

U.G./P.G. ENTRANCE EXAMINATION, APRIL 2021

APPLIED ZOOLOGY

Time : One Hour and a Half

Maximum : 100 Marks

Put a (✓) mark against the most appropriate answer. Each question carries 1 mark :

Negative marks apply. (Use ball point pen only).

1. A subspecies is named using ———.
 - (a) Trinomen.
 - (b) Uninomen.
 - (c) Binomen.
 - (d) Polynomen.
2. Classification of organisms based on observed over all similarities is called ———.
 - (a) Cladistics.
 - (b) Phenetics.
 - (c) Phyletic.
 - (d) Phenotypic.
3. The type of caudal fin with unequal dorsal and ventral lobes and with vertebral column only in the dorsal lobe is :
 - (a) Diphyrceral.
 - (b) Homocercal.
 - (c) Heterocercal.
 - (d) Hemicercal.
4. Amphicoelus vertebra has ——— centrum.
 - (a) Biconcave.
 - (b) Biconvex.
 - (c) Flat on one side.
 - (d) Flat on both the sides
5. 'Stem reptiles' belong to the order.
 - (a) Chelonia.
 - (b) Crocodilia.
 - (c) Rhynchocephalia.
 - (d) Cotylosauria.
6. Pecten is found in the eye of :
 - (a) Amphibians.
 - (b) Reptiles.
 - (c) Birds.
 - (d) Fishes.

Turn over

7. Coprophagy in rabbit is a mechanism for the digestion of :

- (a) Protein.
- (b) Cellulose.
- (c) Lipid.
- (d) Hexosans.

8. Ambergris is produced by :

- (a) Baleen whale.
- (b) Blue whale.
- (c) Killer whale.
- (d) Sperm whale.

9. The bone constituting the lower jaw in mammals.

- (a) Basisphenoid.
- (b) Pre-frontal.
- (c) Mesethmoid.
- (d) Dentary.

10. Which of the following is a symbiotic protist ?

- (a) *Vorticella*.
- (b) *Noctiluca*.
- (c) *Trichonympha*.
- (d) *Paramecium*.

11. Kinetosome is associated with :

- (a) Cilia.
- (b) Pseudopodia.
- (c) Antenna.
- (d) Maxilla.

12. Flagellated chambers are characteristic of ——— type of canal system in sponges.

- (a) Rhagonoid.
- (b) Syconoid.
- (c) Leuconoid.
- (d) Asconoid.

13. Marine, polypoid cnidarians which secrete exoskeleton of calcium carbonate is :

- (a) Corals.
- (b) Jelly fishes.
- (c) Sea-anemones.
- (d) Sea wasps.

14. Biradial symmetry occurs in the phylum :

- (a) Gastrotricha.
- (b) Cnidaria.
- (c) Echinodermata.
- (d) Ctenophora.

15. Epidermis with multinucleate mass of protoplasm is called ———.
- (a) Syncytium. (b) Cuticle.
(c) Tegument. (d) Rhaddites.
16. Copulatory bursa is found in :
- (a) Ascaris. (b) Enterobius.
(c) Wuchereria. (d) Ancylostoma.
17. Nephridia with external and internal opening is called :
- (a) Protonephridia. (b) Metanephridia.
(c) Mesonephridia. (d) Oligonephridia.
18. ——— feature is considered to be the most significant in arthropods being the most successful organisms on the earth.
- (a) Cuticular exoskeleton.
(b) Jointed appendages.
(c) Metamerism.
(d) Compound eye.
19. Ommatidia is associated with :
- (a) Compound eye. (b) Osphradium.
(c) Statocyst. (d) Tentacle.
20. Malacology is the study of :
- (a) Shells. (b) Corals.
(c) Molluscs. (d) Echinoderms.
21. Which of the following phylum is exclusively marine ?
- (a) Annelida. (b) Mollusca.
(c) Cnidaria. (d) Echinodermata.

