

# ରେନେସାଁ of Aliyah

Question Booklet No.	Question Booklet Series: C
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## AUAT – 2019 2-Year M.Sc. in Zoology (41) (TEST BASED ON MCQ)

Full Marks: 100

Duration: 2 Hours

Roll No. of the Candidate: _____	_____
Date of Examination: _____	_____
Name of Examination Centre: _____	_____
Signature of the Candidate: _____	_____

Signature of the Invigilator on  
Verification

### 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 be 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 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 Sheets will 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 60 minutes of the commencement of examination. Candidates leaving the examination hall before conclusions of the examination will not be allowed to take the Question Booklet with them while going outside the examination hall.
8. Use of any Electronic device like Mobile, Programmable Calculator etc. is strictly prohibited.

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**(Part I: Core Subject)**

1. Which of the following statements regarding termination of transcription in *E. coli* is correct?
    - (a) In Rho dependent termination the Rho factor moves along the DNA template ahead of the RNA polymerase.
    - (b) Rho factor has topoisomerase activity for relieving supercoiling.
    - (c) Termination often involves a stem-loop structure forming in the RNA transcript.
    - (d) Termination often involves a stem-loop structure forming in the DNA template.
  2. In six species polyculture system of major carps, the species pairs selected as column feeders are:
    - (a) Rohu and silver carp
    - (b) Catla and grass carp
    - (c) Mrigal and common carp
    - (d) Rohu and grass carp
  3. Which of the following statements is correct, according to Chargaff's rules?
    - (a) All DNA molecules contain the same proportions of A, C, G and T.
    - (b) Single-stranded RNA molecules contain the same amount of A and U.
    - (c) In double-stranded DNA, the amount of T equals the amount of C.
    - (d) In double-stranded DNA, the amount of G equals the amount of C.
  4. Which of the following are phagocytic cells derived from monocytes:
    - (a) Neutrophils
    - (b) Mast cells
    - (c) Macrophages
    - (d) NK cells
  5. In fishes, the lateral line sense organs are inverted by the cranial nerve:
    - (a) 5th
    - (b) 6th
    - (c) 9th
    - (d) 10th
  6. State animal of West Bengal is
    - (a) Royal Bengal tiger
    - (b) Fishing cat
    - (c) Elephant
    - (d) One horned rhinoceroses
  7. Which of the following chicken poultry breeds is not an Indian pure breed:
    - (a) Aseel
    - (b) Busra
    - (c) Chittagong
    - (d) Leghorn
  8. Which one of the following species is NOT categorized as Critically Endangered (CR) by the IUCN:
    - (a) Royal Bengal Tiger (*Panthera tigris*)
    - (b) White-rumped Vulture (*Gyps bengalensis*)
    - (c) Gharial (*Gavialis gangeticus*)
    - (d) Bengal Florican (*Houbaropsis bengalensis*)
  9. With respect to their surrounding membrane systems, which is the odd one out?
    - (a) Nucleus
    - (b) Endoplasmic reticulum
    - (c) Lysosome
    - (d) Golgi body
  10. The receptor for steroid hormones lies
    - (a) In the cytoplasm.
    - (b) Embedded in the plasma membrane.
    - (c) Within the nuclear envelope.
    - (d) In the cytoplasm or inside the nucleus.
  11. Nosema disease in honeybee is caused by:
    - (a) Protozoa
    - (b) Fungi
    - (c) Virus
    - (d) Bacteria
  12. The first extra-embryonic membrane to form during chick embryogenesis is
    - (a) amnion
    - (b) chorion
    - (c) yolk sac
    - (d) allantois
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13. In *Bos*, the true stomach is the:
- rumen
  - reticulum
  - omasum
  - abomasum
14. Conjugation between two *Paramecia* produces total — daughter cells:
- 2
  - 4
  - 8
  - 16
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15. The fast block to polyspermy in sea urchins
- is a depolarization of the egg plasma membrane
  - requires exocytosis of the cortical granules
  - includes the elevation of the fertilization envelope
  - involves the hardening of the jelly coat
16. Which life cycle stage of Tryporyzasp which cause major damage to paddy plant is
- Larva
  - Pupa
  - Adult
  - All of the above
17. Which of the following has the highest percentage of modified bases?
- m-RNA
  - t-RNA
  - r-RNA
  - sn-RNA
18. Which of these greenhouse gases is most abundant in the atmosphere?
- Carbon dioxide
  - Methane
  - Water vapour
  - Nitrous oxide
19. Which of the following is NOT true about antibody structure?
- Antibodies have multiple identical antigen binding sites.
  - Antibodies are built from equal numbers of large (heavy) and small (light) peptide chains.
  - Antibodies are secreted and function away from the cell. They are not attached to the cellmembrane.
  - The class of the antibody molecule is determined solely by its heavy chain.
20. The spike phase of the neuronal action potential is due to:
- the opening of voltage-gated  $Na^+$  channels
  - the opening of voltage-gated  $K^+$  channels
  - the closure of resting  $K^+$  channels
  - the opening of voltage-gated  $Cl^-$  channels
21. Ganoid scales are found in
- Neoceratodus* sp
  - Protopterus* sp
  - Polypterus* sp
  - Sphyrna* sp
22. The type of egg and cleavage pattern found in insects:
- mesolecithal, holoblastic
  - centrolecithal, superficial
  - telolecithal, meroblastic
  - isolecithal, holoblastic
23. In malaria, where do the asexual sporozoites undergo schizogony to form merozoites?
- In the stomach of the female *Anopheles* mosquito
  - In liver cells
  - In red blood cells
  - In macrophages

