

Question Booklet No.

Question Booklet Series :

A

AUAT — 2024
2-Year M. Sc. in Zoology (P17)
(TEST BASED ON MCQ)

Full Marks : 100

Duration : 2 Hours

Roll No. of the Candidate : _____

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IMPORTANT INSTRUCTIONS

Candidates should read the below instructions carefully and follow them accordingly.

1. The Question Booklet has paper seal pasted on it. Please do **NOT** open the Question Booklet until you are asked to do so by the Invigilator.
2. The candidates must check immediately after breaking the seal that the Question Booklet contains **100 Multiple Choice Questions** in two parts (Part—I and Part—II).
3. Answer of questions of Part—I and Part—II both will have to be given on the **OMR Answer Sheet** provided for this purpose. Fill up the necessary fields that are intended for you by writing and/or shading appropriately. Otherwise the **OMR Answer Sheet cannot** be evaluated and will liable to be rejected. Question numbers progress from **1** to **100** continuously with alternative answers being shown as [A], [B], [C] and [D] for each question. Record your response by completely darkening the corresponding bubble. While responding, you should consider the best alternative answer and shade only one bubble with **black/blue ball point pen only**. For each correct response you will be awarded **1** mark. There will be negative marking for wrong responses. For each wrong response, **-0.25** mark will be awarded. Multiple responses against one **MCQ** will be treated as a wrong response.
4. On leaving the examination hall, candidates must submit the **OMR Answer Sheet**. They are allowed to keep the Question Booklet with them.
5. **OMR Answer Sheet** will be processed by electronic means. Any untoward/irrelevant remarks, folding or putting stray notes on the answer sheet, any damage to the answer sheet will lead to the rejection of the same and the sole liability shall remain with the candidate.
6. Rough Work may be done at the end of the Question Booklet.
7. No candidate will be allowed to leave the examination hall before completion of the examination.
8. Use of any Electronic device like Mobile, Programmable Calculator etc. is strictly prohibited.

DO NOT OPEN THE SEAL UNTIL INSTRUCTED TO DO SO

PART—I
(Core Subject)

1. Each haemoglobin molecule has the ability to carry a maximum of
[A] one O₂ molecule
[B] two O₂ molecules
[C] three O₂ molecules
[D] four O₂ molecules
2. Larva of Gastropoda is
[A] trocophore
[B] veliger
[C] nauplius
[D] bipinnaria
3. Which of the following is a characteristic of reptiles?
[A] Cold-blooded
[B] Presence of feathers
[C] Live birth
[D] Three-chambered heart
4. African sleeping sickness is caused by
[A] *Giardia intestinalis*
[B] *Leishmania donovani*
[C] *Trypanosoma gambiense*
[D] *Entamoeba histolytica*
5. Odd-toed ungulates such as horse, zebra, donkey etc. are included under order
[A] Proboscidea
[B] Ruminants
[C] Perissodactyla
[D] Artiodactyla
6. The most commonly used molecular tool for phylogenetic analysis involves the sequencing of
[A] mitochondrial DNA
[B] mitochondrial RNA
[C] ribosomal RNA
[D] nuclear DNA
7. _____ is a phylogenetic tree that represents evolutionary time through its branch spans.
[A] Dendrogram
[B] Chronogram
[C] Phylogram
[D] Cladogram
8. The resolution power of electron microscope is
[A] 0.01–0.1 nm
[B] 50–200 nm
[C] 1–3 mm
[D] 1–20 nm
9. The type of placenta found in cats and dogs is
[A] zonary
[B] diffuse
[C] discoidal
[D] metadiscoida
10. During replication, the Okazaki fragments on lagging strand are joined together by
[A] DNA polymerase
[B] DNA ligase
[C] primase
[D] helicase

11. Fight-or-flight reactions include activation of
- [A] the parathyroid glands, leading to increased metabolic rate
 - [B] the thyroid gland, leading to an increase in the blood calcium concentration
 - [C] the anterior pituitary gland, leading to cessation of gonadal function
 - [D] the adrenal medulla, leading to increased secretion of epinephrine
12. The K_m value of an enzyme represents
- [A] maximum reaction velocity
 - [B] substrate concentration at 50% velocity
 - [C] affinity of enzyme for substrate
 - [D] rate of product formation
13. Which of the following lipoproteins is primarily responsible for transporting dietary triglycerides from the intestine to adipose tissue?
- [A] HDL
 - [B] Chylomicrons
 - [C] LDL
 - [D] VLDL
14. Which of the following is **not** a component of the electron transport chain?
- [A] NADH dehydrogenase (Complex I)
 - [B] Succinate dehydrogenase (Complex II)
 - [C] Cytochrome c oxidase (Complex IV)
 - [D] ATP synthase (Complex V)

