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University Examinations 2023/2024

SECOND YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN MEDICAL LABORATORY

HML 3222: ENTOMOLOGY AND VECTOR BIOLOGY

DATE: APRIL 2024

TIME: 3 HOURS

INSTRUCTIONS:

- (i) The paper consists of **Three** Sections
 - (ii) Section A: Multiple Choice Questions
 - (iii) Section B: Short Answer Questions
 - (iv) Section C: Long Answer Questions
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SECTION A MCQs (20Marks)

1. What is medical entomology primarily concerned with?
 - a) Study of plant diseases
 - b) Study of insect behavior
 - c) Study of insects and arthropods that impact human health
 - d) Study of aquatic ecosystems
2. Which class of althropods includes bugs
 - a) Arachnida
 - b) Insecta
 - c) Crustacea
 - d) Myriapoda

3. What is the significance of arthropods in the field of medicine?
 - a) They serve as pollinators for medicinal plants.
 - b) They are vectors for various diseases affecting humans and animals.
 - c) They contribute to the synthesis of pharmaceutical drugs.
 - d) They play a role in the decomposition of medical waste-
4. Which arthropod is commonly associated with the transmission of Lyme disease?
 - a) Mosquito
 - b) Flea
 - c) Louse
 - d) Tick
5. What is the primary role of vectors in the context of medical entomology?
 - a) Aiding in plant fertilization
 - b) Transmitting disease-causing organisms
 - c) Assisting in waste decomposition
 - d) Supporting ecosystems through predation
6. Health concern associated with bites from the *Aedes aegypti* mosquito?
 - a) Lyme disease
 - b) Malaria
 - c) Dengue fever
 - d) Leishmaniasis
7. Direct skin irritation and allergic reactions are common consequences of the bite of which arthropod?
 - a) Flea
 - b) Mosquito
 - c) Tick
 - d) Bedbug
8. What term is used to describe diseases that are transmitted to humans through the bite of infected arthropods?
 - a) Zoonotic diseases

- b) Vector-borne diseases
 - c) Waterborne diseases
 - d) Airborne diseases
9. The vector responsible for the transmission of the Zika virus is primarily a species of:
- a) Mosquito
 - b) Tick
 - c) Flea
 - d) Sandfly
10. The process by which an arthropod transmits a pathogen from an infected host to a susceptible host is known as:
- a) Incubation
 - b) Inoculation
 - c) Infestation
 - d) Incision
11. What is the primary role of reservoir hosts in the epidemiology of vector-borne diseases?
- a) Transmitting the disease to vectors
 - b) Providing a breeding ground for vectors
 - c) Enhancing host immunity
 - d) Serving as a source of infection for vectors
12. What is the primary goal of vector control strategies in the prevention of vector-borne diseases?
- a) Eradicating all vectors
 - b) Reducing vector density and interrupting transmission
 - c) Promoting natural selection of vectors
 - d) Enhancing vector resistance to insecticides
13. The primary vector for the transmission of Rift Valley fever virus is typically a species of:

- a) Mosquito
 - b) Sandfly
 - c) Tick
 - d) Blackfly
14. Which of the following is an example of mechanical transmission by arthropods?
- a) Transmission of malaria by mosquitoes
 - b) Transmission of Lyme disease by ticks
 - c) Transmission of Zika virus by mosquitoes
 - d) Transmission of Chagas disease by triatomine bugs
15. Which of the following is an example of biological control for arthropods?
- a) Use of insect repellents
 - b) Application of synthetic pesticides
 - c) Introduction of natural predators
 - d) Environmental modification
16. The vector for onchocerciasis (river blindness) is primarily:
- a) Tsetse fly
 - b) Sandfly
 - c) Blackfly
 - d) Mosquito
17. Which method involves the release of sterile male insects to reduce the reproductive capacity of a population?
- a) Chemical control
 - b) Cultural control
 - c) Biological control
 - d) Genetic control
18. Which of the following is a non-biting midge that is a nuisance but not a vector of diseases?

- a) Culicoides
- b) Simulium
- c) Chironomus
- d) Glossina

19. The vector for plague is:

- a) Fleas
- b) Mosquitoes
- c) Ticks
- d) Lice

20. Which disease is transmitted by the bite of infected Phlebotomine sandflies?

- a) Chagas disease
- b) Leishmaniasis
- c) Onchocerciasis
- d) Tularemia

SECTION B: ANSWER ALL QUESTIONS (40 MARKS)

1. Describe beneficial uses of arthropods (5marks)
2. Describe the morphological and biological characteristics of *Phlebotomine Sandflies*. (5marks)
3. List orders of class insecta- (5marks)
4. Provide examples of successful biological vector control programs. (5marks)
5. Outline the life cycle stages of Triatomine bugs. (5marks)
6. Describe specific diseases transmitted by Black flies (5marks)
7. Describe life cycle of ticks and their hosts. (5marks)
8. Describe direct effects of arthropods on human health (5marks)

SECTION C: ANSWER ANY TWO QUESTIONS (40 MARKS)

1. Discuss the general methods of control of arthropods (20 marks)
2. Explain main arthropods of medical importance and provide examples of diseases transmitted by them: (20 marks)

3. Explain the morphological and biological characteristics of mosquito, significance in disease transmission, and the importance of control measures: (20 marks)