



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2019/2020

THIRD SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF

PHARMACY (BPharm Level II)

HMM 230: MEDICAL MICROBIOLOGY II

DATE: Thursday, 1st April 2021

TIME: 2.00 p.m. - 5.00 p.m.

INSTRUCTIONS

- i) Answer ALL Questions
- ii) Section A (MCQ): Choose the correct answer
- iii) Answer questions in sections B and C in the booklet provided

SECTION A: Multiple Choice Questions (30 marks)

1. Your patient is a 30 year old woman with a non-bloody diarrhea for the last 14 hours. Which of the following organisms is LEAST likely to cause this illness?
 - a) *Clostridium difficile*
 - b) *Streptococcus pyogenes*
 - c) *Shigella dysenteriae*
 - d) *Salmonella enteritidis*
2. Of the organisms listed below, which one is them MOST frequent bacterial cause of pharyngitis?
 - a) *Staphylococcus aureus*
 - b) *Streptococcus pneumoniae*
 - c) *Streptococcus Pyogens*
 - d) *Neisseria meningitidis*
3. ONE the following statements concerning the mechanism of action of antimicrobial drugs is FALSE:
 - a) Vancomycin acts by inhibiting peptidoglycan synthesis
 - b) Quinolones, such as ciprofloxacin act by inhibiting the DNA gyrase of bacteria

- c) Erythromycin is a bactericidal drug that disrupts cell membrane by detergent like action.
 - d) Aminoglycosides such as streptomycin are bactericidal drugs that inhibit protein synthesis
4. Infection by dermatophyte is MOST associated with:
- a) Intravenous drug use
 - b) Inhalation of the organism from contaminated bird feces
 - c) Adherence of the organism to perspiration moist skin
 - d) Fecal-oral transmission
5. Each of the following statements concerning *Candida albicans* is correct EXCEPT:
- a) *C. albicans* is a budding yeast that forms pseudohyphae when it invades tissue
 - b) *C. albicans* is transmitted primarily by respiratory aerosol
 - c) *C. albicans* cause thrush
 - d) Impaired cell mediated immunity is an important predisposing factor to disease.
6. What is the minimum number of phage(s) that can initiate the development of a plaque in a bacterial lawn?
- a) 1
 - b) 100
 - c) 5000
 - d) 10000
7. Which of the following pathways is involved in the transmission of new reassorted influenza lawn?
- a) A reassortment of two avian viruses that is directly transmitted from birds to human.
 - b) A reassortment of an avian virus and a human virus that is transmitted from a pig.
 - c) A reassortment of two pig viruses that is directly transmitted from pigs to humans.
 - d) A reassortment of a human virus and a pig virus that is transmitted from a bird.
8. ONE of the following statements is FALSE about gastrointestinal infections associated with rotavirus, norovirus and astroviruses.
- a) Vaccine is only available for rotavirus

- b) Once infected antibiotics can be prescribed to alleviate diarrhea
 - c) Illness from astrovirus infection is less severe than in rotavirus and norovirus
 - d) Norovirus equally infect people of all ages, but rotavirus mainly infect children and the elderly.
9. The mechanism of action for acyclovir is:
- a) It inhibits virus entry
 - b) Prevent viral egress
 - c) Inhibits the replication of dsDNA viruses
 - d) Inhibits the replication of dsRNA viruses
10. A 20-year-old KU male student comes to your clinic and presents with fever, anorexia, malaise, dark urine and upper abdominal discomfort. The liver is palpable below the right costal margin. Laboratory studies are negative for HBsAb, and positive for HBsAg, Anti-HBc IgM, and HBeAg. Which of the following will most likely change in his serologic findings when this patient enters the window period?
- a) He will become HBsAg-negative
 - b) He will become HBcAg-positive
 - c) He will become HBeAg-negative
 - d) He will become HBsAb-positive
11. ONE of the following protozoa is a haemoflagellate.
- a) *Plasmodium falciparum*
 - b) *Leishmania donovani*
 - c) *Giardia lamblia*
 - d) *Trichomonas vaginalis*
12. The infective stage of Plasmodia species in human is:
- a) Gametocytes
 - b) Sporozoites
 - c) Hypnozoites
 - d) Merozoites

13. ONE of the following helminths is associated with rectal prolapse.

- a) Enterobius vermicularis
- b) Strongyloides stercoralis
- c) Ancylostoma duodenale
- d) Trichuris trichuria

14. ONE of the following parasites can be identified by Xenodiagnoses.

- a) Trypanosoma cruzi
- b) Trichomonas hominis
- c) Trichiuris trichiura
- d) Trypanosoma brucei

15. ONE of the following drugs is widely used in control of fascioliasis

- a) Ivermectin
- b) Niclosamide
- c) Metronidazole
- d) Triclabendazole

16. Cytozoic parasites live in:

- a) Host cells
- b) Tissue of the host, but not within cells
- c) Cavities of the host
- d) Lumen of the gut and blood vessels

17. ONE of the following statements is NOT true about tsetse flies

- a) Are larviparous
- b) Are holometabolous
- c) Transmit American Trypanosomiasis
- d) Both males and females are avid blood feeders.