15. Which of the following is an example of a mutualistic relationship?
- [A] Predation
 - [B] Parasitism
 - [C] Commensalism
 - [D] Mycorrhizae
16. In ecological succession, which type of species are the first to colonize a newly formed habitat?
- [A] Climax species
 - [B] K-selected species
 - [C] Pioneer species
 - [D] Symbiotic species
17. The process by which two or more species evolve adaptations in response to each other over time is called
- [A] coevolution
 - [B] convergence
 - [C] divergence
 - [D] parallel evolution
18. What is the role of microtubules in cell division?
- [A] Maintaining cell shape
 - [B] Contracting during cytokinesis
 - [C] Forming the mitotic spindle
 - [D] Secreting hormones
19. Which type of cell death is characterized by morphological changes, including cell shrinkage and DNA fragmentation?
- [A] Necrosis
 - [B] Apoptosis
 - [C] Autophagy
 - [D] Cellular senescence

- 20.** The Major Histocompatibility Complex (MHC) molecules on the cell surface present antigens to
- [A] B lymphocytes
 - [B] cytotoxic T lymphocytes
 - [C] natural killer cells
 - [D] All of the above
- 21.** The enzyme telomerase is crucial for maintaining the integrity of chromosomal ends by adding
- [A] guanine repeats
 - [B] adenine-thymine rich sequences
 - [C] histone modifications
 - [D] non-coding RNA
- 22.** Which of the following is **not** a type of cell junction in animal cells?
- [A] Tight junctions
 - [B] Desmosomes
 - [C] Gap junctions
 - [D] Plasmodesmata
- 23.** Which type of mutation can lead to a frameshift in the protein sequence?
- [A] Silent mutation
 - [B] Missense mutation
 - [C] Insertion or deletion mutation
 - [D] Nonsense mutation
- 24.** The largest biogeographical region of India is
- [A] Himalayas
 - [B] Desert
 - [C] Gangetic Plain
 - [D] Deccan Plateau

- 25.** Human population growth curve is a
- [A] S-shaped curve
 - [B] parabola curve
 - [C] J-shaped curve
 - [D] zig-zag curve
- 26.** The enzyme required for transcription is
- [A] DNA polymerase
 - [B] RNA polymerase
 - [C] restriction enzyme
 - [D] RNase
- 27.** Colour blindness in man is
- [A] sex-linked character
 - [B] sex-influenced character
 - [C] sex-limited character
 - [D] dominant character
- 28.** The earliest fossil form in the phylogeny of horse is
- [A] Merychippus
 - [B] Equus
 - [C] Eohippus
 - [D] Meshippus
- 29.** The acrosome of the sperm is formed by
- [A] lysosome
 - [B] mitochondrion
 - [C] Golgi complex
 - [D] vacuole

30. Which of the following hormones helps to retain pregnancy and prevents premature parturition?

- [A] Progesterone
- [B] Estrogen
- [C] Relaxin
- [D] Oxytocin

31. Which of the following is **not** an enzyme?

- [A] Maltase
- [B] Lipase
- [C] Trypsin
- [D] Amylose

32. Which of the following is one of the parts of the hindbrain?

- [A] Hypothalamus
- [B] Cerebellum
- [C] Corpus callosum
- [D] Spinal cord

33. The synaptic vesicles, a neuromuscular junction discharges

- [A] adrenaline
- [B] epinephrine
- [C] acetylcholine
- [D] None of the above

34. The sequence of the structural genes in the lac operon is

- [A] lacA-lacZ-lacY
- [B] lacZ-lacY-lacA
- [C] lacZ-lacA-lacY
- [D] lacA-lacY-lacZ

35. A false positive result is best described as one that is given

- [A] by a substance other than that being tested for
- [B] when the substance being tested for is present in large amounts
- [C] when substance being tested for is present in minute quantities
- [D] when substance being tested for is absent

