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University Examinations 2024/2025

THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF MEDICAL LABORATORY SCIENCES

HML 3311: PRINCIPLES OF MEDICAL VIROLOGY

DATE: JANUARY 2025

TIME: 3 HOURS

INSTRUCTIONS:

Answer *All* questions

Ensure that all your answers are properly numbered

Part I multiple Choice Questions (MCQ): Write the correct answer on the space provided in the answer booklet. Each MCQ is one mark

Part II: Short Answer Questions – Answer questions following each other on the answer booklet

Part III: Long Answer Questions – Answer each question on the answer booklet

SECTION A: MULTIPLE CHOICE QUESTIONS (20 marks)

1. The eclipse period is a
 - a) Period between uncoating and the formation of the first progeny virus
 - b) Period between onset of infection and the appearance of the first extracellular virus
 - c) Period when viruses are scarce extracellularly but in abundance intracellularly
 - d) Period during which signs and symptoms of disease are manifested
2. Burkitt lymphoma is caused by
 - a) Epstein-Barr virus

- b) Herpes simplex virus
- c) HIV
- d) Hepatitis A virus

3. Which of the virus below undergoes latency

- a) Hepatitis B virus
- b) Herpes simplex virus
- c) HIV
- d) Polio virus

4. Monkeys act as the reservoir host of the following except

- a) HIV
- b) Ebola
- c) Marburg
- d) Rabies

5. Which of the following are DNA viruses?

- a) Hepadna viruses
- b) flavi viruses
- c) Retroviruses
- d) Picornaviruses

6. Rhinoviruses causes

- a) Haemorrhagic fever
- b) Gastroenteritis
- c) Common cold
- d) Mouth sores

7. The ability of a virus to replicate in a particular cell is controlled by

- a) Host proteins
- b) Virus attachment proteins
- c) Viral capsid

d) Viral genome

8. Which of the following is not a live attenuated vaccine?

- Measles vaccine
- Polio salk vaccine
- Hepatitis A vaccine
- Yellow fever vaccine

9. The classical receptor site for gp 120 is

- CD3 marker
- CD4 marker
- CD8 marker
- CD2 marker

10. The most causative agent of common cold is

- Type A influenza viruses
- Adeno viruses
- Rota viruses
- Rhino viruses

11. Yellow fever viruses and Dengue haemorrhagic fever viruses are found in the family;

- Paramyxoviridae
- Coronaviridae
- Bunyaviridae
- Flaviviridae

12. Which proteins of the virus induce protective antibody

- Core proteins
- Genome proteins
- Enzyme proteins
- Surface proteins

13. Genome replication in Hepatitis B viruses involves

- a) DNA dependent RNA polymerase
- b) DNA dependent DNA polymerase
- c) RNA dependent DNA polymerase
- d) RNA dependent RNA polymerase

14. Viral host cell specificity is a function of

- a) Viral surface receptors
- b) Viral genome
- c) Viral polymerase
- d) Viral nucleic acid

15. Which of the viruses below is acid labile

- a) Echo viruses
- b) Polio viruses
- c) Rhino viruses
- d) Hepatitis A viruses

16. The following polio vaccines induce production of IgA

- a) Salk
- b) Sabine
- c) None of them
- d) All of them

17. The following are enveloped except

- a) Hepatitis A virus
- b) Hepatitis B virus
- c) Hepatitis C virus
- d) Hepatitis D virus

18. Which of the following are true about viral adsorption?

- a) The receptors confer specificity

- b) It occurs after viral entry into host cell
- c) The viral nucleic acid is released
- d) It is enhanced by host enzymes

19. The following are enveloped viruses except

- a) Influenza virus
- b) Herpes simplex virus
- c) Yellow fever virus
- d) Rhino viruses

20. Reverse transcriptase is a useful enzyme to have when

- a) An RNA virus converts its RNA to DNA
- b) There are no host cells present
- c) Nutrients are scarce
- d) Spikes are forming in the new virus

SECTION B: SHORT ANSWER QUESTIONS (40 MARKS)

1. Describe the transmission and symptomatology of rotavirus infections. (5 Marks)
2. Write short notes on complications of congenital cytomegalovirus infections. (5 Marks)
3. Describe the antigenic structure of Hepatitis B virus and the respective roles. (5 Marks)
4. Write short notes on the symptomatology and diagnosis of Chikungunya virus. (5 Marks)
5. Outline the clinical manifestations of mumps virus and possible complications. (5 Marks)
6. Summarize the pathogenesis of rabies viruses. (5 Marks)
7. Outline the impact of Infection Prevention & Control (IPC) in the epidemiology of viral diseases. (5 Marks)
8. Describe the morphological classification of viruses. (5 Marks)

SECTION C: LONG ANSWER QUESTIONS (40 MARKS)

1. a) i. Draw and label the viral growth curve. (4 Marks)

ii) How long does an animal virus take to complete their replication compared to bacterial viruses. (2 Marks)

(b) Name five disadvantages of inactivated vaccines (2 Marks)

(c) Explain the viral transmission routes citing relevant examples (10 marks)

2.(a) Explain how the following affects viruses. (8 marks)

i) Ether

ii) Magnesium sulphate

iii) Temperature

iv) Glycerol

(b) Describe three effects of interactions among viruses (6 marks)

(c) Describe the three steps involved in viral pathogenesis (6 marks)

3.a) Outline the viral replication steps (10 marks)

(b) Discuss five interactions seen when a host cell is infected by 2 or more virus particles (10 marks)