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# UNIVERSITY OF NAIROBI

44%

UNIVERSITY EXAMINATIONS 2013/2014

SECOND YEAR EXAMINATIONS FOR THE DEGREE OF BACHELOR OF  
MEDICINE AND BACHELOR OF SURGERY

MEDICAL MICROBIOLOGY MCQ PAPER

DATE: JANUARY 10, 2014

TIME: 9.00 A.M. - 10.30 A.M.

## INSTRUCTIONS

1. Write your registration number on each page.
2. Read the instructions carefully and answer as instructed in each section.
3. Circle the correct response.
4. If you change your mind, do so clearly by crossing the response with an (X)

1. Which one of the following is NOT an outcome of a viral infection to host cell?

- (a) Transformation
- (b) Lytic infection
- (c) Persistent infection
- (d) Latent infection
- (e) Cell migration

2. Which one of the following virus families has a diploid (+) RNA as a genetic material?

- (a) Tongaviridae
- (b) Retroviridae
- (c) Coronaviridae
- (d) Picornaviridae
- (e) Filoviridae

3. The presence of HBsAg in blood of a patient indicates:

- (a) Active replication of HBV
- (b) HBV is no longer replicating
- (c) A cute infection
- (d) Immunity to HBV infection
- (e) Chronic infection

4. These two viruses are from different virus families are primarily transmitted via the same route but cause different diseases:
- (a) Rotavirus and hepatitis A virus
  - (b) Measles virus and parainfluenza A virus
  - (c) Measles virus and polio virus
  - (d) Calicivirus and Rift valley fever virus
  - (e) Yellow fever virus and west Nile virus - *mosquitoes*
5. An effective vaccine based on purified viral protein for this virus exists:
- (a) HIV-1
  - (b) Human herpes virus 1
  - (c) Hepatitis B virus
  - (d) Dengue fever virus
  - (e) Hanta virus
6. This anti-viral drug interferes with the release of new virus particles from an infected cell:
- (a) Amantadine
  - (b) Acyclovir
  - (c) Nevirapine
  - (d) Zanamvir
  - (e) All of the above
7. Influenza virus and parainfluenza viruses:
- (a) Belong to same family
  - (b) Are both segmented viruses
  - (c) Undergo both antigenic drift and shifts
  - (d) Have same mode of transmission
  - (e) Have positive sense RNA genome
8. These two viruses belong to the same family but one causes a localized infection while the other causes systemic infection:
- (a) Influenza virus and para influenza virus
  - (b) Poliovirus and Rhinovirus → *picornaviruses*
  - (c) Riftvalley fever virus and Dengue virus
  - (d) Hepatitis D virus and Rubella virus
  - (e) Mumps and Rubella viruses

This virus is a member of the Picornaviridae family and is primarily transmitted via contact with contaminated surfaces.

- (a) Poliovirus
- (b) Hepatitis A virus
- (c) Parainfluenza type 1 virus
- X (d) Rhinovirus
- (e) Measles virus

10. Which of the following virological tests is considered a "direct detection"?

- ✓ (a) Antibody detection by ELISA
- (b) Antigen tests by ELISA
- (c) Cytopathic effect (CPE) in cell culture
- (d) Haemagglutination inhibition tests
- (e) None of the above

11. Which of the following is the causative agent of cutaneous warts?

- ✓ (a) Human Papilloma virus
- (b) West Nile virus
- (c) Tick-borne encephalitis virus
- (d) Poliovirus
- (e) Rabies virus

12. Which one of the following virus is the causative agent for epidemic gastroenteritis particularly a board cruise ships?

- X (a) Rotavirus
- (b) Adenovirus 40/41
- (c) Norwalk like virus
- (d) Astrovirus
- (e) Hepatitis A virus

13. Ribavirin antiviral agent is used for treatment of:

- (a) Respiratory syncycic virus
- (b) Herpes simplex type 1 virus
- ✓ (c) Hepatitis B virus
- (d) Group A coxsackie virus
- (e) Parro virus

14. Eastern equine encephalitis virus can be successfully controlled by eradication

- (a) Horses
- (b) Birds
- X (c) Mosquitoes
- (d) Fleas
- (e) Ticks

15. The agent causing varicella in children belong to one of the families of viruses listed below:

- (a) Poxviruses
- (b) Adenoviruses
- (c) Paramyxoviruses
- (d) Herpes viruses - HHV- VZV
- (e) Orthomyxovirus

