



**UNIVERSITY EXAMINATIONS**  
**SECOND YEAR EXAMINATION FOR THE AWARD OF THE**  
**DEGREE OF BACHELOR OF SCIENCE IN CLINICAL MEDICINE**  
**AND COMMUNITY HEALTH**  
**SECOND TERM 2022/2023**  
**[JANUARY-APRIL, 2023]**

**PATH 201: MEDICAL VIROLOGY**

**STREAM: Y2T2**

**TIME: 2 HOURS**

**DAY: TUESDAY, 9:00 – 12:00 PM**

**DATE: 28/03/2023**

**INSTRUCTIONS**

**1. Do not write anything on this question paper.**

**SECTION A (60MKS): ATTEMPT ALL QUESTIONS**

1. Among the following is true about viruses
  - A. Obligate extracellular parasites.
  - B. One genus can possess both nucleic acids
  - C. Are ubiquitous
  - D. None of the above
2. Which one is not the function of the capsid
  - A. They are actively involved in the making of the protein spikes on the surface of the virus
  - B. It protects the nucleic acid from digestion by enzymes
  - C. Contains special sites on its surface that allow the virion to attach to a host cell
  - D. Provides proteins that enable the virion to penetrate the host cell membrane
3. Among the following viral genomes which one has the same polarity as the mRNA
  - A. +SSDNA
  - B. -SSRNA
  - C. +SSRNA
  - D. +DSDNA
4. Which of the following viruses has an ambisense genome
  - A. Rhabdoviruses,
  - B. Bunyaviruses

- C. Paramyxoviruses
  - D. Retroviruses
5. Among the following viral families which one is a reverse transcribing group
    - A. Reoviridae
    - B. Retroviridae
    - C. Parvoviridae
    - D. Orthomyxoviridae
  6. The following viruses can be spread through oral route except
    - A. Human rhinovirus
    - B. Herpes
    - C. HIV
    - D. Human papilloma virus
  7. Among the viral diseases which one is transmitted by ticks
    - A. Chikungunya fever
    - B. West Nile fever
    - C. Japanese encephalitis
    - D. None of the above
  8. Which of the following viruses is well matched with its host receptor
    - A. Hepatitis B - Polymerized albumin receptors
    - B. Epstein-Barr virus – Acetylcholine
    - C. SARS-CoV2 – CD4 molecules
    - D. Rabies virus – CD21 receptor
  9. Which one of the following is not true about viral pathogenesis and virulence
    - A. They do form biofilms for their own protection against the host immune system.
    - B. They release of toxic substances from infected tissues that end up destroying host cells and tissues.
    - C. They do damage cellular genes
    - D. They do damage organ function indirectly as a result of the host immune response to the presence of virus antigens.
  10. Which one of the following viruses is a dsRNA virus
    - A. Adenoviruses
    - B. Poxviruses
    - C. Reoviruses
    - D. Parvoviruses)
  11. Which of the following adenoviruses serogroups belongs to serogroup A
    - A. 3, 7, 11, 21
    - B. 8, 9, 19
    - C. 40, 41
    - D. 12, 18, 31

12. Adenoviruses can be isolated from the following samples except
  - A. Blood
  - B. Urine
  - C. Nasopharyngeal secretions
  - D. Conjunctival discharge
13. The replication of the adenoviruses in host cells occurs in the
  - A. Cytoplasm
  - B. Cytosol
  - C. Nucleus
  - D. None of the above
14. One the following is not a strategy on control and prevention of Adenovirus infections
  - A. Use of antivirals
  - B. Surgical intervention
  - C. Antibiotics usage
  - D. Hand washing
15. Which of the following envelope glycoproteins does corona virus use to bind and fuse to the host cell receptor.
  - A. Envelope protein
  - B. Membrane protein
  - C. GP120 protein
  - D. S protein
16. Corona viruses causes the following infections to humans except
  - A. Pelvic inflammatory infection
  - B. Severe Acute Respiratory Syndrome (SARS)
  - C. Enteric infections
  - D. Neurological syndromes
17. Which of the following supportive care strategies is not the best for a Corona virus infected patient
  - A. Pain relievers
  - B. Rest
  - C. Fluid intake
  - D. Exercise
18. Among the following is true about the general characteristics of Pox viruses
  - A. Are Non enveloped viruses
  - B. Has a rounded brick shape
  - C. Are about 50nm in size
  - D. Have a SSRNA genome
19. Which of the following viral varieties is an example of the genera Orthopox virus
  - A. Variola virus
  - B. Smallpox virus
  - C. Tanapox