24. When a harmless species takes advantage by resembling the aposematic coloration of other species that are toxic, it is called \_\_\_\_\_.  
 (a) Batesian mimicry  
 (b) Mullerian mimicry  
 (c) Cryptic colouration  
 (d) Disruptive colouration
25. The larva that occurs in the development of sea urchin is  
 (a) Pluteus  
 (b) Echinopluteus  
 (c) Bipinnaria  
 (d) Auricularia
26. The cavity common to all types of canal systems is:  
 (a) Incurrent canal  
 (b) Excurrent canal  
 (c) Radial chamber  
 (d) Spongocoel
27. Which one of the following is NOT a "hallmark feature" of cancer:  
 (a) Self-sufficiency in growth signals  
 (b) Limitless replicative potential  
 (c) Triggering of apoptosis  
 (d) Sustained angiogenesis
28. The realized niche of an organism is  
 (a) the area a species can occupy in the face of exploitative competition  
 (b) the habitat of a species within a community resulting from clumping  
 (c) the habitat that exists in nature as opposed to the ideal  
 (d) the life pattern that the organism actually assumes
29. Why Phosphofructokinase, rather than Hexokinase, is the pacemaker of glycolysis?  
 (a) Glucose-6-Phosphate is not solely a glycolytic intermediate  
 (b) Hexokinase has a low Km for glucose  
 (c) Hexokinase is inhibited by feedback inhibition  
 (d) None of the above is true.
30. Which of the following benthic zones is the deepest zone?  
 (a) Neritic zone  
 (b) Littoral zone  
 (c) Hadal zone  
 (d) Abyssal zone
31. Which molecule in animal plasma membranes reduces the permeability of the membrane to most biological molecules?  
 (a) Sphingolipids  
 (b) Cholesterol  
 (c) Phospholipids  
 (d) Glycolipids
32. Gause's principle of competitive exclusion is, essentially,  
 (a) the more abundant species will exclude the less abundant species through competition  
 (b) competition for the same resources excludes species having different life styles  
 (c) no two species can occupy the same niche indefinitely when resources are limited  
 (d) larger organisms exclude smaller ones through competition as in the case of large trees controlling underbrush
33. Which one of the following is NOT a function of the mitochondria:  
 (a) Non-shivering thermogenesis  
 (b) Apoptosis  
 (c) Fatty acid breakdown  
 (d) Protein glycosylation
34. The posterior most of all mouth parts in *Periplaneta* is  
 (a) Labrum  
 (b) Labium  
 (c) Hypopharynx  
 (d) Maxillae

