chromosomal change involving deletion.
 - (B) Formation of multivalents in meiosis is due to reciprocal translocation.
 - (C) Klinefelter's syndrome has 44+XXy.
 - (D) In Down's syndrome of a male child, the sex complement is XY.
- (1) A, B
 - (2) B, C
 - (3) A, B, D
 - (4) A, B, C, D
35. The function of DNA helicase during DNA replication is -
- (1) unwinding of DNA strand.
 - (2) addition of nucleotides.
 - (3) proof reading of newly synthesized DNA strand.
 - (4) formation of okazaki fragments.



36. Among the following which is **not** the function of the ribosome ?

- (1) Peptide bond formation.
- (2) Aminoacylation of tRNA.
- (3) Binding of protein factors during elongation.
- (4) Binding of aminoacyl tRNA to mRNA.

37. The structural gene in Lac operon, β - galactoside permease is coded by -

- (1) Lac Y
- (2) Lac Z
- (3) Lac A
- (4) Lac operator

38. The development of primary oocytes is arrested in which stage of the meiosis during oogenesis ?

- (1) Prophase I of meiosis I.
- (2) Prophase II of meiosis I.
- (3) Metaphase I of meiosis II.
- (4) Metaphase II of meiosis II.

39. Choose the correct combination of key gluconeogenic enzymes.

- (1) Phosphoenol pyruvate carboxykinase, fructose-1, 6-bisphosphatase, glucose-6-phosphatase.
- (2) Phosphoenol pyruvate carboxykinase, fructose-1, 6-bisphosphatase, phosphoglycerate kinase.
- (3) Carboxykinase, fructose-1, 6-bisphosphatase, glucose-6-phosphatase.
- (4) Phosphoenol pyruvate carboxykinase, phosphoglycerate kinase, glucose-6-phosphatase.

40. Hyaluronic acid is a

- (1) Homopolysaccharide
- (2) Disaccharide
- (3) Heteropolysaccharide
- (4) Pentasaccharide



41. The hemoglobin exhibits
- (1) Primary structure of a protein.
 - (2) Secondary structure of a protein.
 - (3) Tertiary structure of a protein.
 - (4) Quaternary structure of a protein.
42. Organism which cannot tolerate a wide fluctuation in the salinity is in nature.
- (1) stenohaline
 - (2) euryhaline
 - (3) euryhydric
 - (4) stenohydric
43. The type of coelom formed by the out-pouching of a mesodermal sac from the endoderm of a primitive gut is known as -
- (1) Schizocoelous
 - (2) Enterocoelous
 - (3) Pseudocoelous
 - (4) Mesocoelous
44. Which one of the phylum shows cellular grade of organization ?
- (1) Cnidaria
 - (2) Porifera
 - (3) Nematoda
 - (4) Platyhelminthes
45. Scientific name of peacock is -
- (1) *Pavo cristatus*
 - (2) *Phasianidae phasianidae*
 - (3) *Eudynamys scolopaceus*
 - (4) *Centropus sinensis*



46. "A single lineage of ancestor descendant populations that maintains its identity from other such lineages and that has its own evolutionary tendencies and historical fate" is
- (1) Evolutionary species concept.
 - (2) Phylogenetic species concept.
 - (3) Morphological species concept.
 - (4) Biological species concept.
47. Which one of the following is true for nematodes ?
- (1) Radial symmetry, pseudocoelomate, multicellular, eumetazoa.
 - (2) Bilateral symmetry, pseudocoelomate, multicellular, eumetazoa.
 - (3) Bilateral symmetry, cucoelomate, multicellular, eumetazoa.
 - (4) Bilateral symmetry, enterocoelomate, multicellular, eumetazoa.
48. Polyps and medusa are found in
- (1) Porifera
 - (2) Platyhelminthus
 - (3) Nematoda
 - (4) Coelenterata
49. *Plasmodium vivax* belongs to which class of phylum protozoa ?
- (1) Sporozoa
 - (2) Acantharea
 - (3) Heliozoa
 - (4) Rhizopoda
50. Which one of the following statement is **not** true for sponges ?
- (1) Body comprises pores (ostia), canals and chambers that serve for passage of water.
 - (2) Epidermis consists of nematoblasts.
 - (3) Skeletal structure consists of calcareous or siliceous crystalline spicules.
 - (4) Asexual reproduction is by budding and sexual reproduction by eggs and sperm.



