



KENYATTA UNIVERSITY

EXAMINATION FOR THE DEGREE OF BACHELOR OF PHARMACY

HMM 230: MEDICAL MICROBIOLOGY II

3rd TRIMESTER 2021/2022

TIME: 3 HOURS

INSTRUCTIONS

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

SECTION A: MULTIPLE CHOICE QUESTIONS (30 X 1 = 30 MARKS)

1. Anal pruritis and scratching is associated with
 - a. *Ancylostoma duodenale*
 - b. *Necator americanus*
 - c. *Trichuris trichiura*
 - d. *Enterobius vermicularis*
2. One of the following parasitic diseases does not match with the parasite that causes them.
 - a. *Trichomonas vaginalis* – Trichomoniasis
 - b. *Plasmodium falciparum* – Malaria
 - c. *Giardia lamblia* – Amoebiasis
 - d. *Trypanosoma brucei* – Trypanosomiasis
3. One of the following is not a Leishmanial clinical disease
 - a. Visceral leishmaniasis
 - b. Cutaneous leishmaniasis
 - c. Mucocutaneous leishmaniasis
 - d. Cerebral leishmaniasis

4. One of the following stages is not a developmental stage in human trypanosomiasis
 - a. Amastigote stage
 - b. Cytomastigote stage
 - c. Epimastigote stage
 - d. Trypomastigote stage
5. Protozoans reproduce asexually by
 - a. Fragmentation
 - b. Meiosis
 - c. Schizogony
 - d. Polymorphism
6. *Cimicidosis* refers to infestation with
 - a. Maggots
 - b. Bedbugs
 - c. Fleas
 - d. Lice
7. The following are species of human lice except
 - a. *Pediculus humanus*
 - b. *Pediculus irritans*
 - c. *Phthirus pubis*
 - d. *Pediculus capitis*
8. The technique by which uninfected bugs are allowed to feed on a patient's blood then the gut contents are examined for parasites 2-4 weeks later is called
 - a. Secondary Parasite Identification
 - b. Non-Invasive Parasitic Larvae Examination
 - c. Parasitic-Host Typing
 - d. Xenodiagnosis
9. Leishmaniasis is spread by
 - a. Blackfly
 - b. Sandfly
 - c. Blowfly
 - d. Horsefly
10. One of the following arthropod vectors causes myiasis in vertebrates:
 - a. *Pulex irritans*
 - b. *Sarcoptes scabiei*
 - c. *Simulium damnosum*
 - d. Blow fly
11. Enteroinvasive *E. coli* (EIEC) is predominantly found in developing countries infecting children and travelers. ONE of the following infections is similar to EIEC infection
 - a. Bacillary dysentery
 - b. Shigellosis
 - c. Typhoid
 - d. Enteric fever

12. A 32-year-old woman develops profuse diarrhea. She has no symptoms other than the diarrhea with manifestations of fluid and electrolyte loss. The most likely cause of her diarrhea is
- Enterotoxigenic *Escherichia coli*
 - Salmonella typhimurium*
 - Vibrio cholerae*
 - Shigella dysenteriae*
13. ONE of these Gram-negative bacteria commonly causes urinary tract infections
- Neisseria gonorrhoeae*
 - Klebsiella pneumoniae*
 - Escherichia coli*
 - Enterobacter cloacae*
14. The causative agent of chancroid, one of the most common sexually transmitted disease and is characterized by painful lesions and genital ulcers is
- Neisseria gonorrhoeae*
 - Haemophilus haemolyticus*
 - Haemophilus ducreyi*
 - Neisseria meningitidis*
15. B lactam ring is present in
- Penicillin
 - Erythromycin
 - Tetracyclines
 - Chloramphenicol
16. One of the following differential stains is used to stain melanin in fungal cell walls
- Fontana-Masson
 - Periodic acid Schiff
 - Giemsa
 - Hematoxylin and Eosin
17. Each of the following statements concerning *Candida albicans* is correct except
- Candida albicans* is a budding yeast that forms pseudohyphae when it invades tissue
 - Candida albicans* causes thrush
 - Candida albicans* is transmitted primarily by respiratory aerosol
 - Impaired cell mediated immunity is an important predisposing factor to candidiasis
18. Aspergillosis is recognized in tissue by the presence of
- Metachromatic granules
 - Pseudohyphae
 - Septate hyphae
 - Budding cells
19. Tinea nigra is caused by
- Hortaea werneckii*
 - Malassezia furfur*
 - Piedraia hortae*
 - Trichosporum beigelli*

