



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: TUESDAY, 9:00 – 12:00 P.M.

DATE: 10/05/2022

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
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- 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
 - Atelocerata;
 - Crustacea;
 - Acari;
 - Scorpiones;
 - 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) *Mansonia* 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. *Oncocerca volvulus* is transmitted by

- a) *Simulium damnosum*
- b) *Glossina palpalis*
- c) *Aedes aegypti*
- d) reduviid bug

9. The following is true about black flies (Simuliidae) 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
- they lay between 30-70 eggs singly per oviposition
 - oviposition is species dependent
 - there are four larval instars
 - they can fly long distances
11. Tsetse flies can be best described as under
- both males and females transmit trypanosomiasis
 - only females transmit trypanosomiasis
 - both males and females suck blood
 - all the above
12. Which of the following is larviparous
- tsetse flies
 - sand flies
 - black flies
 - reduviid bug
13. ticks can be differentiated from mites by
- looking at their colour
 - their biting habits
 - their size and serrated hypostome
 - none of the above
14. Which of the following is not true about argasidae
- they are responsible for babesiosis
 - they cause ehrlichiosis
 - are vectors of tularemia
 - cause East coast fever in humans
15. all of the following are true of mosquitoes except
- they are present in Antarctica
 - occur throughout tropical and temperate regions
 - inhabit 1250M below sea level
 - can survive 5500M above sea level
16. Which of the following feature does not distinguish mosquitoes from other flies
- conspicuous forward projecting proboscis
 - numerous scales in the thorax, legs, abdomen and wings
 - fringe of scales along the posterior margin of wings
 - have four appendages
17. Which of the following is true of anautogenous development
- blood meal is required
 - blood meal is not required
 - more common in ticks and mites
 - 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 (*Glossina*spp) [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]