16. Rhinoviruses are primarily transmitted by:

- (a) Droplet aerosolization
- (b) Sexual activities
- (c) Fecal-oral route
- (d) Blood transfusion
- (e) Vertical transmitter

17. The presence of Negri inclusion bodies in host cells is characteristic of:

- (a) Mumps virus infection
- (b) Infectious mononucleosis
- (c) Congenital rubella
- (d) Aseptic meningitis
- (e) Rabies

18. One of the following viruses is transmitted via sexual route:

- (a) Cytomegalovirus
- (b) Yellow fever virus
- (c) Rabies virus
- (d) Herpes simplex type 2 virus - Genital Herpes
- (e) Mumps virus

19. What is the most common cause of aseptic meningitis of viral etiology?

- (a) Enteroviruses
- (b) Herpesviruses
- (c) Arboviruses
- (d) Retroviruses
- (e) Orthomyxoviruses

20. Which one of the following immunization should be administered immediately after birth?

- (a) Diphtheria-pertussis-tetanus (DPT) vaccine ✓
- (b) Haemophilus influenzae type b vaccine ✓
- (c) Hepatitis B vaccine ✓
- (d) HIV vaccine ?!
- (e) Oral polio virus

21. Which one of the following infection routes is most often involved in the neonatal transmission of hepatitis B virus (HBV)?
- (A) Blood transfusion
  - (b) Fetal contact with infected blood during childbirth
  - (c) Ingestion of the virus via maternal breast milk
  - (d) Transmission of the virus from hospital personnel during childbirth
  - (e) Transplacental transmission of the virus
22. The finding of large, multinucleated, clumps of cells in the bronchial secretion of a 2 year old girl with acute bronchopneumonia suggests that this infection is caused by:
- (a) Bordetella pertussis
  - (b) Epstein-Barr virus
  - (c) Mycoplasma hominis
  - (d) A rhinovirus
  - (e) Respiratory syncytial virus
23. All of the following picornaviruses are resistant to the acidity of the stomach except:
- (a) Coxsackievirus A
  - (b) Coxsackievirus B
  - (c) Echo virus
  - (d) Polio virus
  - (e) Rhinovirus
24. In a chronic carrier of hepatitis B virus (HBV), which positive test is most indicative of high infectivity?
- (a) Hepatitis B surface Antigen (Hbs Ag)
  - (b) Hepatitis B core Antigen (Hbc Ag)
  - (c) Hepatitis B e Antigen (Hbe Ag)
  - (d) Anti-HBs Ag
  - (e) Anti-HBc Ag
25. A retrovirus is found in a high proportion of laboratory animals of a given species. Most viremic animals are asymptomatic, but others develop a fatal wasting syndrome, and a few develop leukemia and other tumors after long periods of latency. The virus in question most likely lacks which one of the following genes?
- (a) gag
  - (b) pol
  - (c) env
  - (d) onC
  - (e) gp 120

26. The subfamily for the HIV-1 virus is:

- (a) Spumvirinae
- (b) Lentivirinae
- (c) Betaretrovirus
- (d) Deltaretrovirus
- (e) Gammaretrovirus

27. Naked viruses generally

- (a) Retain infectivity on drying
- (b) Must stay wet during transmission
- (c) Do not kill infected cells
- (d) Are transmitted via the aerosol
- (e) Are not inactivated by detergent

28. Viruses are generally visualized

- (a) In cell culture in vitro
- (b) With a regular magnifying glass
- (c) With a light microscope
- (d) With an electron microscope
- (e) Only (c) and (d) are correct

29. Enveloped viruses can bud from:

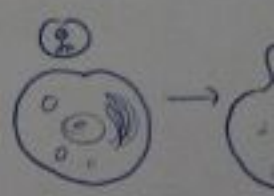
- (a) Nuclear membranes
- (b) Endoplasmic reticulum
- (c) Golgi apparatus
- (d) Cell membranes
- (e) All of the above

30. An example of a virus with a broad host range is:

- (a) Influenza virus
- (b) HIV-1
- (c) Measles virus
- (d) Poliovirus
- (e) All of the above