- D. Orf virus
20. Which of the following is not true about Cowpox infection?
- A. It manifests as ulcerative lesions.
  - B. It has been discovered to protect humans against smallpox
  - C. Cows are the main reservoir.
  - D. None of the above
21. Which of the following is a complication of monkey virus infection in humans
- A. Scabs' formation
  - B. Septicemia
  - C. Lymphadenopathy
  - D. Myalgia
22. Which of the following is not a mode of transmission of smallpox
- A. Inhalation of airborne variola virus
  - B. Direct contact with contaminated beddings
  - C. Transplacental
  - D. None of the above
23. One of the following Orthomyxoviruses characteristics is not true
- A. They possess a SSRNA genome.
  - B. Their genome is segmented.
  - C. They are monomorphic viruses.
  - D. They possess H&N glycoproteins.
24. Which of the following person can be at risk of contracting the flu?
- A. A 70-year-old woman
  - B. A healthy 5 year-old boy
  - C. A 35-year-old man with diabetes
  - D. All of the above
25. A 39-year-old man came to the clinic with a marked fatigue, high grade fever, and headache, the symptoms resembled seasonal influenza flu. Which of the following primary samples/specimen can be collected for the laboratory diagnosis of the influenza virus?
- A. Blood
  - B. Urine
  - C. Nasopharyngeal washing
  - D. CSF
26. Among the following are characteristics of alphaviruses except
- A. They have a ds DNA genome.
  - B. Enter the host cell via pinocytosis.
  - C. They replicate in the cytoplasm of the host cell.
  - D. Their capsid is made up of a 30KD capsid protein.
27. Which of the following is the causative agent of German measles
- A. Western equine encephalitis virus
  - B. Rubella virus
  - C. Chikungunya virus
  - D. Flaviviruses

28. Among the following are the St. Louis Encephalitis manifestation presentations except
- A. Central nervous system involvement gives inflammation and neuronal degeneration.
  - B. Viremia is usually present
  - C. Lymphadenopathy
  - D. Convulsions, coma, and death.
29. Among the following conditions caused by flavivirus, which one is characterized by pathologies related to virus replication in the reticuloendothelial cells
- A. Yellow fever
  - B. West Nile Encephalitis
  - C. St. Louis Encephalitis
  - D. None of the above
30. Which unique form does the rabies virus take?
- A. The virion has a dumbbell appearance.
  - B. It is bullet shaped.
  - C. It is star shaped.
  - D. The virion is very pleomorphic.
31. Which of the following rabies virus proteins is responsible for presence of an RNA replicase enzyme
- A. N protein
  - B. G protein
  - C. M protein
  - D. L protein
32. Which of the following is symptoms is not associated with a rabies virus manifestation
- A. Some patients may develop hydrophobia.
  - B. Seizures and hallucinations
  - C. Keratoconjunctivitis
  - D. In some patient's paralysis will be present
33. Its not true about paramyxoviruses
- A. They have a double layered envelope.
  - B. They produce a reverse transcriptase enzyme.
  - C. Have a helical symmetry -ve sense RNA genome.
  - D. Produce multinucleated cells
34. It's true about the respiratory syncytia virus
- A. It causes a fever with a rash
  - B. Occasionally can produce conjunctivitis.
  - C. More serious complications include encephalitis and sub-acute sclerosing panencephalitis (SSPE).
  - D. It is a major cause of bronchiolitis and pneumonia in infants under 1 year.