36. Human blood types in the ABO blood group are identified by

- [A] clotting factors in plasma
- [B] microscopic examination of white blood cells
- [C] antigen-antibody reactions
- [D] series of enzyme controlled reactions

37. Name the event wherein the paternal and maternal chromosomes change their material with each other in cell division.

- [A] Crossing over
- [B] Synapsis
- [C] Dyad forming
- [D] Bivalent forming

38. Which of these substances is transported by the blood plasma?

- [A] Carbon dioxide
- [B] Nitrogenous waste
- [C] Food
- [D] All of the above

39. Which of the following techniques is used to determine the protein structures?

- [A] X-ray crystallography
- [B] Kryptonics X-ray vision
- [C] Magnetic Resonance Imaging (MRI)
- [D] None of the above

40. Which of the following is an example of Homology and similarity tool?

- [A] BLAST
- [B] RasMol
- [C] EMBOSS
- [D] PROSPECT

41. Ovum receives the sperm in the region of

- [A] vegetal pole
- [B] equator
- [C] animal pole
- [D] pigmented area

42. Which of the following cells of the immune system **do not** perform phagocytosis?

- [A] Macrophage
- [B] Neutrophil
- [C] Eosinophil
- [D] Basophil

43. Lac operon will be turned on when

- [A] lactose is less than glucose
- [B] lactose is less in the medium
- [C] lactose is more than glucose
- [D] glucose is enough in the medium

44. B cells mature in the _____ while T cells mature in the _____.

- [A] thymus and bone marrow
- [B] spleen and bone marrow
- [C] bone marrow and thymus
- [D] liver and kidneys

45. Which central tendency is most affected by outliers?

- [A] Mean
- [B] Median
- [C] Mode
- [D] Range

46. An exception to Mendel's law is

- [A] independent assortment
- [B] linkage
- [C] dominance
- [D] purity of gametes

47. Homozygosity and heterozygosity of an individual can be determined by

- [A] test cross
- [B] back cross
- [C] self-fertilization
- [D] All of the above

48. The traditional system of brackish water aquaculture in West Bengal is known as

- [A] Gheris
- [B] Kharlands
- [C] Pokkali fields
- [D] Bheris

49. Predatory fish is

- [A] Catla
- [B] Rohu
- [C] Mrigal
- [D] Seenghala

50. Which species is used for production of marine pearls?

- [A] *C. Madrasensis*
- [B] *Perna viridis*
- [C] *Pinctada fucata*
- [D] *Paphia textile*

51. *Apis dorsata* is used to refer to

- [A] rock bee
- [B] Indian bee
- [C] European bee
- [D] little bee

52. Silk contains a protein known as

- [A] casein
- [B] fibroin
- [C] sericin
- [D] Both [B] and [C]

53. The bee carries the pollen back to its colony on

- [A] its body
- [B] its middle legs
- [C] its front legs
- [D] its rear legs

54. What does a high BOD value mean?

- [A] Pure form of water
- [B] Low pollution rate of water
- [C] High pollution rate of water
- [D] None of the above

55. The endocrine gland responsible for the body's circadian rhythm is the

- [A] thymus gland
- [B] pineal gland
- [C] parathyroid gland
- [D] pituitary gland

56. Which of the following processes **does not** occur in prokaryotes?

- [A] Transcription
- [B] Splicing
- [C] Translation
- [D] Replication

57. Which is responsible for the sticky ends in the DNA fragment?

- [A] Calcium ions
- [B] Endonuclease
- [C] Unpaired bases
- [D] Free methylation

58. Which of the following is **not** a characteristic of arthropods?

- [A] Presence of an exoskeleton
- [B] Presence of jointed appendages
- [C] Presence of a neural spine
- [D] Presence of a segmented body