18. The egg of *Schistosoma mansoni*:
- a) Has lateral spine
 - b) Is unembryonated
 - c) has terminal spine
 - d) Is infective.
19. ONE of the following is the cardinal method for prevention of transmission of nematodes
- a) Proper medication
 - b) Proper clinical diagnosis
 - c) Proper human behavior of excreta disposal
 - d) Mass chemotherapy with Praziquantel
20. The drug of choice for the treatment of the late stage Human African Trypanosomiasis is
- a) Melarsoprol
 - b) Amphotericin B
 - c) Sodium stibogluconate
 - d) Suramin
21. Pediculosis is a human disease transmitted by:
- a) Human fleas
 - b) Human lice
 - c) Human bedbugs
 - d) Human jiggers.
22. All of the following organisms are associated with arthropods **EXCEPT**
- a) *Ancylostoma duodenale*
 - b) *Wuchereria bancrofti*
 - c) *Plasmodium falciparum*
 - d) *Trypanosoma rhodesiense*
23. All of the following parasites cause anaemia in the human host **EXCEPT**
- a) *Ascaris lumbricoides*
 - b) *Wuchereria bancrofti*

- c) *Trypanasoma brucei*
- d) *Necator americanus*

24. ONE of the following vectors is associated with transmission of typhus fever.

- a) *Tunga penetrans*
- b) Glossina fly
- c) *Simulium damnosum*
- d) Copepods

25. All of the following terms are true of *Pediculus humanus* EXCEPT

- a) Order - Mallophaga
- b) Hemimetabolous
- c) They are segmented
- d) They have five instars.

26. River blindness is transmitted by one of the following vectors.

- a) Tsetse fly
- b) Sand fly
- c) Black fly
- d) Horse fly.

27. ONE of the following insects may transmit yellow fever to humans.

- a) *Aedes aegypti*
- b) *Xynopsylla cheopis*
- c) *Pulex irritans*
- d) *Pediculus humanus*

28. *Phthirus* pubis refers to

- a) ^{Pubic} ~~Public~~ louse
- b) Body louse
- c) Head louse
- d) Blood sucking flies.

29. Loa loa worm disease may be transmitted by one of the following arthropods.

- a) Filth flies
- b) Deer flies
- c) Tsetse flies
- d) Phlebotomus flies

30. *Rickettsia typhi* may be transmitted to human by one of the following insects.

- a) *Xenopsylla cheopis*
- b) *Dermatobia homis*
- c) *Pulex irritans*
- d) *Tunga penetrans*

SECTION B: Short Answer Questions (50 marks)

1. Outline factors that predispose a person to nosocomial infections. (5 marks)
2. State five direct microscopic techniques used in diagnosis of fungal infections. (5 marks)
3. Explain briefly the pathogenesis of cryptococcosis (5 marks)
4. Using a diagram, briefly explain the Baltimore classification system of viruses. (5 marks)
5. Briefly explain how host viral immune responses result in hemorrhage syndrome seen in persons infected with Ebola virus. (5 marks)
6. i) List the host cells that are targeted by Epstein - Barr Virus (1 mark)
ii) Explain briefly the two replication cycles of Epstein-Barr Virus in these cells. (4 marks)
7. A bilaterally symmetrical pear-shaped organism was isolated from a greenish yellow vaginal discharge. On close examination, the organism was found to have an undulating membrane, a cytostome and several flagella. No cysts were found in the discharge.

Give its:

- i) Identify (1 mark)
 - ii) Class (1 mark)
 - iii) Clinical disease (1 mark)
 - iv) Mode of transmission (1 mark)
 - v) Treatment (1 mark)
8. Giving an example in each case, state five direct effects of arthropods on human hosts. (5 marks)

(5 marks)

9. With reference to the life cycle stages, state the control ^{of} Schistosoma haematobium infection. (5 marks)
10. a) Define an intermediate host and definitive host. (3 marks)
- b) State the definitive and intermediate host in trichinellosis and filariasis (2 marks)

SECTION C: Essay Questions (40 marks)

1. a) Giving examples in each case, explain the mode of action of antimicrobial agents. (10 marks)
- b) Name five steps in HIV lifecycle that have been exploited by researchers to generate the current HIV drugs. Additionally, provide one example of antiretroviral drug that targets each of these steps.
2. a) Describe *Taenia saginata* under the following headings
- b) Describe symbiosis in parasitic infections and show the different aspects of symbiosis (10 marks)
- Morphology (2 marks)
 - Transmission and Life cycle (6 marks)
 - Management (2 marks)