RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. SECOND SEMESTER EXAMINATION, SEPTEMBER 2020

FIRST YEAR [BATCH 2019-22]

Date : 25/09/2020 **ZOOLOGY (Honours)**

Time : 11.00 am – 7.00 pm **Paper : III [CC3] & IV [CC4]** Full Marks : 50+50

Paper : III [CC3]

Answer all the questions: **(5×10)**

Group – A

1. a) "Ruminant stomach is a microbial starter culture"--- justify the statement.
   b) What is the speculative function of omasum in ruminating animals?
   c) Define holonephros condition. [3+1+1]

Group – B

2. a) State three important adaptive features of FM echolocating bat.
   b) In a large flock of echolocating bats, how does the echolocating call of one individual never get confused with the call of another one?
   c) Mention the significance of 'water cells'. [2+2+1]

3. a) Describe the poison apparatus of snake with a figure.
   b) Mention four important differences between venomous and non-venomous snakes. [(2+1)+2]

4. a) Name the snakes used in ASV preparation in India.
   b) Illustrate the role of bones and muscles in the biting mechanism of a venomous snake. [1+4]

5. Describe the structure of a rectrix with one suitable diagram. [3+2]

6. a) Compare between Horn and Antler.
   b) What is prong horn?
   c) Write down the significance of marsupium.
   d) Mention two important non-mammalian characteristics of Monotremata. [2+1+1+1]

Group – C

7. a) Mention the role of endostyle in *Ascidia*.
   b) What is the significance of 'Axial Complex' in the life cycle of tunicates? [2.5+2.5]

8. a) Briefly explain the 'Root effect' for diffusion of gases from blood to swim bladder in fish.
   b) Name different components of a 'Weberin apparatus' in fish. [4+1]

9. Enumerate how a canal neuromast receives & analyses different stimuli in fish with a schematic diagram. [4+1]

10. a) Mention the most significant anatomical modification in the arterial system of reptiles.

    b) Elaborate few alternative configurations of the departing arches commonly found in birds with simple figures. [1+(2+2)]

Paper : IV [CC4]

Answer all the questions: **(5×10)**

Group – D

11. a) Device an experimental proof regarding the membrane fluidity of a plasma membrane.

    b) What do you mean by membrane 'flip-flop'?

    c) State the significance of GPI anchorage. [3+1+1]

12. a) Define GERL system.

    b) How could you furnish supportive evidences justifying endosymbiotic origin of mitochondria?

    c) State the significance of 'Toc complex'. [2+2+1]

13. a) Differentiate between O-linked and N- linked glycosylation.

    b) After detecting a misfolded protein in ER, what are the sequences of events to counter it?

    c) What do you mean by 'mitochondrial eve'? [2+2+1]

14. a) In an experimental condition, you are said to use cellular secretion of *Streptomyces griseous* in on vertebrate kidney cell. This result decreased renal function, lower reabsorption and hyper diuresis. What according to you might be the underlying cellular alteration?

    b) How does DNA polymerase find its way within cell nucleus after being synthesized and processed in cytoplasm?

    c) What is Sumolylation? [2+2+1]

Group – E

15. a) Describe the structure of GAG with suitable diagram.

    b) Write down the structural difference between collagen and elastin. [(2+1)+2]

16. a) Illustrate the structure of microtubule with labelled diagram.

    b) Write down the key functions of intermediate filaments. [4+1]

Group – F

17. a) Mention two important applications of flow cytometry.

    b) State the importance of keeping multiple filters in a flow cytometry machine. [3+2]

18. a) Mention the three cell cycle checkpoints along with their importance.

    b) How the different cdk and cyclins influence the progression of cell cycle? [2.5+2.5]

Group – G

19. a) State the basic principles of sedimentation with respect to centrifugation.

b) How the particle size and the medium characteristics would influence the sedimentation rate? What is a nomogram? [2+2+1]

Group – H

20. "The expression of PGC- 1 finally leads to the biogenesis of mitochondria" - enumerate with a schematic figure. [5]

———— × ————