35. A population's carrying capacity
- May change as environmental conditions change.
  - Increases as the per capita growth rate ( $r$ ) decreases.
  - Can never be exceeded.
  - Generally remains constant over time.
36. Oxytocin and ADH are produced by the — and stored and released from the —.
- hypothalamus and neurohypophysis
  - adenohypophysis and neurohypophysis
  - neurohypophysis and adenohypophysis
  - hypothalamus and adenohypophysis
37. Typical prototherian character is:
- 4-chambered heart
  - Presence of cloaca
  - Segmented sternum
  - Tarsal spur in males
38. Predominant immunoglobulin in external secretions such tears, mucous is :
- IgG
  - IgE
  - IgM
  - IgA
39. In which one among the following categories of protected areas in India are local people not allowed to collect and use the biomass?
- Biosphere Reserves
  - National Parks
  - Wetlands declared under Ramsar Convention
  - Wildlife Sanctuaries
40. While there are many criteria to describe the difference between two species, the biological definition of a species is based on being part of
- A population of animals that are in one place.
  - A population of animals that behave alike.
  - An interbreeding population of animals.
  - A population of animals that looks alike.
41. Kyoto Protocol is related to
- Depletion of the ozone layer
  - Climate change
  - Reducing greenhouse gas emission
  - Hazardous waste materials
42.  $Na^+$ , and  $K^+$ ,  $Ca^{2+}$ , and  $Cl^-$  permeation through their respective ion channels represents an example of:
- Passive transport
  - Primary active transport
  - Secondary active transport
  - None of the above
43. The most plausible hypothesis to explain why species richness is higher in tropical than in temperate regions is that
- tropical regions have very high rates of immigration and very low rates of extinction.
  - tropical communities are younger.
  - tropical regions generally have more available water and higher levels of solar radiation.
  - higher temperatures cause more rapid speciation.
44. Which among the following oxides cause the Acid rain?
- Carbon monoxide and carbon dioxide
  - Nitrous oxide and sulphur dioxide
  - Carbon dioxide and nitrous oxide
  - Sulphur dioxide and carbon monoxide
45. Which measure of central tendency is obtained using the middle score when all scores are organized in numerical order?
- Median
  - Mode
  - Mean
  - Variance

46. The statistical test that can be utilized to validate the statement "peoples having high cholesterol suffer more from hypertension" is:
- ANOVA
  - Pearson correlation coefficient
  - Student's t- test
  - Regression analysis
47. Hypertrichosis, hairiness of the pinna of the ear, is inherited as a Y-linked recessive in humans. If a man with hypertrichosis marries a normal woman, what types of children may they have?
- All of their children of both sexes have hypertrichosis.
  - All the sons have hypertrichosis, but none of their daughters.
  - Half of their sons, but none of their daughters will have hypertrichosis.
  - All the daughters have hypertrichosis, but none of their sons.
48. Which one of the following sequences shows the correct hierarchy of classification, going from the most inclusive to the least inclusive?
- Kingdom, Domain, Phylum, Order, Class, Family, Genus, Species
  - Domain, Kingdom, Phylum, Class, Order, Family, Genus, Species
  - Species, Genus, Family, Class, Order, Phylum, Kingdom
  - Domain, Phylum, Kingdom, Genus, Species, Family, Order, Class
49. The female silkworm larvae can be identified by the presence of  
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- Silk glands
  - Scent glands
  - Ischiwatta's glands
  - Herold's glands
50. Elasmobranchs living in a marine environment compensate for their hypoosmotic system relative to the sea by
- Drinking sea water
  - Pumping  $Na^+$  into the blood
  - Excreting massive amounts of water
  - Reabsorbing urea
51. The zoogeographical realm with highest diversity of methaterian mammals is:
- Oriental
  - Ethiopian
  - Neotropical
  - Australian
52. If an autosomal recessive disorder which shows Hardy-Weinberg equilibrium has an incidence of 1 in 6400 then the frequency of carriers is approximately \_\_\_\_.
- 1 in 20
  - 1 in 40
  - 1 in 80
  - 1 in 160
53. In E. coli, which of the following proteins involved in peptide initiation and chain elongation is a GTPase switch?
- Only EF-Tu
  - Only EF-G
  - Both EF-Tu and EF-G
  - Initiation factor (IF) – 2
54. A woman with type A blood has a child with type A blood. Which of the following men could not be the father of this child?
- A
  - B
  - AB
  - All could be the father
55. Which of the following trisomy karyotypes has the mildest effect on human development?
- 47,XXX
  - 47,XXY
  - 47,XX,+13
  - 47,XX,+21
56. Which of the following factors is mainly responsible for the negative resting membrane potential (-70mV) in a neuron?
- Axonal insulation by Schwann cells
  - Voltage-gated sodium channel opening
  - Potassium leak currents
  - The action potential

