

# RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. SIXTH SEMESTER TAKE-HOME TEST / ASSIGNMENT, JULY 2020

THIRD YEAR [BATCH 2017-20]

ZOOLOGY (Honours)

Paper : X & XI

Date : 05/07/2020

Time : 11 a.m. – 7 p.m.

Full Marks : 50+50

## Paper : X

Answer ALL questions of the following :

1. What are the three measures of central tendency? Discuss the advantages and disadvantages of those measures. [1+4]
2. What do we do if there is no mode in the dataset? Find the mean, median and mode for the following numbers 7,4,3,5,6,3,3,2,4,3,4,3,3,4,4,3,2,2,4,3,5,4,3,4,3,4,3,1,2,3. [5]
3. The following are the monthly salaries (in Rs) of 30 employees in a firm.

140	139	126	114	100	88	62	77	99	103
108	129	144	148	134	63	69	148	132	118
142	116	123	104	95	80	85	106	123	133

The firm gave bonus of Rs. 10, 15, 20, 25, 30, 35 for individuals in the respective salary groups: 'exceeding Rs. 60 but not exceeding Rs. 75'; 'exceeding Rs. 75 but not exceeding Rs. 90'; and so on up to 'exceeding Rs. 135 but not exceeding Rs. 150'. Find the average bonus paid per worker. [5]
4. a) What do you mean by Integrated Pest Management? State three drawbacks IPM. [1+1]  
b) In an ant threatened termite colony, you are observing that some army termites are undergoing 'autolysis'. How would you consider this as evolutionary fit defensive process for colony protection? [2]  
c) What is the female : male ratio of *Scripophaga*? [1]
5. a) State two differences between house rat (*Rattus rattus*) and common Indian field rat (*Bandicota bengalensis*). [2]  
b) State the chemical controlling measures of *Sitophilus*. [2]  
c) Zinc phosphide is commonly used in treating *Bandicota*. What kind of pesticide is it? [1]
6. a) Let, the market price of a crop is Rs. 5000/ton. During an attack by a pest, 2 ton/ha land got damaged. You calculated the cost to treat this is Rs. 150/ha land. If you consider 'X' as the crop injury per pest density, calculate the Economic Injury Level (EIL) [assume proportionate reduction in injury is 0.3]. [2]  
b) Being a polyphagous pest, state the orientation of damage caused by the 'gram pod borer'. [2]  
c) In which pest category does General Equilibrium Position (GEP) lie well above the Damage Boundary (DB) and Economic Injury Level (EIL)? [1]
7. How do worker bees maintain a bee colony? What is bee wax? What are the forces driving swarming in honey bees? [3+1+1]

8. How will you identify male and female larvae of mulberry silk worm? Illustrate the structure of a silk gland. [2+3]
9. Define following terms: [1×5]  
Renditta, Denier, Chasam, Latkoa, Matka
10. Mention scientific names of three exotic carps used along with the indigenous carps in a composite fish culture. What are the hazards in brackish water prawn culture? State the advantages of hypophysation. [1.5+2+1.5]

### Paper : XI

**Answer ALL questions of the following :**

11. “The contribution of Linnaeus was unique for correct identification of organisms” – justify with reasons. Why ‘Upward Classification’ could not become a good supplement to the ‘Downward’ one? [2.5+2.5]
12. Elaborate whether ‘Incipient Species’ escalates the process of speciation or not. Why did the ‘Evolutionary Species Concept’ fail to explain the reasons & existence of discontinuities between contemporary species? [2.5+2.5]
13. “All living organisms are not biological species” – justify with reasons. Why ‘Isolation’ is considered as a good factor for ‘Speciation’? [2.5+2.5]
14. You are trying to disprove someone’s comment that all life originated on this planet according to a superpower’s will. What are the story and the points you will try to put forward to that person? [5]
15. As bacteria and human both are the species, Darwin-Wallace theory of evolution is applicable to both of them. Try to highlight the aspects of how a pathogenic bacterial infection within the human host follows Darwin’s law. State the possible outcomes for both the species. [5]
16. How does the bottleneck effect shape genetic drift in a population that might have an impact in changing the behaviour pattern (foraging, feeding, mating, etc.) for the members of the newly formed population? [5]
17. Explain the possible need that might lead to the evolution of instinctive and learning behaviour and altruism among the organisms in the light of Darwin-Wallace theory of evolution. [5]
18. a) Migration is a necessary evil process” - justify this statement? [2]  
b) State the role of ‘hallux’ in origin and evolution of bird? [2]  
c) What is the role of ‘Cluster N’ in bird’s brain? [1]
19. a) Define ‘arrhenotoky’. How does it differ from ‘thelytoky’? [1+1]  
b) Why does nature show greater tendency to favour Mullerian mimicry rather than Batesian mimicry? [2]  
c) What is Zugunruhe? [1]
20. How does alloparental care benefit a species? Write down different strategies of parental care exhibited by fishes. [1+4]

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