35. Which one of the following is not true about the pathogenesis of Mumps virus
- A. It can cause croup
  - B. The major targets include glandular and nervous tissue
  - C. Causes Parotitis
  - D. Severe cases may progress to include epididymoorchitis in prepubescent males
36. Among the following is not a complication of measles in humans
- A. Bronchopneumonia
  - B. Otitis media
  - C. Laryngotracheobronchitis
  - D. None of the above
37. A Parvovirus B19 manifestation may present with the following symptoms except
- A. Arthralgia may be present.
  - B. May also present as gloves-and-socks syndrome.
  - C. Decline in the erythrocyte count as well as increase in lymphocyte, granulocyte, and platelet counts.
  - D. A macular rash may develop on the cheek.
38. Which of the following is true about parvovirus epidemiology.
- A. It occurs only in the temperate regions
  - B. It occurs only during the cold seasons, in people of all ages
  - C. The normal mode of parvovirus B19 transmission is fecal oral route
  - D. Parvovirus B19 levels in saliva have been shown to be comparable with those levels found in blood.
39. What is the function of the "hairpin" structures found on the genome of parvoviruses?
- A. They aid in the process of replication by acting as a self-primer.
  - B. They use it as an attachment structure to the host genome.
  - C. It is an antigen protein.
  - D. None of the above.
40. Which of the following retroviruses genes is correctly matched with its function
- A. **LTR** gene - codes for the **core** proteins, **structural** virion components
  - B. **Gag** gene – codes for noncoding regulatory sequences at each end of the genome, which are necessary for integration into host chromosome, and which also control gene expression
  - C. **pol** gene- reverse transcriptase (polymerase)
  - D. **onc** gene – codes for envelope glycoprotein
41. Is not true about the retroviruses.
- A. The replication process occurs in the cytoplasm of the host cell
  - B. They are enveloped viruses.
  - C. They have a linear, dimeric, ssRNA (+) sense genome
  - D. They are about 80-100 nm in diameter.

42. HTLV 1 is known to cause the following conditions except
- A. T-cell leukemia/lymphoma
  - B. Pelvic inflammatory disease
  - C. HTLV1 associated myelopathy/Tropical spastic paraparesis.
  - D. Infective dermatitis
43. It is true about the HIV-2 viral infection.
- A. Easily transmitted as compared with HIV-1
  - B. It has no response to non-nucleoside reverse transcriptase inhibitors antivirals.
  - C. Has a faster progression after infection.
  - D. Has a worldwide distribution
44. Among the following is not true about the asymptomatic phase of HIV infection
- A. The patient enters a stage of clinical latency.
  - B. Occurs after a few months to >10yrs (Incubation period 8-10yrs)
  - C. During this time the patient feels fine, but they are infectious as they have on-going viral replication.
  - D. There is a gradual onset of a variety of prodromal disorders.
45. It's a serotype of hepatitis that can be transmitted via the oral-fecal route
- A. Hepatitis A
  - B. Hepatitis B
  - C. Hepatitis D
  - D. Hepatitis D
46. The following are the antigens found with Hepatitis B except
- A. Surface antigen (sAg)
  - B. M antigen (mAg)
  - C. e antigen (eAg)
  - D. Core antigen (cAg)
47. The following are complications associated with Hepatitis C except
- A. Hepatocellular carcinoma
  - B. Aplastic and haemolytic anaemias
  - C. Immune complex disorders
  - D. Cirrhosis
48. Which of the following is true about Hepatitis D
- A. Genome encodes only one protein, namely the delta antigen
  - B. Was discovered in the serum of some patients who were infected with Hepatitis B and Hepatitis C.
  - C. It is a defective virus which requires Hepatitis C as a helper virus in order to replicate.
  - D. It has a circular +ssRNA genome.
49. Which of the following is a high risk human papilloma virus (HPV) serotype
- A. HPV 2
  - B. HPV 7

