

65



(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2023/2024

ACADEMIC YEAR

SECOND YEAR FIRST SEMESTER

MAIN EXAMINATION

FOR BACHELOR OF SCIENCE IN NURSING DEGREE

COURSE CODE: NUR 213

**COURSE TITLE: MEDICAL MICROBIOLOGY AND
PARASITOLOGY**


DATE: 6/12/2023

TIME: 9AM-12PM

INSTRUCTIONS TO CANDIDATES

Answer ALL Section one (1) MULTIPLE CHOICE QUESTIONS and ALL Section two (2) SHORT ANSWER QUESTIONS and any one (1) section THREE (3) LONG ANSWER QUESTION.

TIME: 3 Hours

This paper consists of 7 printed pages. Please Turn Over 
KIBU observes ZERO tolerance to examination cheating

SECTION 1 (MULTIPLE CHOICE QUESTIONS) (50 MARKS)

- Q1. In which age group is respiratory syncytial virus cause severe infections?
- School-age children
 - Adolescents
 - Infants in the first year of life
 - Elderly adults
- Q2. What is a potential risk associated with hepatitis B infection?
- Risk for respiratory infections
 - Risk for bone deformities
 - Risk for cirrhosis and hepatocellular carcinoma
 - Risk for heart disease
- Q3. Which microorganisms contain the presence of lipopolysaccharide in their cell walls?
- Algae
 - Fungi
 - Gram-negative bacteria
 - Gram-positive bacteria
- Q4. Smallpox disease was officially declared eradicated in which year?
- 1977
 - 1980
 - 1990
 - 2000
- Q5. What is the key function of a vaccine in relation to the body's immune system?
- To weaken the immune system
 - To stimulate the immune system to recognize and destroy disease agents
 - To introduce live, virulent microorganisms into the body
 - To provide immediate treatment for existing diseases
- Q6. What is the primary purpose of a prophylactic vaccine?
- To treat a disease that has already occurred
 - To prevent or ameliorate the effects of a future infection
 - To stimulate the immune system to destroy a disease
 - To provide full sterilizing immunity
- Q7. The scientist who used the Chamberland filter to show that the infectious agent of the tobacco mosaic virus could pass through it was _____?
- Dmitry Ivanovsky
 - Adolf Mayer
 - Martinus Beijerinck
 - Louis Pasteur
- Q8. In 1881 _____ discovered yellow fever virus which is transmitted by mosquitoes?
- Martinus Beijerinck
 - Friedrich Loeffler
 - Carlos Finlay

d) Walter Reed

Q9. What is the primary mode of transmission for enteroviruses?

- a) Respiratory droplets
- b) Sexual contact
- c) Oral-fecal route
- d) Bloodborne transmission

Q10. Which viral species is mainly responsible for causing the common cold and exacerbations of asthma and chronic bronchitis?

- a) Rhinovirus
- b) Enterovirus
- c) Parechovirus
- d) Coxsackie virus

Q11. Who is credited with the invention of vaccination?

- a) Watson
- b) Jenner
- c) Crick
- d) Pasteur

Q12. How is hepatitis B primarily transmitted?

- a) Through respiratory droplets
- b) By consuming contaminated food or water
- c) Parenterally, sexually, or from mother to baby
- d) Through casual contact with infected individuals

Q13. The process that ensures the complete destruction of all living cells, viruses, and spores from an object is referred to as _____?

- a) Disinfection
- b) Sterilization
- c) Antisepsis
- d) Pasteurization

Q14. What is the main reservoir for *Mycobacterium leprae*, aside from humans?

- a) Wild armadillos
- b) Rats
- c) Domestic dogs
- d) Monkeys

Q15. Which condition is primarily associated with *K. pneumoniae*?

- a) Urinary tract infections
- b) Chest infection and bronchopneumonia
- c) Surgical wound infections
- d) Gastrointestinal infections

Q16. Which *Klebsiella* species is commonly associated with hospital-acquired infections of the wound and urinary tract, and may also infect immunocompromised patients?

- a) *K. pneumoniae*
- b) *K. oxytoca*

- c) *K. aerogenes*
- d) *K. malnourished*

Q17. Which of the following biochemical processes can be used to identify *Shigella* species?