57. Which of the following statements is false? Checkpoints of cell-cycle control system ensure that:
- The environment is favourable for the cell to initiate DNA replication.
  - M phase is completed before cytokinesis begins.
  - All chromosomes are attached to the mitotic spindle before the chromosomes are segregated to the two daughter cells.
  - All DNA is replicated before M phase begins.
58. Binding of antigen to antibody:
- Is usually unaffected by molecular rigidity.
  - Is unaffected by the presence or absence of water molecule
  - Is optimized by spatial complementarity.
  - Is usually unaffected by pH.
59. Which of the following does NOT accurately describe lymphatic filariasis?
- It mainly affects the lower limb.
  - Chyluria is the most common manifestation.
  - The intermediate host is generally a mollusc
  - Treatment involves yearly doses with both albendazole and diethylcarbamazine
60. Which of the following reactions is required for proofreading during DNA replication by DNA polymerase III in *E. coli*?
- 3'-5' exonuclease activity
  - 5'-3' exonuclease activity
  - 3'-5' endonuclease activity
  - 5'-3' endonuclease activity
61. Which of the following is true regarding PCR
- Denaturation of template DNA involves heating at  $90^{\circ}\text{C}$  –  $98^{\circ}\text{C}$
  - Annealing involves binding of primers between  $40^{\circ}\text{C}$  –  $60^{\circ}\text{C}$
  - Primer extension occurs at  $72^{\circ}\text{C}$
  - All of the above are true
62. Hormone X produces its effect in its target cells via the cAMP second messenger system. Which of the following will produce the greatest effect in the cell?
- a molecule of hormone X applied to the extracellular fluid surrounding the cell
  - a molecule of hormone X injected into the cytoplasm of the cell
  - a molecule of cAMP applied to the extracellular fluid surrounding the cell
  - a molecule of cAMP injected into the cytoplasm of the cell
63. Which of the following gases is least likely to have existed in the early atmosphere of the earth?
- $\text{NH}_3$
  - $\text{CO}_2$
  - $\text{H}_2\text{O}$
  - $\text{O}_2$
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64. Which of the following statements about pancreatic acinar cells is incorrect:
- they secrete glucagon hormone
  - they are the most abundant cell types found in the pancreas
  - they exhibit all characteristic features of protein synthesizing cells
  - they secrete pancreatic juice
65. If  $X^B$  = normal vision and  $X^b$  = colour blindness, what are the chances a colour blind female will have colour blind sons if she has children with a man with normal vision?
- 100%
  - 50%
  - 25%
  - None of the above
66. In birds, sound is produced by
- Furcula
  - Larynx
  - Syrinx
  - Pygostyle

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67. Which minerals are found in the run-off from agricultural land and treated and untreated sewage effluents, which are highly responsible for eutrophication of water bodies?
- Phosphorous and carbon
  - Nitrogen and phosphorus
  - Potassium and arsenic
  - Iron and manganese
68. Of the following indications of the health of water body, which is the most widely accepted means of measuring how polluting an effluent is?
- Biological Oxygen Demand (BOD)
  - Chemical Oxygen Demand (COD)
  - Dissolved oxygen (DO)
  - Heavy metal analysis
69. The type of placenta found in primates:
- chorio-allantoic, discoidal, deciduate, haemo-chorial
  - chorio-vitelline, cotyledonary, deciduate, haemo-endothelial
  - chorio-vitelline, diffused, deciduate, haemo-chorial
  - chorio-allantoic, zonary, non-deciduate, epithelio-chorial
70. The only urodele anamphibian found in West Bengal is
- Pipa* sp
  - Rhacophorus* sp
  - Tylototriton* sp
  - Ichthyophis* sp
71. For three linked genes, A, B and C, map distances between them is as follows: A – B : 15 cM; B – C : 8cM and A – C : 23 cM. In an individual of genotype AbC / aBc, the percentage of gametes expected to be ABC is
- 23
  - 11.5
  - 5.75
  - 0.6
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72. *Fossa ovalis* is the remnant of
- Foramen ovale
  - Sinus venosus
  - Truncus arteriosus
  - Chordae tendineae
73. Which of the following terms is used to describe the dose of a drug required to kill 50% of a group of animals?
- LD<sub>50</sub>
  - LC<sub>50</sub>
  - ED<sub>50</sub>
  - None of the above
74. An enzyme which can catalyse the reaction : AB + C → A + BC is classified as:
- Transferase
  - Lyase
  - Isomerase
  - Ligase
75. Removal of a —— from a community affects community structure significantly.
- Umbrella species
  - Keystone species
  - Flagship species
  - Sentinel species
76. Which of the following lymphoid tissues is unencapsulated:
- Thymus
  - Lymph node
  - Spleen
  - MALT
77. During gastrulation in *Xenopus*, the future endoderm and mesoderm move inside the embryo through the blastopore'; in contrast, in chickens, gastrulation involves cells moving inward through the:
- Cleavage furrow
  - Primitive streak
  - Koller's sickle
  - Yolk plug