51. The extensible projections around the oral end that aid in food capture in coelenterates are -
- (1) Tentacles
 - (2) Nematocytes
 - (3) Ciliary comb plates.
 - (4) Medusa
52. The excretory structures present in platyhelminthus are -
- (1) Choanocytes
 - (2) Flame cells
 - (3) Green glands
 - (4) Malpighian tubules
53. *Taenia solium* belongs to class -
- (1) Monogenea
 - (2) Cestoda
 - (3) Trematoda
 - (4) Turbellaria
54. With reference to mollusca, which one of the following statements is **false** ?
- (1) Dorsal body wall forms pair of folds called the mantle, which enclose the mantle cavity.
 - (2) The digestive system consists of a rasping organ called radula.
 - (3) Presence of radial symmetry.
 - (4) The gaseous exchange is by gills, lungs, mantle or body surface.
55. In polychaetae, the first segment of the body that surrounds the mouth and may bear setae is known as
- (1) Peristomium
 - (2) Parapodia
 - (3) Prostomium
 - (4) Pseudostomium



56. Coxal gland in arthropods helps in -

- (1) Respiration
- (2) Locomotion
- (3) Excretion
- (4) Digestion

57. Which of the cells are not concerned with the formation, maintenance and modeling of a bone ?

- (1) Osteoblasts
- (2) Osteocytes
- (3) Osteoclasts
- (4) Chondroblast

58. Catecholamines are secreted by -

- (1) Cells of zona fasciculate.
- (2) Chromaffin cells.
- (3) Cells of zona glomerulosa.
- (4) Cells of zona reticularis.

59. Kuffer cells present in -

- (1) Kidney
- (2) Pancreas
- (3) Liver
- (4) Heart

60. Proximal convoluted tubule of the nephron is lined by

- (1) Columnar epithelial cells.
- (2) Cuboidal epithelial cells with brush border.
- (3) Squamous epithelial cells.
- (4) Stratified columnar cells.



61. The innermost layer of cells of cumulus oophorous adhering to the oocytes is called
- (1) Zona pellucida
 - (2) Corona radiata
 - (3) Theca interna
 - (4) Theca externa
62. Piercing type of mouth parts are present in the adults of order
- (1) Diptera
 - (2) Lepidoptera
 - (3) Homoptera
 - (4) Coleoptera
63. Which of the following is **not** the function of tube feet in echinoderms ?
- (1) Locomotion
 - (2) Water circulation
 - (3) Respiration
 - (4) Reproduction
64. Which of the following is **not** a characteristic feature of phylum hemichordata ?
- (1) Circulatory system consists of dorsal and ventral vessels and dorsal heart.
 - (2) Respiratory system consists of gill slits connecting the pharynx with outside.
 - (3) Reproduction may be sexual or asexual.
 - (4) Presence of dorsal tubular nerve cords.



65. Choose the correct combination for class Pisces.
- (1) Craniata, gnathostomata, vertebrata, anamniota.
 - (2) Craniata, agnatha, vertebrata, anamniota.
 - (3) Craniata, gnathostomata, vertebrata, amniota.
 - (4) Craniata, agnatha, vertebrata, amniota.
66. Choose the correct combination.
- (1) Huntington's chorea - recessive autosomal.
 - (2) Haemophilia - dominant autosomal.
 - (3) Phenylketonuria - recessive autosomal.
 - (4) Cystic fibrosis - dominant autosomal.
67. DNA replication and synthesis of protein occurs in which phase of cell division ?
- (1) G₂ phase
 - (2) S phase
 - (3) G₁ phase
 - (4) M phase
68. Choose the correct sequence of human phylogeny.
- (1) Dryopithecus, Ramapithecus, *Homo habilis*, *Homo erectus*.
 - (2) Ramapithecus, Dryopithecus, *Homo habilis*, *Homo erectus*.
 - (3) *Homo habilis*, *Homo erectus*, Australopithecus, Dryopithecus.
 - (4) *Homo habilis*, Ramapithecus, *Homo erectus*, *Homo sapiens*.
69. Phenylketonuria is due to
- (1) Inability to convert phenylalanine to ketone.
 - (2) Inability to convert phenylalanine to tyrosine.
 - (3) Inability to convert tyrosine to phenylalanine.
 - (4) Inability to convert phenylalanine arginine.



70. is the 'The pace maker' in human heart.

- (1) Bundle of His.
- (2) Purkinje fibres.
- (3) AV node.
- (4) SA node.

71. Find out the **mismatch** in the following.

- (1) Lungs - Calotes
- (2) Skin - Frog
- (3) Gill - Whales
- (4) Trachea - Cockroach

72. Which one of the animals listed below is known for the longest migration in animal kingdom ?

- (1) Alaskan geese.
- (2) Nile water crocodile.
- (3) Salmon fish.
- (4) Arctic tern.

73. Which one of the following is **not** an avian adaptation ?

- (1) Pneumatic bones.
- (2) Sebaceous glands.
- (3) Double respiration.
- (4) Streamlined body.