59. Which is the most abundant protein in animals?

- [A] Albumin
- [B] Collagen
- [C] Haemoglobin
- [D] Cellulose

- 60.** An environmental stimulus that can be used to entrain an endogenous clock is called
- [A] Zeitgeber
 - [B] Zugunruhe
 - [C] Key stimulus
 - [D] Circadian rhythm
- 61.** The honey bees exhibit a type of dance to communicate the location of food. This is known as
- [A] Waggle dance
 - [B] Tap dance
 - [C] Round dance and waggle dance
 - [D] Breakdance
- 62.** The inherited behavior is called
- [A] imprinting
 - [B] learning
 - [C] maturation
 - [D] instinct
- 63.** The posterior pituitary stores and releases
- [A] growth hormone and prolactin
 - [B] prolactin and oxytocin
 - [C] oxytocin and Antidiuretic Hormone (ADH)
 - [D] ADH and growth hormone
- 64.** Which of the following is called the resting and inactive stage in the insect life cycle?
- [A] The egg stage
 - [B] The larva stage
 - [C] The pupa stage
 - [D] The adult stage
- 65.** The most common plasmid vector used in genetic engineering is
- [A] PBR 328
 - [B] PBR 322
 - [C] PBR 325
 - [D] PBR 330
- 66.** Which of the following was India's first Biosphere Reserve?
- [A] Sundarbans
 - [B] Nanda Devi
 - [C] Nilgiri
 - [D] Pachmarhi
- 67.** The functional unit of muscle contraction is
- [A] A-band
 - [B] Myofibril
 - [C] H-band
 - [D] Sarcomere
- 68.** Which of the following works as bioindicator of environmental pollution?
- [A] Diatoms
 - [B] Coral Reefs
 - [C] Fishes
 - [D] Lichens
- 69.** The non-cellular membrane of human ovum is called
- [A] zona pellucida
 - [B] zona radiate
 - [C] membrana granulosa
 - [D] vitelline membrane
- 70.** Two bones can be connected to each other by which of the following connective tissues?
- [A] Tendon
 - [B] Ligament
 - [C] Cartilage
 - [D] All of the above

PART—II

(Islamic History and Culture, General English & General Knowledge)

71. Alhamdulillah means
আলহামদুলিল্লাহ এর অর্থ
[A] Praise be to Allah
[B] Glory be to Allah
[C] Allah is almighty
[D] Allah is the most gracious
72. As per Islam, which of the following is **true** about intoxicants?
ইসলাম অনুসারে মাদকদ্রব্যের ব্যাপারে কোন্ বক্তব্যটি সঠিক?
[A] Totally allowed
[B] Marginally allowed
[C] Marginally forbidden
[D] Strongly forbidden
73. The *Holy Qur'an* is revealed
'পবিত্র কুরআন' অবতীর্ণ হয়েছে
[A] at a time
[B] over a period of 12 years
[C] over a period of 23 years
[D] over a period of 32 years
74. The saying 'Cleanliness is half of faith' is made by
'পবিত্রতা ঈমানের অর্ধেক' এই উক্তিটি করেছেন
[A] Prophet Muhammad
[B] Hazrat Umar
[C] Ibn Taymiyya
[D] Imam Bukhari
75. The prayer at the noon is called
দুপুরের নামাযকে বলা হয়
[A] Fajr
[B] Zuhr
[C] Asar
[D] Isha
76. Mother of Prophet Muhammad (PBUH) died when he was _____ year(s) old.
পয়গম্বর মুহাম্মদ(সা.) মাতৃহারা হন _____ বছর বয়সে।
[A] 1
[B] 3
[C] 6
[D] 12
77. Which of the following is a festival of sacrifice?
নিম্নের কোনটি ত্যাগের উৎসব?
[A] Laylat al-Qadr
[B] Muharram
[C] Eid al-Fitr
[D] Eid al-Adha
78. The first woman martyr in Islam is
ইসলামের প্রথম মহিলা শহীদ হলেন
[A] Asma
[B] Nusaybah
[C] Al-Khansa
[D] Sumayyah
79. Hijri calendar is enumerated from the time of
কোন্ সময় থেকে হিজরি ক্যালেন্ডার গণনা করা হয়?
[A] birth of Prophet Muhammad
[B] migration of Prophet Muhammad to Madinah
[C] journey of Prophet Muhammad into heaven
[D] death of Prophet Muhammad
80. Islam acknowledges
ইসলাম স্বীকৃতি দেয়
[A] only the last Prophet
[B] only the last four Prophets
[C] only the last ten Prophets
[D] all the Prophets

81. On which day Muslims pray Jummah Prayer?

কোন দিনে মুসলমানরা জুমার নামায পড়ে?

- [A] Sunday
- [B] Saturday
- [C] Tuesday
- [D] Friday

82. The term Waqf refers to ____.

ওয়াকফ শব্দটি বোঝায় ____।

- [A] Bill of exchange
- [B] What is due to the State treasury?
- [C] Promissory note
- [D] Charitable foundation or trust

83. The Arabic term Haq means

আরবি শব্দ হক এর অর্থ হলো

- [A] legal rights
- [B] credit proposal
- [C] taking full responsibility
- [D] kind of sale

84. How many gates of Jannah are there?

জান্নাতের দরজা কয়টি?