- a) H₂S production
- b) Urease production
- c) Nitrate reduction to nitrites
- d) Lysine decarboxylase production

Q18. The following is one of the clinical presentations of shigellosis?

- a) Large volume of watery diarrhea
- b) Severe dehydration with no other symptoms
- c) Dysentery with a small volume of bloody stools
- d) Persistent vomiting with no diarrhea

Q19. The following is a strongly suggestive sign of shigellosis that can aid in diagnosis?

- a) Presence of fresh blood in the urine
- b) Neutrophils in fecal smears
- c) Elevated lymphocyte count in the blood
- d) Elevated platelet count in the blood

Q20. Which component of the bacterial cell envelope is specifically associated with Gram-negative bacteria and is essential in conferring pathogenicity?

- a) Periplasm
- b) Cytoplasmic membrane
- c) Outer membrane
- d) Cell wall

Q21. The antibiotics commonly used to treat severe dysentery caused by *Shigella* infections?

- a) Penicillin and erythromycin
- b) Ampicillin and ciprofloxacin
- c) Tetracycline and doxycycline
- d) Azithromycin and metronidazole

Q22. The scientist that discovered bacteria using a single-lens microscope and called them "animalcules"?

- a) Louis Pasteur
- b) Antonie van Leeuwenhoek
- c) Robert Koch
- d) Joseph Jackson Lister

Q23. Who is known for discovering that some bacteria could be stained blue with crystal violet?

- a) Louis Pasteur
- b) Robert Koch
- c) Hans Christian Gram
- d) Joseph Jackson Lister

Q24. Which term describes bacterial cells that are round in shape?

- a) Bacillus
- b) Coccobacilli
- c) Cocci
- d) Fusiform

Q25. The cellular arrangement of most clinically important bacteria in terms of their size?

- a) 1 to 3 μm in width and 0.25 to 1 μm in length
- b) 0.25 to 1 μm in width and 1 to 3 μm in length
- c) 1 to 3 μm in both width and length
- d) 0.25 to 1 μm in both width and length

Q26. How do Gram-positive bacteria typically appear when subjected to the Gram stain?

- a) Stain pink to blue
- b) Stain deep blue
- c) Stain deep red
- d) Stain yellow to red

Q27. What is the primary component of the cell wall in both Gram-positive and Gram-negative bacteria?

- a) Peptidoglycan
- b) Lipopolysaccharide
- c) Cellulose
- d) Chitin

Q28. Which of the following antigen is NOT possessed by salmonella bacteria.

- a) O antigen
- b) H antigen
- c) iV antigen
- d) Vi antigen

Q29. What is considered the most effective control strategy for preventing shigellosis transmission?

- a) Treatment with antibiotics
- b) Avoiding contaminated water sources
- c) Personal hygiene and handwashing
- d) Vaccination

Q30. What type of structure is found scattered around the lipopolysaccharide layer in the outer membrane of Gram-negative bacteria?

- a) Ribosomes
- b) Flagella
- c) Porins
- d) Plasmids

Q31. What the alternative treatment for Pityriasis versicolor other than ketoconazole shampoo ?

- a) Hydrocortisone cream

- b) Zinc oxide lotion
- c) Selenium sulfide lotion or zinc pyrithione shampoo
- d) Acetaminophen solution

Q32. The primary symptom of white piedra infection on the hair shaft caused by *Trichosporon beigeli*?

- a) Reddish nodules along the hair shaft
- b) Greyish-white nodules
- c) Hard, black nodules
- d) Greenish discoloration of the hair

Q33. The regions of the body that white piedra is localized, other than face and pubic hair?

- a) Fingernails and toenails
- b) Scalp and axilla
- c) Elbows and knees
- d) Trunk and groin

Q34. The primary site of infection for dimorphic systemic mycoses following the inhalation of conidia?

- a) Skin
- b) Gastrointestinal tract
- c) Pulmonary
- d) Urinary tract

Q35. How do dimorphic fungal pathogens overcome the physiological and cellular defenses of the normal human host in dimorphic systemic mycoses?

- a) By producing toxins
- b) By changing their morphological form
- c) By secreting enzymes
- d) By inducing fever

Q36. What is the primary focus of mycology in the field of microbiology?

