

DO NOT OPEN THIS BOOKLET UNTIL TOLD TO DO SO

Question Booklet No.

116003

**DESCRIPTIVE & OBJECTIVE TYPE (MCQ)
SUBJECT : ZOOLOGY**

Roll No.

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Full Marks : 200 (100 Descriptive & 100 MCQ)

Time : 3 Hours

CANDIDATES SHOULD READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE ANSWERING THE QUESTIONS :

1. The Question Booklet has a seal pasted on it. Candidates should break open the seal only when they are asked to do so by the invigilators.
2. Immediately after breaking open the seal, candidates must check that the Question Booklet contains 100 marks for Section 'A' (Descriptive Type) and 100 marks for Section 'B' (MCQ). If any discrepancy is found, immediately report to the invigilator for changing of the Question Booklet.
3. Candidates must take care to fill up all the required particulars at the appropriate places marked on the Question Booklet as well as on the Answer Booklet. Do not write anything in the spaces provided for office use.
4. For answering Section 'A' questions candidates must answer in Answer Booklet provided.
5. For answering Section 'B' questions candidates must use OMR answer sheet.
 - (i) Each question in Section 'B' has 4 (four) alternative answers given as 1, 2, 3, 4 on the OMR answer sheet. Choose the one which you consider to be the best alternative answer and shade the appropriate bubble on the OMR answer sheet.
 - (ii) Each question carries 1 (one) mark with no negative marking.
 - (iii) Use **only blue or black ball point pen** only.
 - (iv) The OMR answer sheet will be processed by electronic means using scanner. Hence, any irrelevant/stray marking, incorrect/multiple shadings, faulty erasing of answers or any damage to the OMR answer sheet will be the sole responsibility of the candidate.
6. Page(s) for Rough Work is provided at the end of the Question Booklet.
7. Candidates must hand over the Answer Booklets and OMR answer sheets before leaving the examination hall. They may take away the Question Booklet.
8. Mobile phones and electronics devices are strictly prohibited. Any candidate found in possession of mobile phone in the examination hall will be immediately disqualified and expelled from the examination.
9. Any misconduct or indiscipline in the examination hall/resorting to any form of unfair means/failure to follow the examination rules will result in disciplinary action as deemed fit by the Commission.
10. The decision of the Commission on all matters is final.

Correct Method

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SEAL

ZOOLOGY

SECTION – A (DESCRIPTIVE)

1. Answer any 2(two) of the following questions. (2 × 20) = 40 marks
- (i) Define ureotelism. Describe the various steps involved in the synthesis of urea. Mention the physiological significance of ureotelism.
 - (ii) What is evolution? Give an account of biochemical, physiological and connecting link evidence in the favour of evolution.
 - (iii) Describe the endocrine control of mammalian reproduction.
 - (iv) Describe the structure of compound eye in arthropods and explain the mechanism of image formation in arthropods.
2. Answer any 2(two) of the following questions. (2 × 10) = 20 marks
- (i) Discuss in detail the life cycle & pathology of *Ascaris lumbricoides*.
 - (ii) Give an account of Citric acid cycle.
 - (iii) Describe various chromosomal disorders in human beings.
3. Answer any 8(eight) of the following questions. (8 × 5) = 40 marks
- (i) Sericulture
 - (ii) IPM
 - (iii) Lampbrush chromosome
 - (iv) Speciation
 - (v) Organogenesis
 - (vi) Social organization in bees
 - (vii) Agarose gel electrophoresis
 - (viii) Environmental Pollution
 - (ix) Mutualism
 - (x) Cytoplasmic inheritance

SECTION – B OBJECTIVE (MCQ)