Turn over

22. Which of the following is not a fundamental chordate character ?
- (a) Notochord. (b) Pharyngeal gill slits.
(c) Vertebral column. (d) Dorsal tubular nerve cord.
23. The larva of *Petromyzon* is :
- (a) Ascidian tadpole. (b) Ammocoetes.
(c) Tornaria. (d) Trochophore.
24. Alternation of generation is exhibited by :
- (a) Salpa. (b) Myxine.
(c) Ascidia. (d) Amphioxus.
25. Furcula is found in the pectoral girdle of :
- (a) Reptiles. (b) Mammals.
(c) Amphibians. (d) Birds.
26. Which is the oldest living reptile ?
- (a) Sphenodon. (b) Chelone.
(c) Hylonomus. (d) Crocodylus.
27. Which of the following is a limbless amphibian ?
- (a) Ichthyophis. (b) Necturus.
(c) Ambystoma. (d) Rhacophorus.
28. Which of the following is not a sub-terranean fish from Kerala ?
- (a) Aenigmachanna. (b) Kryptoglanis.
(c) Sahyadria. (d) Horaglanis.
29. 'Law of ten percent' pertains to :
- (a) Transfer of energy from one trophic level to the next.
(b) Limiting factors.
(c) Population growth.
(d) Ecological succession.

30. Bulb-shaped age pyramid refers to ——— population.
- (a) Stable. (b) Expanding.
(c) Declining. (d) Explosive.
31. Species which occur abundantly or spend most of the time in ecotone is called :
- (a) Flagship species. (b) Edge species.
(c) Umbrella species. (d) Endemic species.
32. "Two or more species with closely similar niche requirements cannot co-exist indefinitely in the same habitat". This statement is :
- (a) Law of tolerance. (b) Law of minimum.
(c) Competition-Exclusion principle. (d) Cascade effect.
33. Which among the following is nitrifying bacteria ?
- (a) Nitrosomonas. (b) Azotobacter.
(c) Clostridium. (d) Rhizobium.
34. Which of the following can be best related to hot spots of biodiversity ?
- (a) Endemism. (b) Rarity.
(c) Threatened. (d) Exotism.
35. International Day for Biodiversity is held on :
- (a) April 22. (b) March 22.
(c) May 22. (d) February 22.
36. Which of the following is not an ex-situ conservation method ?
- (a) Zoo. (b) Germplasm bank.
(c) Gene bank. (d) National park.
37. Which zoo geographical realm is known as the "realm of birds" ?
- (a) Nearctic. (b) Neotropical.
(c) Palearctic. (d) Australian.

38. The type of learning which can occur only during the "sensitive period" is :
- (a) Habituation. (b) Imprinting.
(c) Latent learning. (d) Insight learning.
39. Navigation using familiar land marks is :
- (a) Pilotage. (b) Compass navigation.
(c) True navigation. (d) (b) and (c).
40. Geographical isolation plays a major role in ———— speciation.
- (a) Autogenous. (b) Allogeous.
(c) Allopatric. (d) Sympatric.
41. A locally occurring subset of a larger population that freely interbreeds is called :
- (a) Cline. (b) Semi species.
(c) Sub species. (d) Deme.
42. Change in the frequency of genes purely by chance.
- (a) Founder principle. (b) Genetic drift.
(c) Hardy-Weinberg equilibrium. (d) Gene mutation.
43. Morphologically identical species :
- (a) Sibling species. (b) Semi species.
(c) Sub species. (d) Super species.
44. Which of the following is not a vestigial organ in human ?
- (a) Vermiform appendix. (b) Coccyx.
(c) Nictitating membrane. (d) Pinna.
45. In the absence of fertilization a fibrous scar is formed in the ovary called :
- (a) Corpus haemorrhagicum. (b) Corpus luteum.
(c) Corpus albicans. (d) Corona radiata.

46. Which of the following are the different stages of labour ?
- (a) Gestation, Parturition, Milk ejection reflex.
 - (b) Lactation, Ovulation, Gestation.
 - (c) Dilation, Expulsion, Placental stage .
 - (d) Fertilization, Implantation, Pregnancy.
47. In amphibian development, neural tube and notochord develop respectively from :
- (a) Ectoderm and Endoderm.
 - (b) Endoderm and Mesoderm.
 - (c) Mesoderm and Endoderm.
 - (d) Ectoderm and Mesoderm.
48. The phenomenon in which males develop from unfertilized egg is :
- (a) Thelytoky.
 - (b) Arrhenotoky.
 - (c) Diploid parthenogenesis.
 - (d) Autofertilization.
49. The ability of a single cell to divide and produce all the differentiated cells in an organism :
- (a) Pluripotency.
 - (b) Multipotency.
 - (c) Totipotency.
 - (d) Unipotency.
50. Which of the following has centrolecithal egg ?
- (a) Human.
 - (b) Insects.
 - (c) Amphibians.
 - (d) Aves.
51. Which of the following is not a teratogen ?
- (a) Alcohol.
 - (b) Retinoic acid.
 - (c) Diethylstilbestrol.
 - (d) Folic acid.
52. Which of the following represent the correct sequence of membranes of hen's egg beginning from inside ?
- (a) Vitelline membrane, chalazae, shell membranes and shell.
 - (b) Vitelline membrane, chalazae, albumen, shell membranes and shell.
 - (c) Chalazae, albumen, vitelline membrane, shell membranes and shell.
 - (d) Albumen, vitelline membrane, chalazae, shell membranes and shell.

