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University Examinations 2024/2025

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

HMU 3211: 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 major groups of arthropod-borne viruses include
   A. Togaviruses, Flaviviruses, and Bunyaviruses,
   B. Togaviruses, Rhabdoviruses, Reoviruses
   C. Reoviruses, Enteroviruses, Rhabdoviruses
   D. Retroviruses, Enteroviruses, Togaviruses
2. The major pathological features in Yellow Fever include
   A. Midzonal hepatic necrosis and Councilman bodies
   B. Midzonal hepatic necrosis and Negri bodies

C. Glomerular and renal papillary necrosis

D. Midzonal hepatic necrosis and diffuse encephalitis

3. The pathogenesis of dengue hemorrhagic shock syndrome is distinguished from that of uncomplicated dengue by

A. Excitotoxic injury of neurons

B. Development of dengue virus meningiits

C. Immune enhancement of infection

D. Neurotropic spread of virus

4. Rabies reaches the central nervous system by

A. Hematogenous distribution

B. Neurotropic spread

C. Entry into brain within macrophages

D. Both "A" and "B"

5. Hepatitis A can be transmitted by:

A. Changing diapers on an infected baby

B. Having sex with someone who is infected

C. Eating cooked meat

D. Needle stick injuries from infected patients

6. A 30 year old patient comes in with symptoms of hepatitis. The following serological results are obtained: Hepatitis A lgM antibody negative, Hepatitis A lgG antibody positive, Hepatitis B surface antigen positive, Hepatitis B surface antibody negative, Hepatitis C antibody negative. This set of results suggests that the patient has acute:

A. Hepatitis A

B. Hepatitis B

C. Hepatitis C

D. Hepatitis A and B

7. The likelihood of HIV being transmitted from a pregnant woman to her infant in the absence of antiretroviral therapy is about:

A. 1 in 500

B. 1 to 5 0/0

C. 20 to 25%

D. 50 to 75%

8. One of the key differences between amantidine/rimantidine and the newer neuraminidase inhibitor influenza virus drugs is:

   A. Drug allergy

   B. Antimetabolic effect on host cells due to lack of specificity for viral enzymes

   C. Rate of development of drug resistance

   D. Drug-drug interactions associated with competition for cytochrome P450 enzymes

9. Which of the following best characterizes antiviral chemotherapy in comparison to bacterial chemotherapy?

   A. Few drug targets, toxicity problematic

   B. Sensitivity tests of limited value

   C. Toxicity a minor problem, multiple enzymatic targets

   D. Many more drug options are available to treat viral infections

10. Foscarnet interacts with which of the following viral enzymes:

    A. Pyrophosphate-binding site of the polymerase

    B. Protease

    C. Nucleoside reductase

    D. Reverse transcriptase

11. The following statements are clearly true about enteroviruses EXCEPT:

    A. There are many serotypes

    B. They can cause a variety of diseases which imitate bacterial infection

    C. They are an important cause of meningitis

    D. They are an important cause of diarrhea

12. All of the following are syndromes associated with enteroviruses EXCEPT:
    A. Conjuctivitis
    B. Coronary artery disease
    C. Myocarditis
    D. Pericarditis
    E. Pleuritis
13. The following explains the structure of Rubella virus except
    A. Enveloped
    B. Has heamagglutinins containing surface projections
    C. Spherical 40-80 nm
    D. Positive sense, ss DNA virus
14. A child appears at the hospital with running nose, conjunctivitis and red spots with a bluish centre on the buccal mucosa, which viral infection could the child be suffering from?
    A. Influenza
    B. Rubella
    C. Measles
    D. Cytomegalovirus
15. When cultured in human epithelial cell line_____produces cytopathic effects of rounding and clustering of swollen cells in to grape like appearance.
    A. Adenoviruses
    B. Poliovirus
    C. Coxsackie virus
    D. Yellow fever virus
16. Influenza virus hemagglutinins play a significant role in which of the following phases of viral replication?
    A. Uncoating
    B. Virion Assembly
    C. Release by budding

D. Adsorption

E. Production of mRNA

17. Which one of the following are of great importance in routine diagnosis of HIV infection

A. Reverse transcriptase

B. P24

C. Gp41

D. Gp12

18. Which of the following statements is true regarding naked virions?

A. They release from infected cells by budding. B. They are almost exclusively RNA viruses.

C. Their release from infected cells may cause cell lysis.

D. All herpesviruses are naked viruses

19. Serological diagnostic test is used to detect for the presence of the following molecules except;

A. lgG

B. lgM

C. Antigen

D. Antibodies

20. The following samples are brought in the Laboratory at the same time, which one should be processed urgently?

A. Blood sample for HIV virus

B. Cerebral spinal fluid for viral meningitis

C. Stool sample for Rota virus

D. Tissue sections for cytomegalovirus

SECTION B: SHORT ANSWER ALL QUESTIONS (40 MARKS)

1. Enumerate three advantages and three disadvantages of animal inoculation of viruses.

(6 Marks)

2. Write short notes on complement fixation test for diagnosis of viral infections. (6 Marks)
3. Critically appraise the evidence for a viral aetiology of human cervical cancer. (6 Marks) 4.
4. Describe the use of neuraminidase subtype by neuraminidase assay and neuraminidase inhibition test both for laboratory diagnosis of influenza. (8 Marks)
5. Write short notes on animal inoculation of viruses and the methods involved. (8 Marks)
6. Outline detection of virus growth in cell culture. (6 Marks)

SECTION C: LONG ANSWER TWO QUESTIONS (40 MARKS)

1. Define diagnostic virology and describe different diagnostic methods for virus direct detection. (20 Marks)
2. Write short notes on viral sample collection, transportation and processing. (20 Marks)
3. Discuss laboratory diagnosis of pyrexia illness suspected to be of viral origin. (20 Marks)