31. Enveloped viruses can enter host cells via:

- (a) Endocytosis
  - (b) Exocytosis
  - (c) Lysis
  - (d) Budding
  - (e) None of the above
- fusion of membranes?*



32. These viruses are ALWAYS associated with latency:

- (a) Herpes viruses
- (b) Rabies viruses
- (c) Influenza viruses
- (d) Coronaviruses
- (e) Retroviruses

33. The following DNA virus replicates its genome in the cytoplasm of infected cell:

- (a) Parvovirus
- (b) Adenovirus
- (c) Herpes virus
- (d) Papilloma virus
- (e) Vaccinia virus

34. The following is true of Baltimore virus classification:

- (a) All viruses must generate a (+) sense DNA strand
- (b) There are 7 groups of virus genomes
- (c) Viruses may or may not generate an mRNA in the course of replication
- (d) The (+) sense RNA genome of all RNA viruses can serve as infectious genomes
- (e) All dsDNA viruses are in the same group

35. Following natural course of HIV-1 infection, plasma viremia is highest:

- (a) A few weeks after infection (acute phase)
- (b) During clinical latency
- (c) Two to three years after primary infection
- (d) Throughout the infection period
- (e) None of the above *clinical phase / AIDS development*

36. Which of the following viruses causes an acute febrile rash and produces disease in immunocompetent children but has been associated with transient aplastic crises in persons with sickle cell disease?

- (a) Rubeola
- (b) Varicella-zoster
- (c) Parvovirus
- (d) Rubella
- (e) Herpes simplex

37. Infection with herpes simplex virus, a common human pathogen, is best described by which of the following statements? *MoHA - +HSV-1: cold sores  
+HSV-2: genital warts*
- (a) The CNS and visceral organs are usually involved  
 (b) It rarely recurs in host who has a high antibody titer  
 (c) It can be reactivated by emotional disturbances or prolonged exposure to sunlight  
 (d) Initial infection usually occurs by intestinal absorption of the virus  
 (e) Infection with type 1 virus is most common
38. Infectious mononucleosis, a viral disorder that can be debilitating, is characterized by which of the following statements?
- (a) It is most prevalent in children less than 14 years old.  
 (b) It is caused by a rhabdovirus  
 (c) The causative pathogen is an Epstein-Barr virus  
 (d) Affected persons respond to treatment with the production of heterophil antibodies  
 (e) Ribavirin is the treatment of choice
39. The clinical picture of arbovirus infection fits one of three categories: encephalitis, hemorrhagic fever, or fever with myalgia. One of the characteristics of arboviruses is that they:
- (a) Are transmitted by arthropod-vectors  
 (b) Are usually resistant to ether  
 (c) Usually cause symptomatic infection in humans  
 (d) Are closely related to parvoviruses  
 (e) They are transmitted by ticks
40. Coronaviruses are recognized by club-shaped surface projections that are 20 nm long and resemble solar coronas. These viruses are characterized by their ability to:
- (a) Infect infants more frequently than adults  
 (b) Cause the common cold  
 (c) Grow well in the usual cultured cell lines  
 (d) Grow profusely at 50°C  
 (e) Agglutinate human red blood cells
41. Delta hepatitis only occurs in patients who also have either acute or chronic infection with hepatitis B virus. The delta agent is:
- (a) An incomplete hepatitis B virus  
 (b) Related to hepatitis A virus  
 (c) A hepatitis B mutant  
 (d) An incomplete RNA virus  
 (e) Hepatitis C



42. A 3-year old child presents at the physician's office with symptoms of coryza, conjunctivitis, low-grade fever, and koplik's spots. The causative agent of this disease belongs to which group of viruses?
- (a) Adenovirus  
 (b) Herpes virus  
 (c) Picornavirus  
 (d) Orthomyxovirus  
 - (e) Paramyxovirus
43. One of the most common sexually transmitted diseases that may lead to cervical carcinoma is caused by which of the following viruses? HPV
- (a) Cytomegalovirus  
 (b) Papillomavirus  
 (c) Epstein-Barr virus  
 (d) Herpes simplex virus  
 (e) Adenovirus
44. Which virus is the leading cause of the croup syndrome in children and, when infecting mammalian cells in culture, will hemabsorb red blood cells?
- (a) Group B coxsackievirus  
 (b) Rotavirus  
 - (c) Parainfluenza virus  
 (d) Adenovirus  
 (e) Rhinovirus
45. One of the following is a characteristic of naked viruses:
- (a) They are all RNA viruses  
 (b) They are all DNA viruses  
 (c) They leave the host cell by cell lysis  
 (d) They cannot survive for long outside host cell  
 (e) None of the above
46. Lag phase of bacterial growth is associated with:
- (a) Cell division lag  
 (b) Vigorous metabolic activity lag  
 (c) Spore formation plateau  
 (d) Loss of cell membrane selective permeability death/decline  
 (e) Gram stain variation

