# M.Sc. ZOOLOGY
## FOURTH SEMESTER
## ENTOMOLOGY-III
### MSZ-401 D
[USE OMR SHEET FOR OBJECTIVE PART]

SET A

Duration: 3 hrs.
Full Marks: 70

( **Objective** )

Time: 30 mins.
Marks: 20

*Choose the correct answer from the following:*
$1 \times 20 = 20$

1. Functions of accessory pulsatile organs of insect are to pump blood to:
   a. Visceral organs
   b. Brain
   c. Appendages
   d. Heart

2. Which one of the following substances acts as a neuromuscular transmitter?
   a. Acetylcholine
   b. Glutamic acid
   c. Dopamine
   d. Indolamine

3. Tse Tse fly is the vector of the disease:
   a. Kala azar
   b. Sleeping sickness
   c. River blindness
   d. Yellow fever

4. Which one of the following mosquitoes is the carrier of a Nematode, *Wuchereria bancrofti*?
   a. Anopheles
   b. Culex
   c. Aedes
   d. None of the above

5. Which one of the following is a Tea pest?
   a. *Andraca bipunctata*
   b. *Sitophilus orizae*
   c. *Leptocorisa varicornis*
   d. *Dinoderus minutus*

6. Which one of the following groups is a non-biodegradable pesticide?
   a. Organochlorines
   b. Organophosphates
   c. Pyrethroids
   d. Carbamates

7. Destructive stage of Teak defoliator, *Hyblaea puera* is:
   a. Egg stage
   b. Larval stage
   c. Pupa stage
   d. Adult stage

8. Rice grasshopper, *Hieroglyphus banian* lay their eggs on:
   a. Leaf
   b. Stem
   c. Soil
   d. Seed

9. Which one of the following pests is an internal feeder?
   a. Mealy bug
   b. Brinjal fruit borer
   c. Bunch caterpillar
   d. Tea mosquito bug

10. Which one of the following is a physical method of pest control?
    a. Augmentation
    b. Crop rotation
    c. Use of radiant energies
    d. Hand picking

11. What is the primary function of the crop in the insect digestive system?
   a. Mechanical breakdown of food
   b. Absorption of nutrients
   c. Storage of food
   d. Secretion of digestive enzymes

12. What is the role of the peritrophic membrane in the insect digestive system?
   a. Absorption of nutrients
   b. Protection of the midgut epithelium
   c. Mechanical breakdown of food
   d. Secretion of digestive enzymes

13. Where does most nutrient absorption occur in the insect digestive system?
   a. Foregut
   b. Crop
   c. Midgut
   d. Hindgut

14. What is the function of the Malpighian tubules in insects?
   a. Digestion of proteins
   b. Secretion of digestive enzymes
   c. Water reabsorption
   d. Removal of metabolic wastes

15. What is the primary function of the spermatheca in the insect reproductive system?
   a. Production of sperm
   b. Storage of sperm
   c. Production of eggs
   d. Storage of eggs

16. In which part of the insect reproductive system are eggs fertilized?
   a. Ovary
   b. Spermatheca
   c. Oviduct
   d. Vas deferens

17. What is the purpose of the ovipositor in the insect reproductive system?
   a. Egg fertilization
   b. Sperm storage
   c. Sperm transfer
   d. Egg-laying

18. What role do Toll receptors play in insect immunity?
   a. Activation of phagocytosis
   b. Production of antimicrobial peptides
   c. Inhibition of melanization
   d. Regulation of humoral immune responses

19. What is the primary function of vitellogenin in insect vitellogenesis?
   a. Sperm production
   b. Eggshell formation
   c. Egg yolk deposition
   d. Oocyte maturation

20. What is the role of juvenile hormone (JH) in regulating vitellogenesis in insects?
   a. Stimulating vitellogenin synthesis
   b. Inhibiting vitellogenin synthesis
   c. Triggering oocyte maturation
   d. Regulating egg laying

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## ( Descriptive )

Time : 2 hr. 30 mins.                                                            Marks : 50

[ Answer question no.1 & any four (4) from the rest ]

1. Describe the essential features of insect circulatory system. Write the          5+5=10
   mechanism of haemolymph circulation through it.

2. Write a note on microanatomy of brain.                                           10

3. Explain the gradual succession of insects in a corpse. Describe the life         5+5=10
   cycle of an insect of forensic importance.

4. Describe the life cycle and damage done by any one of cotton pest.               7+3=10

5. Describe the anatomy of the insect digestive system. What is the                 8+2=10
   significance of filter chamber in fluid eating insects?

6. Write short notes:                                                               5+5=10
   a) Male reproductive system
   b) Meroistic ovariole

7. Explain TOLL signaling pathway in insects.                                       10

8. Explain vitellogenesis in insects. What are the hormones involved in             5+5=10
   vitellogenesis process?

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