Turn over

53. Which of the following is not a component of dietary fibres ?
- (a) Cellulose. (b) Galactans.
(c) Lignin. (d) Lactose.
54. Pernicious anaemia is a deficiency disorder of-----vitamin.
- (a) Vitamin B5. (b) Vitamin B12.
(c) Vitamin B6. (d) Vitamin B9.
55. Acidity or high level of dissolved carbon dioxide in blood inversely influences the oxygen carrying capacity of haemoglobin. This is :
- (a) Hamberger effect. (b) Haldane effect.
(c) Bohr effect. (d) Pasteur effect.
56. The physiological mechanism responsible for the high osmotic concentration of urine :
- (a) Tubular re-absorption. (b) Counter current mechanism.
(c) Tubular secretion. (d) Glomerular ultrafiltration.
57. "The smaller the blood vessel, the lower the viscosity, and the greater the flow rate". This is called :
- (a) Hamberger effect. (b) Fahraeus- Lindqvist effect.
(c) Pasteur effect. (d) Haldane effect.
58. In insects, juvenile hormone is produced by :
- (a) Prothoracic gland. (b) Sinus gland.
(c) Corpora cardiaca. (d) Corpora allata.
59. The most common second messenger, which signals the action of hormones.
- (a) Cyclic AMP. (b) Cyclic GMP.
(c) Mg^{++} . (d) Ca^{++} .
60. Overproduction of somatotropin in adults causes.
- (a) Cretinism. (b) Addison's disease.
(c) Cushing's disease. (d) Acromegaly.

61. Sex index of normal males is :
- (a) 1. (b) 0.5.
(c) 0.3. (d) 2.
62. Crossing of F1 hybrid with recessive parent is called :
- (a) Monohybrid cross. (b) Test cross.
(c) Dominant back cross. (d) None.
63. Alkaptonuria is :
- (a) Autosomal dominant disorder.
(b) Autosomal recessive disorder.
(c) Sex-linked disorder.
(d) Multifactorial disorder.
64. Supplementary interaction has F2 phenotypic ratio.
- (a) 9 : 3 : 3 : 1. (b) 3 : 1.
(c) 13 : 3. (d) 1 : 4 : 6 : 4 : 1.
65. Which of the following is a common fixative ?
- (a) Methyl benzoate. (b) Bouin's fluid.
(c) Haematoxylin. (d) Eosin.
66. Polytene chromosomes are found in :
- (a) Secondary oocytes of vertebrates.
(b) Salivary glands of *Drosophila*.
(c) Primary oocytes of vertebrates.
(d) Primary oocytes of invertebrates.
67. In meiosis, chiasmata formation occurs during _____ stage.
- (a) Leptotene. (b) Diplotene.
(c) Zygotene. (d) Pachytene.

Turn over

68. Which of the following is not a cell adhesion molecule?
- (a) Cadherins. (b) Cyclic AMP.
(c) Integrins. (d) Selectins.
69. Immunoglobulin that is normally a pentamer :
- (a) IgA. (b) IgM.
(c) IgE. (d) IgG.
70. Cells that target and kill body cells infected by virus are :
- (a) Macrophages. (b) Natural Killer cells.
(c) Monocytes. (d) Neutrophils.
71. Which of the following are antigen-presenting immune cells ?
- (a) Dendritic cells. (b) Mast cells.
(c) Langerhans cells. (d) Kupffer cells.
72. Which of the following is not vector-less gene transfer method?
- (a) Microinjection. (b) Electroporation.
(c) Gene gun. (d) Cosmid.
73. The term hybridoma implies :
- (a) Gametic fusion. (b) Hybrid virion.
(c) Somatic hybridization. (d) DNA-RNA hybrid.
74. Which of the following is not a molecular marker?
- (a) YAC. (b) VNTR.
(c) STR. (d) RAPD.
75. Safranin is used in :
- (a) Histochemical staining. (b) Histological staining.
(c) Gram staining. (d) Blood staining.