47. Which of the following structures is correctly matched with its function?

- (a) Fimbria - motility
- (b) Cell membrane - oxidative phosphorylation
- (c) Mesosome - nutrient storage
- (d) Sex pili - transformation
- (e) Lipopolysaccharide - Gram positive bacterial endotoxic activity

48. Protein synthesis occurs in:

- (a) Plasmids
- (b) Ribosomes
- (c) Cell wall
- (d) Nucleoid
- (e) Fimbria

49. Enriched media: BA, CBA, heated BA

- (a) Contain nutrients necessary for growth of fastidious bacteria -
- (b) Contain indicators which change colour according to biochemical activity of bacteria - *indicative/differential media*
- (c) Components include chemicals which suppress the growth of normal flora -
- (d) Enable multiplication of bacteria prior to subcultures on semi-solid media - *trans*
- (e) Include nutrient agar *enrichment broth - simple media?*

50. Which of the following does not contribute to virulence in a bacterial cell?

- (a) Pili
- (b) Cell wall
- (c) Mesosomes
- (d) Flagella
- (e) Bacteriophages

51. Microfilaria of all these filarial parasites have sheath except:

- (a) Wuchereria bancrofti
- (b) Brugia malayi
- (c) Brugia timori
- (d) Loa loa
- (e) Onchocerca volvulus

52. Microfilariae of which of these parasites largely exhibit diurnal periodicity?

- (a) Loa loa
- (b) Wuchereria bancrofti
- (c) Onchocerca volvulus
- (d) Mansonella perstans
- (e) Brugia malayi

53. Which of these drugs are useful for treating onchocerciasis?
- (a) Diethyl carbamazine (DEC) - ~~NO!~~ → "liver blindness" (contraindication)
  - (b) Praziquantel
  - ✓ (c) Ivermectin - safest
  - (d) Albendazole
  - (e) Suramin
54. All of these are vectors of *Wuchereria bancrofti* except:
- (a) *Culex* species
  - (b) *Aedes* species
  - ✗ (c) *Mansonia* species
  - (d) *Culicoides* species
  - (e) *Anopheles* species
55. Clinical manifestation of onchocerciasis include all of the following except:
- (a) Pruritus of the skin
  - (b) Subcutaneous nodules
  - ✗ (c) Hanging groin
  - (d) Arthritis
  - (e) Renal failure
56. Which of these parasites present with calabar swellings?
- (a) *Mansonella perstans*
  - (b) *Onchocerca volvulus*
  - ✗ (c) *Loa loa*
  - ✗ (d) *Wuchereria bancrofti*
  - (e) *Brugia malayi*
57. All of the following may be a clinical manifestation of *Wuchereria bancrofti* except:
- (a) Hydrocele
  - (b) Elephantiasis
  - (c) Chyluria
  - ✗ (d) Splenomegaly
  - ✗ (e) Tropical pulmonary eosinophilia
58. Which of the following laboratory tests is not useful for diagnosis of filarial parasites?
- (a) Skin snip
  - ✗ (b) Peripheral blood film
  - ✗ (c) Examination of nodulectomy tissue
  - (d) Blood examination for circulating antigen
  - (e) Examination of CSF for microfilariae

59. Which of the following parasitic infections is only found in Africa?

- (a) *Brugia malayi*  
 (b) *Onchocerca volvulus*  
 (c) *Wuchereria bancrofti*  
 (d) *Loa loa*  
 (e) All of the above

60. Which of these parasites may cause blindness?

- (a) *Loa loa*  
 (b) *Mansonella perstans*  
 (c) *Onchocerca volvulus*  
 (d) *Mansonella ozzardi*  
 (e) *Mansonella streptocerca*

61. Which of the following parasites infect by skin penetration?

- (a) *Enterobius vermicularis* - thread worm  
 (b) *Schistosoma haematobium*  
 (c) *Hymenolepis nana*  
 (d) *Diphyllobothrium latum*  
 (e) *Strongyloides stercoralis* - similar to hookworm (eozinophilia)

Question 62 & 63. Match the items in column A with the most appropriate in column B.