78. What is the basis of the mutagenic action of the base analogue 5- bromouracil (5-BU)?
- It replaces T and binds with G
  - It replaces G and binds with T
  - It replaces T and binds with C
  - It replaces A and binds with C
79. Which of the following statements about Michaelis-Menten kinetics is correct?
- $K_m$  is defined as the concentration of substrate required for the reaction to reach maximum velocity.
  - $K_m$  is defined as the dissociation constant of the enzyme-substrate complex.
  - $K_m$  is expressed in terms of the reaction velocity.
  - $K_m$  is a measure of the affinity the enzyme has for its substrate.

**(Part II: General Knowledge, General English & Islamic History and Culture)**

81. Choose the correct option that can be substituted for "A poem of lamentation occasioned by someone's death"
- prologue
  - elegy
  - lyric
  - comedy
82. Salat al-Janazah is –
- Islamic funeral prayer
  - a collective obligation upon Muslims
  - performed in congregation to seek pardon for the deceased and all dead Muslims
  - all of the above
83. The Qur'an forbids all of the following EXCEPT
- gambling.
  - earning interest on lending money.
  - drinking alcoholic beverages.
  - making profits through business
84. The last chapter in the Holy Qur'an is
- Surah Alaq
  - Surah Naas
  - Surah Fatihah
  - Surah Ikhlas
80. Which of the following statements about metagenesis in Obelia is correct:
- The polyploid phase (hydroid colony) reproduces sexually to produce medusae.
  - Medusae reproduce both asexually and sexually
  - Medusoid phase represent a truly haploid sexual generation
  - Sexual generation is represented by haploid gametes only.
85. What is the state of purity in which all pilgrims enter Makkah for Hajj called?
- Adhaan
  - Ihram
  - Istikhara
  - Ababa
86. Which of the following is part of Muslim belief?
- The Day of Judgment
  - The Afterlife
  - Prophecy
  - All of the above
87. Pick out the word opposite in meaning to "Ephemeral":
- Passing
  - Sensuous
  - Permanent
  - Distasteful
88. Kobe Bryant is —— basketball player.
- the
  - a
  - no article
  - Either (a), or (b)

89. How important is Zakat in Islam?
- (a) Zakat is so important that it forms the Third Pillar of Islam
  - (b) Zakat is not so important in Islam
  - (c) Zakat is just a minor responsibility
  - (d) None of the above
90. In which month was the Qur'an revealed?
- (a) Rabi-ul-Awwal
  - (b) Muharram
  - (c) Shaaban
  - (d) Ramadan
91. What are doing — coming Sunday?
- (a) to
  - (b) in
  - (c) on
  - (d) from
92. Harun al-Rashid belonged to which dynasty?
- (a) Umayyad
  - (b) Abbasid
  - (c) Fatimid
  - (d) None of the above
93. Musa (AS) : ? :: Muhammad (PBUH) : Rasulullah
- (a) Kalimullah
  - (b) Khalilullah
  - (c) Ruhullah
  - (d) Zabiullah
94. Headquarter of 'World Bank' is located in
- (a) Geneva, Switzerland
  - (b) Washington DC, United States
  - (c) Berlin, Germany
  - (d) Brussels, Belgium
95. What is the currency of Austria?
- (a) Krone
  - (b) Franc
  - (c) Dollar
  - (d) Euro
96. Which city is known as the 'gateway of India'?
- (a) Delhi
  - (b) Mumbai
  - (c) Chennai
  - (d) Kolkata
97. Longest river in 'Asia' is
- (a) Mahaveli of Srilanka
  - (b) Ganga of India
  - (c) Yangtze of China
  - (d) Huang-He of China
98. CCI has penalised which sports authority in November 2017?
- (a) BAI
  - (b) BCCI
  - (c) ICCI
  - (d) SAI
99. Choose the correct phrasal verb to complete the sentence:
- The lease of our premises has —— and we have to vacate it.
- (a) run out
  - (b) run off
  - (c) run over
  - (d) run down
100. What is the Night Salah (Prayers) during the month of Ramadan called?
- (a) Ishraq Salah
  - (b) Taraweeh Salah
  - (c) Fard Salah
  - (d) There are no special Night Prayers

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