



KISII UNIVERSITY
UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF
BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES
FIRST SEMESTER, 2021/2022
(FEBRUARY - JUNE, 2022)

MELS 264: VECTOR SCIENCES

STREAM: Y2 S1

TIME: 3 HOURS

DAY: FRIDAY, 9:00 – 12:00 P.M.

DATE: 20/05/2022

INSTRUCTIONS:

- 1. Do not write anything on this question paper.***
- 2. Answer question ONE (Compulsory) and any other questions in section B.***

SECTION A: ANSWER ALL QUESTIONS (20 MARKS)

- Which is of the following best describes exophagy
 - First blood-feeding to oviposition
 - Blood feeding in the house
 - Resting indoors after a blood meal
 - Resting outdoors after blood meal
 - What group of arthropods are characterized by having no antennae, four pairs of legs in the
 - Adult, and the head/thorax/abdomen fused into one unit without obvious segmentation
 - What group of arthropods are characterized by having no antennae, four pairs of legs in the
 - Adult, and the head/thorax/abdomen fused into one unit without obvious segmentation
 - What group of arthropods are characterized by having no antennae, four pairs of legs in the
 - Adult, and the head/thorax/abdomen fused into one unit without obvious segmentation

2. What group of arthropods are characterized by having no antennae, four pairs of legs in the adult, and the head/thorax/abdomen fused into one unit without obvious segmentation
 - a. Atelocerata;
 - b. Crustacea;
 - c. Acari;
 - d. Scorpiones;
 - e. Diplopoda

3. Sarcoptes mites:
 - a. Form a burrow into the skin, and feed on blood from capillaries,
 - b. Hide in the base of hair follicles, and feed by piercing cells and sucking the contents,
 - c. Form a burrow into the skin and feed on lymph fluid and inflammatory cells that respond to the irritation,
 - d. Feed on shed flakes of skin and hair

4. Monocytic ehrlichiosis is caused/vectored by which pathogen/vector:
 - a) Borrelia burgdorferi/Ixodes scapularis,
 - b) Borrelia burgdorferi/Amblyomma americanum,
 - c) Ehrlichia chaffeensis/Ixodes scapularis,
 - d) Ehrlichia chaffeensis/Amblyomma americanum,

5. Which of the following statements is true
 - a) Anopheles and Culex are mosquitoes involved in transmission of yellow fever
 - b) Mansonella spp. belong to tsetse fly family and is a vector for sleeping sickness
 - c) Culicines do not transmit filarial worms
 - d) none of the above

6. The following are sand fly species except:
 - a) Sergentomyia
 - b) Phlebotomus
 - c) Lutzomyia
 - d) Funestus

7. Which of the following is true about oviparous insects:
 - a) they lay eggs which hatch immediately
 - b) they lay only eggs
 - c) they lay larvae without egg development
 - d) the eggs hatch within the female

8. Onchocerca volvulus is transmitted by
 - a) Simulium damnosum
 - b) Glossina palpalis
 - c) Aedes aegypti

d) reduviid bug

9. The following is true about black flies (simulidae) except:

- a) male and female can be differentiated by use of their eyes
- b) sexual determination cannot be differentiated by examining their eyes
- c) only females feed on blood
- d) one can differentiate between males and females by looking at their body size

10. The following is true about phlebotomine development except

- a) they lay between 30-70 eggs singly per oviposition
- b) oviposition is species dependent
- c) there are four larval instars
- d) they can fly long distances

11. Tsetse flies can be best described as under

- a) both males and females transmit trypanosomiasis
- b) B)only females transmit trypanosomiasis
- c) C))both males and females suck blood
- d) D)all the above

12. Which of the following is larviparous

- a. tsetse flies
- b. sand flies
- c. black flies
- d. reduviid bug

13. ticks can be differentiated from mites by

- a. looking at their colour
- b. their biting habits
- c. their size and serrated hypostome
- d. none of the above

14. Which of the following is not true about argasidae

- a. they are responsible for babesiosis
- b) B)they cause ehrlichiosis
- a. are vectors of tularamia
- c) D)cause East coast fever in humans

15. all of the following are true of mosquitoes except

- a. they are present in Antarctica
- b. occur throughout tropical and temperate regions
- c. inhabit 1250M below sea level
- d. can survive 5500M above sea level

16. Which of the following feature does not distinguish mosquitoes from other flies

- a. conspicuous forward projecting proboscis
- b. numerous scales in the thorax ,legs,abdomen and wings
- c. fringe of scales along the posterior margin of wings
- d. have four appendages

17. Which of the following is true of anautogenous development

- a. blood meal is required
- b. blood meal is not required
- c. more common in ticks and mites
- d. occurs only in larval stages

18. Diapause occurs when

- a. hatching conditions of vectors is unsuitable
- b) B)larval stages undergo quiescence
- a. there is an environmental stimuli to hatching of eggs
- c) D)all of the above

19. Toxorhynchitae:

- a. are tick spp
- b. are tsetse fly spp
- c. are mosquito spp
- d. are black fly spp.

20. Anthropogenic vectors:

- a. feed on animals to obtain blood
- b. feed on humans for blood
- c. are indiscriminate in feeding on blood
- d. all of the above.

SECTION B: ANSWER ALL QUESTIONS- 20 MARKS

1. Briefly, outline the life cycle of tsetse flies (*Glossinaspp*) [5 marks]
2. Outline the medical importance of *Simulium*spp [5 marks]
3. Describe the breeding sites of phlebotomites [5 marks]
4. Draw a well labelled diagram of a mosquito head [5 marks]

SECTION C: ANSWER ANY TWO- 30 MARKS

1. Explain in details the external morphology of mosquitoes [15 marks]

2. Write short notes on the general control of vectors [15 marks]
3. Discuss in detail the medical importance of ticks [15 marks]