76. An infectious agent without nucleic acid :

- (a) Viroids.
- (b) Prions.
- (c) Rickettsiae.
- (d) Mycoplasmas.

77. Anticodon loop is not present on _____.

- (a) snRNA.
- (b) mRNA.
- (c) rRNA.
- (d) All.

78. Transfer of bacterial genes from one bacterium to another :

- (a) Transduction.
- (b) Transcription.
- (c) Translation.
- (d) Transposition.

79. If one strand of DNA is ATGCGCTGAT, then complementary strand would be :

- (a) TACGTGCTGA.
- (b) TACGCGACTA.
- (c) TAGCCGATAG.
- (d) TACGCGCGTA.

80. The term _____ is used to refer to basic unit of gene mutation.

- (a) Cistron.
- (b) Recon.
- (c) Muton.
- (d) Complon.

81. The author of the book "The Double Helix".

- (a) Francis Crick.
- (b) Richard Dawkins.
- (c) Benjamin Levine.
- (d) James Watson.

82. Interleukin is a _____.

- (a) Cytokine.
- (b) Hormone.
- (c) Mitotic poison.
- (d) Enzyme.

83. An organic molecule that binds to the active sites of certain enzymes to assist in the catalysis of a reaction :

- (a) Isozyme.
- (b) Ribozyme.
- (c) Co-factor.
- (d) Coenzyme.

Turn over

84. Biosynthesis of glycogen from glucose :

- (a) Glycogenolysis. (b) Glycogenesis.
(c) Gluconeogenesis. (d) Glycolysis.

85. Which of the following is a secondary database?

- (a) PROSITE. (b) EMBL.
(c) DDBJ. (d) KEGG.

86. A laboratory tool to detect the expression of thousands of genes at the same time.

- (a) NMR. (b) Micro array.
(c) Mass Spectroscopy. (d) X-ray Crystallography.

87. A quantity or variable with respect to which individuals in a sample differ from one another.

- (a) Variable. (b) Variate.
(c) Parameter. (d) Constant.

88. Which of the following is a graphic representation of data ?

- (a) Frequency polygon. (b) Bar diagram.
(c) Line diagram. (d) Pie diagram.

89. Find out the mode of the following data : 32, 30, 18, 32, 28, 26, 34, 32.

- (a) 30. (b) 18.
(c) 28. (d) 32.

90. The type of sampling in which the target population is arranged according to some ordering scheme and then selecting elements at regular intervals is called :

- (a) Simple random sampling. (b) Cluster sampling.
(c) Systematic sampling. (d) Stratified Sampling.

91. Which of the following is a base unit used in science ?
- (a) Watt. (b) Joule.
(c) Hertz. (d) Kelvin.
92. Which of the following organism has been widely used in classical genetics research ?
- (a) *Caenorhabditis*. (b) *Musca*.
(c) *Anopheles*. (d) *Drosophila*.
93. A statutory right granted for a limited period to an inventor for his invention to exclude any other person from manufacturing, using or selling the product or process without due permission :
- (a) Copyright. (b) Trade mark.
(c) Patent. (d) Geographical Indication.
94. The simulation of human intelligence process by machines :
- (a) Virtual reality. (b) Bio-computing.
(c) AI. (d) Dial-up.
95. The state butterfly of Kerala :
- (a) *Troides minos*. (b) *Pachilopta hector*.
(c) *Papilio buddha*. (d) *Graphium dosen*.
96. Who coined the term "Biodiversity" ?
- (a) E.P. Odum. (b) E.O. Wilson.
(c) Charles Elton. (d) Rachel Carson.
97. Indian Institute of Science is located at :
- (a) Chennai. (b) Mumbai.
(c) Hyderabad. (d) Bangalore.

98. The largest store house of carbon molecules on earth is :
- (a) Fossil fuels.
 - (b) Atmosphere.
 - (c) Marine sediments.
 - (d) Living organisms.
99. Biologists consider viruses as non-living. This is because viruses :
- (a) Are unable to reproduce on their own.
 - (b) Do not contain proteins.
 - (c) Do not contain genetic material.
 - (d) Are smaller than living organisms.
100. The study of malformations or serious deviations from the normal development of organisms is :
- (a) Epidemiology.
 - (b) Gerontology.
 - (c) Pathology.
 - (d) Teratology.