



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## UNIVERSITY EXAMINATIONS 2023/2024

SECOND YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE OF  
BACHELOR OF SCIENCE IN MEDICAL MICROBIOLOGY

### HMM 3222: PRINCIPLES OF MEDICAL VIROLOGY

DATE: APRIL 2024

TIME: 2 HOURS

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#### INSTRUCTIONS:

Part I: Multiple Choice Questions (MCQs)

Part II: Short Answer Questions

Part III: Long Answer Questions

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1. The following diseases are caused by enteroviruses EXCEPT ONE:
    - a) Pleurodynea
    - b) Glomerulonephritis
    - c) Paralysis
    - d) Meningitis
    - e) Pericarditis
  2. The viral pathogenesis, circle the WRONG STATEMENT
    - a) Spread of virus in the body through different route e.g. Blood, Saliva
    - b) Humoral immunity but not cell mediated immunity (CMI) act against viruses
    - c) Inclusion bodies produced by viruses can be single or many
    - d) In cytotoxic infection, cell usually die
    - e) Several RNA viruses can cause persistent infection
  3. In viral properties circle the WRONG STATEMENT:
    - a) The viral envelope contain Lipoprotein
    - b) Viruses can replicate in non-living media
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- c) Viruses need live cells to grow
  - d) Viruses have no ribosome
  - e) Contain either RNA or DNA
4. Regarding poliovirus, circle the WRONG STATEMENT:
- a) Two vaccine are available
  - b) There is no vaccine for polio
  - c) Can be isolated from throat swab or stool
  - d) Sub-clinical infection are common
  - e) Three serotypes exist
5. In structure and classification of viruses, circle the WRONG STATEMENT: c A)  
Icosahedral symmetry have 12 vertices
- a) Helical symmetry such as Othomyxo virus
  - b) The viruses contain protein and nuclic acid
  - c) Transcription is the formation of protein
  - d) Translation is the formation of protein
6. In HCV and HBV, circle the correct answer:
- a) HBV is dsRNA
  - b) HCV is ssRNA
  - c) Both viruses can grow in cell culture
  - d) HBV has not chronicity complication
  - e) Hemodialysis but not hemophiliacs are at risk for HCV
7. The following is INCORRECT viral hepatitis.
- a) HCV-Abs can't be diagnosed in the lab. by EIA test
  - b) Risk factors for hepatocellular carcinoma by HCV are: liver disease, alcohol, age
  - c) HCV-DNA integrate into liver cell chromosomes in most I-ICC patients.
  - d) Cell entry and replication of delta hepatitis (HDV) take place by the presence of HBV
  - e) The RNA and protein of HDV is surrounded by HBsAg
8. The human diploid cell vaccine is used for prevention of:
- a) Rabies
  - b) Varicella
  - c) Hepatitis A
  - d) Yellow fever
  - e) RSV infection
9. The following viral diseases are characterized by maculopapular rash EXCEPT ONE:
- a) Measles
  - b) Rubella
  - c) Erythema infectiosum
  - d) Exanthem subitum
  - e) Herpangina
10. The following statements about herpesviruses are true EXCEPT ONE:
- a) There are eight human herpes viruses
  - b) All are morphologically identical
  - c) All are DNA-viruses

- d) All cause vesicular rash
  - e) All remain latent inside the human body after primary infection
11. The following viruses are associated with congenital infection EXCEPT ONE:
- a) Rubella virus
  - b) CMV
  - c) Parvovirus B-19
  - d) Varicella E) RSV
12. The following statements regarding varicella and zoster are true EXCEPT ONE:
- a) They are two diseases caused by one virus
  - b) Varicella is the primary illness, whereas zoster is the recurrent form of the disease
  - c) They have the same clinical picture
  - d) Varicella is a disease of children, while zoster is a disease of elderly & immunosuppressed.
  - e) Varicella can be prevented by vaccination
13. The following statements regarding HIV are true EXCEPT ONE:
- a) It belongs to the family reteroviridae
  - b) It is an oncovirus
  - c) It is associated with the enzyme reverse transcriptase
  - d) The virus is present in all body fluids
  - e) The sexual route is the main mode of transmission
14. The following viruses are transmitted by the fecal-oral route EXCEPT ONE:
- a) HAV
  - b) HEV
  - c) HDV
  - d) Entero
  - e) Astro
15. The following viruses can be transmitted sexually EXCEPT ONE:
- a) HIV
  - b) HBV
  - c) HSV-2
  - d) Adeno
  - e) Rubella
16. For serological diagnosis of viral diseases blood samples should be collected at:
- a) Two weeks after onset of the disease
  - b) After recovery from the disease
  - c) The acute phase
  - d) Convalescent period
  - e) Soon after onset
17. Most DNA viruses replicate and assemble in the:
- a) Cytoplasm
  - b) Nucleus
  - c) Chromosome
  - d) Cell membrane

- e) Ribosome
18. Enteroviruses differ from rhinoviruses mainly in their:
- Type of nucleic acid
  - Size
  - Capsid shape
  - Ability to survive acidic conditions
  - Strandedness
19. Viruses that can remain latent (usually in neurons) for many years are most likely:
- Togaviruses
  - Herpesviruses
  - Enteroviruses
  - Rhinoviruses
  - Retroviruses
20. which of the following is not an RNA virus?
- Retrovirus
  - Enterovirus
  - Rhabdovirus
  - Adenovirus
  - Rubellavirus

**SECTION B-SHORT ANSWER QUESTIONS. Answer ALL Questions**

- Give a brief comparison between enveloped viruses and naked viruses. (5 Marks)
- Describe the relationship between WBC count and HIV infection. (5 Marks)
- Summarize the replication of parvoviruses. (5 Marks)
- Write short notes on Bacteriophage. (5 Marks)
- Distinguish between abortive and productive viral infections. (5 Marks)
- Describe transmission and clinical features of zika virus infections. (5 Marks)

**SECTION-C LONG ANSWER QUESTIONS Answer TWO Questions**

- Discuss the transmission, symptomatology and laboratory diagnosis of Coronaviruses. (20 Marks)
- Discuss the etiology, diagnosis and prevention of HEPATITIS B. (20 Marks)
- Mrs Makena is a 29-year-old woman who is 13 weeks pregnant. She presented herself to the doctor with a red rash, which she noticed about 24 hours ago. She reports a headache and



feeling nauseous for two days before the rash appeared. On examination, she is pyrexial. She attended the Antenatal Clinical at her local hospital for a routine appointment five days ago.

- a) List all the possible causes of Mrs Makena's symptoms. (6 Marks)
- b) Which samples should be collected from her and which tests should be carried out on them? (14 Marks)