1. Chlorophyll traps light energy for the production of:
(1) ATP
(2) NADPH
(3) CO_2
(4) Both ATP and NADPH
2. In the fluid mosaic model, the phospholipid bilayer:
(1) Has protein embedded in it
(2) Has cellulose embedded in it
(3) Is covered by outer and inner layer of proteins
(4) Is covered by outer and inner layers of carbohydrates
3. Which of the following is an incorrect match?
(1) Tonoplast-Vacuoles
(2) Peroxisomes- Beta oxidation of long chain fatty acid
(3) Histones-Prokaryotes
(4) Chitin-Fungi
4. Which one of the following cell organelles is related to glycosylation?
(1) Lysosome (2) Peroxisome
(3) Mitochondria (4) Golgi complex
5. What is common between mitochondria and chloroplasts?
(1) Production of ATP
(2) Naked DNA
(3) Semiautonomous
(4) All of the above
6. A function of smooth endoplasmic reticulum is to
(1) Form ribosomes
(2) Synthesize lipids
(3) Store nucleic acid
(4) Breakdown carbohydrates
7. Endosymbiotic theory is related with the origin of
(1) Nucleus (2) Mitochondria
(3) Peroxisome (4) Chromosome
8. Sickle cell anemia is due to
(1) A mutation in the beta chain of hemoglobin
(2) A mutation in the alpha chain of hemoglobin
(3) Mutation in both alpha and beta chain of hemoglobin
(4) Infection with virus
9. Which of the cell organelle is present in all the five kingdoms?
(1) Nucleus
(2) Mitochondria
(3) Golgi complex
(4) Ribosomes
10. Match column I with column II and select the correct answer
A. Nucleosome 1. Photorespiration
B. Lysosome 2. ATP
C. Peroxisome 3. Autolysis
D. Active transport 4. Chromatin

(1) A-3 B-4 C-1 D-2
(2) A-4 B-3 C-1 D-2
(3) A-4 B-3 C-2 D-1
(4) A-3 B-4 C-2 D-1
11. Which of the following immunoglobulins is present normally in plasma at the highest concentration?
(1) IgG (2) IgM
(3) IgA (4) IgD
12. Individuals unable to make the J protein found in certain immunoglobulins would be expected to have frequent infections of the
(1) Brain (2) Liver
(3) Pancreas. (4) Intestinal tract

13. SCID is due to
 - (1) Adenosine deaminase deficiency
 - (2) Glucose oxidase deficiency
 - (3) Phosphatase deficiency
 - (4) Lactate dehydrogenase deficiency
14. Humoral immunity consists of
 - (1) Normal cells
 - (2) Pathological cells
 - (3) Cytotoxic cells
 - (4) Immunoglobulin molecules
15. The type of cell division that occurs in the gamete cells is known as :
 - (1) Cytosis (2) Meiosis
 - (3) Osmosis (4) Mitosis
16. Which of the following contains large amounts of hydrolytic enzymes?
 - (1) Centriole (2) Ribosome
 - (3) Nucleolus (4) Lysosome
17. The step of mitosis in which chromosomes line up along the equatorial plane of the cell is called:
 - (1) Prophase (2) Metaphase
 - (3) Anaphase (4) Telophase
18. What is epistasis?
 - (1) A phenotype is inherited only from the mother.
 - (2) A gene is expressed in only one sex.
 - (3) One trait is affected by several genes.
 - (4) One gene affects the way others are expressed.
19. The genotypic ratio of monohybrid cross in F₂ is:
 - (1) 1:2:1 (2) 1:1:1
 - (3) 1:1: 2 (4) 3:1
20. Which of the following cross is used to confirm the law of independent assortment?
 - (1) Backcross
 - (2) Monohybrid cross
 - (3) Test Cross
 - (4) Dihybrid cross
21. Edward syndrome is characterized by trisomy of:
 - (1) 13th chromosome
 - (2) 18th chromosome
 - (3) 21st chromosome
 - (4) 22nd chromosome
22. Mutation that causes visible change in the structure of the chromosome is known as:
 - (1) Chromosome aberration
 - (2) Spontaneous mutation
 - (3) Transposon
 - (4) Aneuploidy
23. Which one of the following leads to gene amplification?
 - (1) Deletion (2) Duplication
 - (3) Inversion (4) Translation
24. Polyploidy can be induced by:
 - (1) Nitrous acid
 - (2) Ethyl-methyl-Sulphonate (EMS)
 - (3) Phospho-Ethylene Glycol (PEG)
 - (4) Colchicine
25. Methyl cytosine residues on deamination produce:
 - (1) Thymine (2) Adenine
 - (3) Guanine (4) Uracil
26. Pyrimidine dimers are a target of the enzyme:
 - (1) Photolyase (2) Glycosylase
 - (3) Transposase (4) Resolvase
27. A change from codon AGG and AAG is a:
 - (1) Silent mutation
 - (2) Neutral mutation
 - (3) Missense mutation
 - (4) Nonsense mutation
28. Which of the following is not applicable to Barr body:
 - (1) X-chromatin
 - (2) Drumstick
 - (3) Sex chromatin
 - (4) Euchromatin