- a) The study of bacteria and viruses
- b) The study of fungi, including their genetic and biochemical properties
- c) The study of plants and their interactions with fungi
- d) The study of human diseases caused by fungi

Q37. Before the advances in DNA technology, fungi were assumed to be _____?

- a) Fungi were considered a type of plant.
- b) Fungi were known to be eukaryotes with unique cell walls.
- c) Fungi were considered a type of animal.
- d) Fungi were believed to be a form of bacteria.

Q38. Which of the following statements is true about a virion?

- a. A complete virus particle that consists of an RNA core with a protein coat sometimes with external envelopes.
- b. A complete virus particle that consists of a DNA core with a protein coat sometimes with external envelopes.
- c. A complete virus particle that consists of an RNA or DNA core with a protein coat sometimes with external envelopes.

- d. A complete virus particle that consists of an RNA or DNA core without a protein coat sometimes with external envelopes.

Q39. The following is an acute viral infection _____?

- a. Mumps
- b. Hepatitis B
- c. HIV
- d. Herpes simplex

Q40. The formal study of fungi begun in _____?

- a) In ancient times, during the Greek philosopher's era
- b) In the 18th century
- c) In the early 1830s
- d) After the discovery of DNA in the 20th century

Q41. How do amoebae primarily move?

- a) By long, whip like flagellae
- b) Using rows of cilia
- c) By means of pseudopodia
- d) Through synchronized wavelike motion of cilia

Q42. Which subdivision of the Phylum Protozoa lacks specialized organelles for motility?

- a) Sarcodina
- b) Mastigophora
- c) Ciliata
- d) Sporozoa

Q43. How are most protozoal infections transmitted among humans?

- a) Through the inhalation of contaminated air
- b) Via insect bites and stings
- c) Through sexual transmission
- d) Mainly through the fecal-oral route and fecally contaminated food or water

Q44. Where can free-living protozoal species be found in the environment?

- a) In the atmosphere
- b) In deep underground soil
- c) In marine and freshwater habitats
- d) Only in human intestines

Q45. Through which route can parasites enter the human body?

- a) Mouth
- b) Skin
- c) Respiratory tract
- d) All of the above

Q46. Which species of *Schistosoma* causes urinary schistosomiasis?

- a) *Schistosoma mansoni*
- b) *Schistosoma haematobium*
- c) *Schistosoma japonicum*
- d) *Schistosoma intercalatum*

Q47. The common name for lymphatic filariasis caused by *Wuchereria bancrofti* and *Brugia malayi*?

- a) Elephantiasis
- b) Malaria
- c) Dengue
- d) Typhoid

Q48. Which of the following is a potential mode of transmission for *Entamoeba gingivalis*?

- a) Airborne transmission
- b) Vector-borne transmission
- c) Contact with fomites and kissing
- d) Sexual transmission

Q49. The form of *Balantidium coli* that is infective, and which part of the body does it reside?

- a) Trophozoite, in the lumen of the small intestine
- b) Cyst, in the lumen of the large intestine
- c) Trophozoite, in the submucosa of the large intestine
- d) Cyst, in the lumen of the small intestine

Q50. What clinical manifestation is commonly associated with onchocerciasis?

- a) Elephantiasis of the external genitalia
- b) Skin fibrous nodules (onchocercomata)
- c) Corneal opacity and optic atrophy
- d) Skin hypo- or hyper-pigmentation with dermatitis

SECTION 2 (SHORT ANSWER QUESTIONS) (30 MARKS)

- Q1. State the general characteristics of genus *Klebsiella* (6mks)
- Q2. Describe the pathogenesis of shigellosis (6mks)
- Q3. State the characteristics of an ideal Disinfectant (6mks)
- Q4. Describe the two forms of fungi (6mks)
- Q5. Describe the pathology of *Trichomonas vaginalis* infection (6mks)
- Atleast shpuld include students describing life cycles of common parasites

SECTION 3 (LONG ANSWER QUESTIONS) (20 MARKS)

- Q1. Discuss the ways by which viral infections can be prevented and or controlled (20mks)
- Q2. Elucidate the life cycle and pathogenicity of Guinea worm (20mks)