74. The structure formed by winding of DNA around a histone octamer is termed

- (1) Centromere
- (2) Telomere
- (3) Nucleosome
- (4) Centrosome



75. In eukaryotic genes, exons are sequences which
- (1) code for amino acids.
 - (2) are degraded in the nucleus.
 - (3) interrupt the coding sequence.
 - (4) are not retained in mature mRNA.
76. In mutation if a purine is replaced by pyrimidine, in DNA, it is called
- (1) Transition
 - (2) Transversion
 - (3) Translocation
 - (4) Transcription
77. Integrated fish farming includes
- (1) culture of *Catla catla*, *Labeo rohita*, etc.
 - (2) horticulture, animal husbandry alongwith pisciculture.
 - (3) culture of mollusks and fish.
 - (4) prawn and fish culture.
78. Terrestrial crustaceans belong to sub-class
- (1) Branchiopoda
 - (2) Malacostraca
 - (3) Ostracoda
 - (4) Copepoda
79. Neoteny is the phenomenon, where in -
- (1) adult fails to sexually mature.
 - (2) larva becomes sexually mature.
 - (3) nymph becomes sexually mature.
 - (4) newly emerged young one becomes sexually mature.



80. Poisonous sea snakes can be identified by their -

- (1) laterally compressed flat tail.
- (2) round and cylindrical tail.
- (3) long, narrow body with scales covering their skin.
- (4) triangular shaped head.

81. Which one of the following features bats and whales do not share ?

- (1) Mammary gland
- (2) Blubber
- (3) Echolocation
- (4) Placenta

82. Degeneracy of codons means -

- (1) single codon for more than one amino acid.
- (2) wobbling between codon and anticodon.
- (3) multiple codons for a single amino acid.
- (4) usage of the same code by all organisms.

83. CLB technique is used for screening -

- (1) autosomal mutations.
- (2) sex-linked lethal mutation.
- (3) translocations.
- (4) dominant lethal.

84. In humans, the placenta is -

- (1) Endothelial
- (2) Epitheliochorial
- (3) Syndesmochorial
- (4) Haemochorial



85. Immunoglobulins are basically -

- (1) Lipoproteins
- (2) Glycoproteins
- (3) Phosphoproteins
- (4) Nucleoproteins

86. Hardy-Weinberg genetic equilibrium holds goods for -

- (1) Panmictic population.
- (2) Mendelian population.
- (3) Assortative mating population.
- (4) Dissortative mating population.

87. Caecilians belong to the order -

- (1) Anura
- (2) Apoda
- (3) Urodela
- (4) Lissamphibia

88. The mesoderm of the chick embryo gives rise to all the following except the -

- (1) Heart
- (2) Kidney
- (3) Brain
- (4) Skeleton



89. Which of the following is **not** used in fresh water pisciculture ?

- (1) Catla catla
- (2) *Labeo rohita*
- (3) Salmon
- (4) Carp

90. Choose the correct combination of cyclin-dependent kinases and their cyclin partners.

- (1) Cdk1 - Cyclin A
- (2) Cdk2 - Cyclin B
- (3) Cdk3 - Cyclin C
- (4) Cdk4 - Cyclin E

91. The process by which a gene undergoes a heritable alteration is

- (1) Mutagenesis
- (2) Inheritance
- (3) Recombination
- (4) Genetic recombination.

92. Which of the following is **not** a function of placenta ?

- (1) Supply of nutrition to the developing embryo.
- (2) Protect the developing fetus from infections.
- (3) Secretion of female hormone progesterone.
- (4) Secretion of oxytocin during parturition.



93. The region on an antigen molecule to which antibody or the TCR (T cell receptor) binds specifically
- (1) Epitope
 - (2) Domain
 - (3) Paratope
 - (4) Haplotype
94. are the cytotoxic lymphocytes, which lack the phenotypic markers of both T cells and B cells and contain prominent cytoplasmic granules.
- (1) Kuffer cells
 - (2) NK cells
 - (3) Interferon
 - (4) Phagocytes
95. The graft exchanged between two genetically dissimilar individuals of the same species is an
- (1) autograft
 - (2) allograft
 - (3) allotope
 - (4) allotype
96. In acquired immunodeficiency syndrome (HIV) virus attacks on
- (1) T helper cells
 - (2) NK cells
 - (3) Macrophages
 - (4) B lymphocytes



97. The specific immunity mediated by T lymphocytes, which recognize major histocompatibility complex-bound antigens is called -
- (1) Humoral immunity.
 - (2) Auto immunity.
 - (3) Cell mediated immunity.
 - (4) Adaptive immunity.
98. A double stranded DNA has 30% thymine, the percentage of Cytosine would be -
- (1) 30%
 - (2) 20%
 - (3) 60%
 - (4) 15%
99. The formation of a peptide bond occurs in which site of the ribosome ?
- (1) Smaller subunit.
 - (2) P site
 - (3) Larger subunit.
 - (4) A site
100. Principal enzymes of electron transport chain are located in -
- (1) mitochondrial matrix.
 - (2) outer membrane of mitochondria.
 - (3) inner membrane of mitochondria.
 - (4) cytoplasm.



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