29. A karyotype is a picture of all the chromosomes duringstate?
 (1) Prophase (2) Metaphase
 (3) Anaphase (4) Telophase
30. Which one of the following bond is present in maltose?
 (1) 1, 4 α -glycosidic
 (2) 1, 4 β -glycosidic
 (3) 1, 6 α -glycosidic
 (4) 2 β -glycosidic
31. Which one of the following reactions of the urea cycle occurs in the mitochondria:
 (1) Argininosuccinate \rightarrow Arginine + Fumarate
 (2) Citrulline + Aspartate + ATP \rightleftharpoons Argininosuccinate + AMP + PP₁
 (3) Arginine + H₂O \rightarrow Ornithine + Urea
 (4) Carbamoyl phosphate + Ornithine \rightarrow Citrulline + P₂
32. Which one of the following is not consumed in the urea cycle?
 (1) CO₂ (2) ATP
 (3) Ornithine (4) Ammonium ion
33. Carnitine is synthesised in:
 (1) Liver and adipose tissue
 (2) Liver and lungs
 (3) Kidney and adipose tissues
 (4) Liver and kidneys
34. The first dehydrogenation reaction in Krebs cycle is catalysed by the enzyme:
 (1) Pyruvate dehydrogenase
 (2) α -ketoglutarate dehydrogenase
 (3) Isocitrate dehydrogenase
 (4) Succinate dehydrogenase
35. Complete oxidation of two moles of pyruvate yields:
 (1) 15 ATPs (2) 30 ATPs
 (3) 32 ATPs (4) 36 ATPs
36. In glycolysis, electrons are removed by:
 (1) NAD⁺ (2) NADP⁺
 (3) FAD (4) FMN
37. A competitive inhibitor of an enzyme is usually:
 (1) A highly reactive compound
 (2) a metal ion such as Hg²⁺ or Pb²⁺
 (3) structurally similar to the substrate
 (4) water insoluble
38. β oxidation of long chain fatty acids occurs primarily in which of the following locations?
 (1) Cytoplasm (2) Peroxisomes
 (3) Mitochondria (4) Golgi apparatus
39. In what form does the product of glycolysis enter the TCA cycle?
 (1) Acetyl CoA (2) Glucose
 (3) Pyruvate (4) ATP
40. Malate-aspartate shuttle operates in
 (1) Lungs and heart
 (2) Heart and pancreas
 (3) Liver and pancreas
 (4) Heart and Liver
41. Which of the following is a common acceptor for all reactions involving transaminases?
 (1) Acetoacetate (2) Pyruvate
 (3) Oxaloacetate (4) α -keto glutarate
42. An enzyme used in both glycolysis and gluconeogenesis is:
 (1) 3-phosphoglycerate kinase
 (2) Glucose-6-phosphatase
 (3) Pyruvate kinase
 (4) Hexokinase
43. A concentration of Glucose 6 phosphate is inhibitory to which enzyme:
 (1) Phosphofructokinase-1
 (2) Hexokinase
 (3) Glucokinase
 (4) Pyruvate kinase

44. The number of different species an ecosystem contains is its
 (1) Speciation
 (2) Species evenness
 (3) Species niche
 (4) Species richness
45. The zone at the edge of a lake or ocean which is alternatively exposed to air and immersed in water is called:
 (1) Pelagic zone (2) Benthic zone
 (3) Lentic one (4) Littoral zone
46. Which of these programs is used to preserve a species facing extinction?
 (1) Edge effects
 (2) Sustainable use
 (3) Natural resources
 (4) Captive breeding
47. The one-horned rhinoceros is specific to which of the following sanctuary
 (1) Bhitar Kanika (2) Bandipur
 (3) Kaziranga (4) Corbett park
48. Bell-shaped polygonal pyramid indicates:
 (1) Low percentage of young individuals
 (2) Moderate percentage of young individuals
 (3) High percentage of young individuals
 (4) Low percentage of old individuals
49. An ecological "niche" can be defined as:
 (1) The inorganic, nonliving aspects of a given area
 (2) The specific environment an organism inhabits
 (3) The role an organism plays in its community
 (4) The various habitats an organism may inhabit
50. The maximum rate of growth of any population under ideal conditions is called:
 (1) Exponential growth
 (2) Environmental growth
 (3) Exponential potential
 (4) Biotic potential
51. Succession in a community is least affected by:
 (1) Competition between organisms
 (2) Population growth rates
 (3) The niches occupied by different species
 (4) Evolutionary relationships between organisms
52. Human population growth curve is:
 (1) S-shaped curve
 (2) J-shaped curve
 (3) Parabola curve
 (4) Zig-zag curve
53. In a small population there is a greater chance of:
 (1) Gene flow
 (2) Natural selection
 (3) Genetic drift
 (4) Mutation
54. The carrying capacity of a population is determined by:
 (1) Population growth rate
 (2) Natality
 (3) Mortality
 (4) Limiting resources
55. The intermediate development stages in the ecological succession are called:
 (1) Sere (2) Ecesis
 (3) Climax (4) Nudation
56. Which of the following inter-specific interactions can be described as +/-:
 (1) Predation (2) Competition
 (3) Mutualism (4) Commensalism