- C. HPV11
  - D. HPV16
50. Mucosal warts are one of the HPV clinical disorders. Which of the following characteristics is false about them
- A. Lesions are most seen in genital mucosa (usually sexually transmitted) but may occur in oropharynx and they are also the cause of laryngeal papillomas.
  - B. They may persist for months or years
  - C. Are caused by HPV types 1, 2, 3, 4, 5 and 8.
  - D. Although they are benign they can cause much distress due to disfigurement of the genital area.
51. It is not an enterovirus
- A. Poliovirus
  - B. Rhinoviruses
  - C. Coxsackievirus
  - D. Echovirus
52. Enteroviruses have the following characteristics except
- A. Have a lipid in their structure.
  - B. They can be spread via the respiratory route.
  - C. Grow in tissue culture with or without CPE
  - D. Cause silent infections but also cause a number of important illnesses (e.g. poliomyelitis)
53. Its not true about the abortive poliomyelitis
- A. Is a mild and nonspecific illness.
  - B. Characterized by 2–3-day fever and influenza like symptoms.
  - C. It shows signs of CNS localization.
  - D. Complete recovery can be expected in less than a week.
54. Rhinoviruses infections and pathologies are characterized with the following facts except
- A. It causes upper and lower respiratory tract infections.
  - B. The virus can be detectable in 3weeks after infection.
  - C. Replication is limited to the nucleus.
  - D. Edema and mild cellular filtration will be observed.
55. The following are characteristics of a Herpesviruses except
- A. Fast replicating
  - B. Infected cells enlarge (cytomegalia)
  - C. Variable host range
  - D. Typically destroy host cells
56. Which of the following is not an attachment viral protein for Herpes viruses to host cells
- A. gA protein
  - B. gB protein
  - C. gD protein
  - D. gH proteins



57. Among the following herpes serotypes which one is correctly matched with the condition it causes
- A. HSV-1 – Multiple Sclerosis
  - B. HHV- 4 (EBV) – Oral and Genital herpes
  - C. HHV- 6 – Lymphomas and carcinoma
  - D. HHV -8 (KSHV) – Kaposi’s sarcoma
58. The following characteristics are true about Varicella-Zoster Virus (VZV) infection except
- A. Initial infection usually in childhood with Varicella virus (HHV-3) represents itself as Chicken Pox
  - B. It can be spread by sexual contact.
  - C. The virus establishes latency within the dorsal root ganglia.
  - D. Years or decades later, the virus (Herpes zoster) may reactivate.
59. Which one of the following general characteristics is true about Reoviruses
- A. They are enveloped viruses.
  - B. They possess a single-stranded RNA genome.
  - C. They are in possession of a circular symmetry.
  - D. Icosahedral capsid structure
60. Which serogroup of rotaviruses causes severe diarrhoeal condition in children
- A. Serogroup A
  - B. Serogroup B
  - C. Serogroup C
  - D. Serogroup G

**SECTION B: (60MKS) - ATTEMPT ALL QUESTIONS**

1. Aerosols is one mode of viral transmission. Describe it with the help of five examples of viruses involved. (10marks)
2. Describe briefly on the pathogenesis of smallpox. (10marks)
3. i. In a table form differentiate between a common cold and an influenza infection. (6marks).  
ii. Briefly describe the management strategies for an influenza infected patient. (4marks)
4. Describe the pathogenesis caused by the rubella viruses. (10marks).
5. Describe how the following conditions present themselves citing the causative agent and the vector  
i. West Nile Encephalitis (WNE). (5marks)  
ii. Dengue fever and Dengue Hemorrhagic fever. (5marks)
6. Describe the various clinical disorders caused by the human papilloma virus indicating the serotypes responsible per given disorder. (10marks)

**SECTION C: (40 MARKS) – ATTEMPT ANY TWO QUESTIONS**

1. Rabies virus has been one of the viruses that has been found to almost every continent in the globe. Discuss it under the following subheadings.
  - i. The general characteristics of the virus (4marks)
  - ii. The transmission and replication cycle of the virus (6marks)
  - iii. Its pathogenesis and clinical presentation (7marks)
  - iv. Its management strategy (3marks)
2. Describe the enterically transmitted hepatitis condition under the following subheading
  - i. The causative agents and their virological characteristics (4marks)
  - ii. Pathogenesis and clinical presentation (8marks)
  - iii. Epidemiology (4marks)
  - iv. Diagnosis and management strategies (4marks)
3. Describe in detail the pathogenesis, clinical presentation and complications associated with the following viruses
  - i. Mumps virus (7marks)
  - ii. Human Parainfluenza virus (6marks)
  - iii. Measles virus (7marks)