20. Fungal cells that reproduce by budding are seen in the infected tissues of patients with:
 - a. Candidiasis, cryptococcosis, and sporotrichosis
 - b. Mycetoma, Candidiasis and mucormycosis
 - c. Tinea corporis, tinea unguium, and tinea versicolor
 - d. Sporotrichosis, mycetoma and aspergillosis
21. One of the following symptoms distinguishes monkey pox from chicken pox
 - a. Myalgia
 - b. Lymphadenopathy
 - c. Fever
 - d. Aches
22. Glycoprotein spikes protruding from the outer surface of viral envelopes function as
 - a. Toxins.
 - b. Cell lysis factors.
 - c. Factors that bind to host cells
 - d. Factors needed for site specific recombination.
23. One of the following statements is incorrect with regards to Rotavirus vaccines
 - a. RotaTeq is given in three doses
 - b. Rotarix is given in two doses
 - c. Vaccines can be interchanged
 - d. RotaTeq was developed from a live attenuated virus
24. The main role of low endosomal pH in the entry of viruses into the host cells is to
 - a. Causes destabilization of capsid protein
 - b. Stabilize enzymatic activity of DNA-dependent RNA polymerase
 - c. Induces the formation of clathrin protein around the vesicle
 - d. Allow the virus to properly bind to its receptor
25. Treatment of influenza does not include
 - a. Annual vaccination
 - b. Isolation and quarantine of infected persons
 - c. Hydration
 - d. Aspirin administration
26. Mechanism of action for acyclovir is to
 - a. Inhibits virus entry
 - b. Prevent viral egress
 - c. Inhibits the replication of dsDNA viruses
 - d. Inhibit the replication of dsRNA viruses
27. Immune cells targeted by Human Cytomegalovirus is
 - a. Monocytes
 - b. T cells
 - c. NK cells
 - d. Dendritic cell
28. One of the following statements is false with regard to SIVcpz pathogenesis
 - a. Chimps have developed mild immunity to the virus
 - b. Transmission rates per coital act is similar to HIV in humans
 - c. Has close sequence similarities to HIV
 - d. Harbored by *Pan troglodytes troglodytes*

29. Hemophiliacs were at increased risk to contracting HIV in 1980's due to
 - a. Weak immune response
 - b. Frequent need of unscreened blood transfusion
 - c. Most of them reside in Africa
 - d. Most of them are sexually active
30. The following factors facilitated the spread of HIV except
 - a. Colonization
 - b. Religion
 - c. Health programs
 - d. Truck drivers

SECTION B: SHORT ANSWER QUESTIONS (50 MARKS)

1. State the main habitats of the following parasites in the human body (5 marks)
 - a. *Ascaris lumbricoides*
 - b. *Trichinella spiralis*
 - c. *Trichiuris trichiura*
 - d. *Necator americanus*
 - e. *Strongyloides stercoralis*
2. State five types of hosts in Parasitology giving examples of each. (5 marks)
3. a) State the two key distinctions between Protozoan and Helminthic parasites (2 marks)
 - b) State three major groups to which protozoan parasites belong (3 marks)
4. State five harmful effects of arthropod vectors on humans (5 marks)
5. State five ways of detecting pediculosis in humans (5 marks)
6. State five (5) reasons why arthropods are diversified both in numbers and species (5 marks)
7. Enumerate five risk factors for the acquisition of skin and soft tissue infections (5 marks)
8. Outline five virulence factors of fungi (5 marks)
9. a) Name two vaccines used to prevent against the monkey pox virus (2 marks)
 - b) Enumerate three drugs that can be used to treat monkey pox virus (3 marks)
10. a) Distinguish between antigenic drift and antigenic shift as it pertains to influenza virus pathogenesis (4 marks)
 - b) What type of reassortment lead to the H2N2 influenza virus (1 mark)

SECTION C: ESSAY QUESTION (40 MARKS)

1. With regard to *Plasmodium falciparum*:
 - A) Briefly explain the intrinsic life cycle (5 marks)
 - b) Explain the clinical manifestations (4 marks)
 - c) State the treatment measures available (1 mark)
2. Explain the use of allelochemicals in the control of arthropod vectors of medical importance (10 marks)

3. Explain the laboratory diagnosis, identification and treatment of Candidiasis (10 marks)
4. Discuss the life cycle of coronavirus from entry to exit. Make sure to mention how mRNA is generated based on Baltimore classification (10 marks)