57. Corpus luteum secretes:
 (1) Estrogen (2) Progesterone
 (3) Testosterone (4) Thyroxin
58. Which one of the following hormones regulate carbohydrates metabolism?
 (1) Insulin and glucagon
 (2) Cortisol and glucagon
 (3) Estrogen and testosterone
 (4) Thyroxin and insulin
59. In adipose tissue, insulin increases lipid synthesis by:
 (1) Providing ADP
 (2) Providing NADP
 (3) Providing acetyl Co A
 (4) Providing glycerol moiety
60. Neurosecretory cells secreting hormones are abundant in:
 (1) Hypothalamus
 (2) Neurohypophysis
 (3) Adrenal medulla
 (4) Pars distalis
61. To induce vasoconstriction by adrenaline, presence of adequate amount of is essential
 (1) Aldosterone (2) Glucose
 (3) Cortisol (4) ACTH
62. Which one of the following is an incorrect match?
 (1) Calcium metabolism-Parathyroid gland
 (2) Carbohydrate metabolism-Parathyroid gland
 (3) Exocrine as well as endocrine gland: Pancreas
 (4) Immunity of body: Thymus gland
63. What is a coelom:
 (1) A body cavity partially lined with mesoderm
 (2) A body cavity lined with endoderm
 (3) The body cavity of a sponge
 (4) A body cavity completely lined with mesoderm
64. Nervous system originates from:
 (1) Epidermis (2) Mesodermis
 (3) Endodermis (4) Coelom
65. Which of the following is incorrectly matched?
 (1) Pancrease-Trypsin
 (2) Stomach-Pepsin
 (3) Colon-Cellulose
 (4) Crypts of Liberkuhn-Erepsin
66. Which cartilage closes off the larynx during swallowing?
 (1) Thyroid (2) Cricoid
 (3) Epiglottis (4) Arytenoid
67. Haemoglobin which has released its oxygen binds more readily to carbon dioxide than Haemoglobin that has oxygen bound to it. This is known as:
 (1) Haldane effect
 (2) Bohr's effect
 (3) Chloride shift
 (4) All-or-none law
68. The number of Fe^{++} present in haemoglobin for O_2 is:
 (1) 1 (2) 2
 (3) 4 (4) 5
69. Heart is two-chambered in:
 (1) Fishes (2) Amphibians
 (3) Reptiles (4) Birds
70. In ECG, the P wave occurs when the impulse is spread across the:
 (1) SA node (2) Atria
 (3) AV node (4) Ventricles
71. Normally, prepotentials are prominent in:
 (1) SA node
 (2) AV node
 (3) SA and AV nodes
 (4) Atrial and ventricular muscle fibres