- [A] Six
- [B] Seven
- [C] Eight
- [D] Nine

85. Name the Angel who was appointed to deliver messages to Prophet Muhammad (SAW) from Allah (SWT)?

আল্লাহর (সুবাহানাছ ওয়া তায়ালা) পক্ষ থেকে নবী মুহাম্মদ(সা.)-এর কাছে বার্তা পৌঁছে দেওয়ার জন্য নিযুক্ত ফেরেশতার নাম কি?

- [A] Jibreel (AS)
- [B] Mikael (AS)
- [C] Israfil (AS)
- [D] Azrael (AS)

86. Which Country is called the 'Land of Prophets'?

কোন দেশকে 'নবীদের দেশ' বলা হয়?

- [A] Saudi Arabia
- [B] Syria
- [C] Palestine
- [D] Iraq

87. Which word is mentioned most times in the *Holy Qur'an*?

'পবিত্র কুরআনে' কোন শব্দটি সবচেয়ে বেশি বার উল্লেখ করা হয়েছে?

- [A] Qul
- [B] Allah
- [C] Rahman
- [D] Āmana

88. What is the name of the fountain which each person of paradise will drink before entering?

জান্নাতে প্রত্যেক ব্যক্তি প্রবেশের পূর্বে যে ঝর্ণার জল পান করবে তার নাম কি?

- [A] Zamzam
- [B] Kawsar
- [C] Tasneem
- [D] None of the above

89. How many times does 'Bismillah' repeat in the *Holy Qur'an*?

'পবিত্র কুরআনে' কতবার 'বিসমিল্লাহ' এসেছে?

- [A] 112
- [B] 113
- [C] 114
- [D] None of the above

90. Which is the longest Surah in the *Holy Qur'an*?

'পবিত্র কুরআনের' দীর্ঘতম সূরা কোনটি?

- [A] Surah Al - Maidha
- [B] Surah An - Nisa
- [C] Surah Al - Imran
- [D] Surah Al - Baqarah

91. The study of various aspects of ageing is called

- [A] Psephology
- [B] Chronology
- [C] Gerontology
- [D] Entomology

92. The fear of being without your mobile phone is called

- [A] Philophobia
- [B] Claustrophobia
- [C] Ophidiophobia
- [D] Nomophobia

93. His courage won him honour. Identify the type of the underlined noun.

- [A] Proper
- [B] Collective
- [C] Abstract
- [D] Common

94. Fill in the blank with the **correct** alternative.

When I met her _____ years after, she looked old and haggard.

- [A] a few
- [B] the few
- [C] few
- [D] some

95. Choose the **correct** alternative from the given sentences :

- [A] Those never fail who dies in great cause
- [B] They never fail who die in a great cause
- [C] They never fails who dies in a great cause
- [D] They never fails who die in a great cause

96. Who is called the first female teacher of India?

ভারতের প্রথম মহিলা শিক্ষক কাকে বলা হয়?

- [A] Sarojini Naidu
- [B] Savitribai Phule
- [C] Rani Lakshmibai
- [D] None of them

97. Mount Etna is a famous volcano located in

মাউন্ট এটনা একটি বিখ্যাত আগ্নেয়গিরি অবস্থিত

- [A] Argentina
- [B] Italy
- [C] Mexico
- [D] Philippines

98. The Battle of Kalinga was fought in the year

কলিঙ্গের যুদ্ধ কবে সংঘটিত হয়েছিল?

- [A] 540 BC
- [B] 320 AC
- [C] 440 BC
- [D] 261 BC

99. In which year the First World War was fought?

প্রথম বিশ্বযুদ্ধ কত সালে সংঘটিত হয়েছিল?

- [A] 1917 – 1920
- [B] 1914 – 1918
- [C] 1912 – 1916
- [D] 1910 – 1914

100. Which country is the largest tea producer in the world?

বিশ্বের বৃহত্তম চা উৎপাদনকারী দেশ কোনটি?

- [A] India
- [B] China
- [C] Bhutan
- [D] Nepal

SPACE FOR ROUGH WORK