72. Conduction rate is highest in:
 (1) Purkinji tissue
 (2) Nodal tissue
 (3) Atrial tissue
 (4) Ventricular tissue
73. Absorption of glucose mainly occurs in:
 (1) Loop of Henle
 (2) Bowman's capsule
 (3) Proximal convoluted tubule
 (4) Distal convoluted tubule
74. Ornithine cycle takes place in:
 (1) Kidneys (2) Liver
 (3) Lungs (4) Spleen
75. Mammals living in deserts have:
 (1) Large kidneys
 (2) Long loop of Henle
 (3) Short loop of Henle
 (4) More thicker convoluted tubules
76. Muscle fatigue is due to the accumulation of:
 (1) Pyruvic acid
 (2) Lactic acid
 (3) Oxalo-acetic acid
 (4) Citric acid
77. Which one of the following contains ATPase?
 (1) Myosin
 (2) Actin
 (3) Troponin-C
 (4) Troponin-I
78. In a mammalian embryo, the trophoctoderm
 (1) Gives rise to the inner cell mass
 (2) Gives rise to the embryo
 (3) Gives rise to extra-embryonic tissues
 (4) Is pluripotent
79. In human being the eggs are:
 (1) Microlecithal (2) Macrolecithal
 (3) Mesolecithal (4) Alecithal
80. The central fluid filled cavity of the blastula is known as:
 (1) Archenteron (2) Blastocoels
 (3) Blastocyst (4) Morula
81. Which of the following sites in the respiratory system is the most likely place for the carbon dioxide and oxygen to exchange in the blood?
 (1) Nose (2) Pharynx
 (3) Trachea (4) Alveoli
82. What is the mechanism for the harmful effects of CO (carbon monoxide)?
 (1) Interfere with or block the active sites of some important enzymes
 (2) Direct chemical combination with a cell constituent
 (3) Secondary action as a result of its presence in the system
 (4) Compete with the co-factors for a site on an important enzyme
83. What is the major organ responsible for detoxification in the body?
 (1) Lung (2) Intestines
 (3) Skin (4) Liver
84. Which of the following is an example of a taxis?
 (1) A moth flies toward a light
 (2) A flatworm turns more when the light is brighter
 (3) A wood-louse moves more when the air is humid
 (4) A bee dances a waggle dance
85. According to John Locke, color, taste and sound are:
 (1) Primary qualities
 (2) Secondary qualities
 (3) Simple ideas
 (4) The basic units of experience

86. The site defend by territorial animal by agonistic behavior is:
 (1) Hierarchy (2) Altruism
 (3) agnostic (4) Territory
87. Common stores grain pest of wheat is:
 (1) *Sitophilus oryzae*
 (2) *Tragoderma granarium*
 (3) *Calandra oryza*
 (4) *Rhizopertha dominica*
88. Breeding and management of bees is known as:
 (1) Sericulture (2) Apiculture
 (3) Silviculture (4) Pisciculture
89. The compound used in anti-malarial drug is
 (1) Chloroquin (2) Aspirin
 (3) Neoprene (4) Isoprene
90. Induced breeding is carried out in the case of:
 (1) Sericulture (2) Apiculture
 (3) Silviculture (4) Pisciculture
91. Wings of insects and bats are:
 (1) Homologous organs
 (2) Paralogous organs
 (3) Analogous organs
 (4) Vestigial organs
92. Excretory organs in earthworms are:
 (1) Nephron
 (2) Flame cells
 (3) Malpighian tubules
 (4) Nephridia
93. Reptiles are:
 (1) Oviparous
 (2) Viviparous
 (3) Ovo-viviparous
 (4) Cripiparous
94. The study of fossils and their relationship to the evolution of life on earth is called:
 (1) Fossilization
 (2) Palaeontology
 (3) Palaeozoology
 (4) Anthropology
95. Contractile vacuole in Protozoa is basically concerned with:
 (1) Excretion
 (2) Osmoregulation
 (3) Respiration
 (4) Photosynthesis
96. A true coelom is absent in:
 (1) Platyhelminthes
 (2) Mollusca
 (3) Insects
 (4) Reptiles
97. The arrangement of the organs of an animal in a series of similar units along the longitudinal axis of the body is called:
 (1) Psedometamerism
 (2) Parametamerism
 (3) Metamerism
 (4) Prometamerism
98. The inner membrane of the two foetal membranes in reptiles, birds and mammals is called:
 (1) Chorion (2) Amnion
 (3) Peritoneum (4) Pericardium
99. Correct order is
 (1) palaeozoic → archaeozoic → coenozoic
 (2) archaeozoic → palaeozoic → proterozoic
 (3) palaeozoic → mesozoic → coenozoic
 (4) mesozoic → archaeozoic → proterozoic
100. The first organisms were
 (1) chemoautotrophs
 (2) chemoheterotrophs
 (3) autotrophs
 (4) eukaryotes