62. Column A

Column B

- G 1 [F] *Trypanosoma brucei gambiense*  
 D 2 [B] *Schistosoma mansoni*  
 B 3 [D] *Diphyllobothrium latum*  
 4 [E] *Onchocerca volvulus*  
 5 [H] *Enterobius vermicularis*

- A) Microcytic anaemia  
 B) Megaloblastic anaemia  
 C) Romana sign  
 D) Portal hypertension  
 E) Leopard skin  
 F) Tropical pulmonary eosinophilia  
 G) Winterbottom sign  
 H) Pruritus ani

63. Column A

Column B

- E 1 [F] American trypanosomiasis  
 B 2 [C] Hydatidosis  
 H 3 [D] Onchocerciasis  
 F 4 [H] Giardiasis  
 G 5 [A] Cutaneous leishmaniasis

- A) Harada mori technique  
 B) ARC 5  
 C) Rectal proplase  
 D) Formal gel test  
 E) Xenodiagnosis  
 F) String test  
 G) Culture in NNN media  
 H) Mazotti test

The dogs may be involved in transmission of:

- (a) Strongyloides stercoralis
- (b) Toxocara canis
- (c) Ancylostoma braziliensis
- (d) Toxocara cati
- (e) Taenia saginata

65. All of the following are zootic except:

- (a) Trichinella spiralis infections
- (b) Hymenolepis nana infections
- (c) Plasmodium malaria
- (d) Taenia saginata
- (e) Tenia solium

66. The large intestine is the habitat of

- (a) Taenia solium
- (b) Entamoeba histolytica
- (c) Trichinella spiralis - muscle
- (d) Schistosoma haematobium
- (e) Ancylostoma duodenale - small int.

67. Which of the following infective pathogens is/are transmitted by fleas?

- (a) Leishmania tropica
- (b) Trypanasoma cruzi
- (c) Yersinia pestis
- (d) Diphyllobotrium latum
- (e) Hymenolepis diminuta

68. Autoinfection occurs in which of the following parasitic infections?

- (a) Ascaris lumbricoides
- (b) Enterobius vermicularis
- (c) Taenia saginata
- (d) Hymenolepis diminuta
- (e) Toxocara canis

69. Prevention of hydatid disease is mainly achieved by:

- (a) Wearing protective shoes
- (b) Use of latrine
- (c) Mass deworming of dogs
- (d) Eating well cooked meat
- (e) Mass treatment of humans with niclosamide

70. Irregular fevers usually occurs in infections with:
- (a) Necator americanus - hookworm  
 (b) Balantidium coli  
 (c) Trichinella spiralis - muscle  
 (d) Taenia solium  
 (e) Hymenolepis nana
71. Which parasites have larval stages that cause pulmonary symptoms?
- (a) Trichinella spiralis  
 (b) Diphyllobothrium latum  
 (c) Necator americanus  
 (d) Taenia saginata  
 (e) Taenia solium
72. Eating uncooked pork may lead to infection with:
- (a) Taenia Saginata  
 (b) Trichinella spiralis  
 (c) Ascaris lumbricoides  
 (d) Ancylostoma duodenale  
 (e) Toxocara canis
73. Heavy infection with Ascaris lumbricoides may lead to:
- (a) Rectal prolapse  
 (b) Anaemia  
 (c) Paralysis  
 (d) Intestinal obstruction  
 (e) Ground itch
74. Transmission of Necator americanus occurs by:
- (a) Oral faecal  
 (b) Ingestion of ova  
 (c) Blood transfusion  
 (d) Infected mites  
 (e) Skin penetration by larvae  
 Skin
75. Microcytic anaemia manifests in which condition?
- (a) Ascariasis - hookworm  
 (b) Hookworm  
 (c) Trichinosis  
 (d) Strongyloidiasis - no anaemia  
 (e) Taeniasis

Paritogenesis occurs in:

- (a) Enterobius vermicularis
- (b) Strongyloides stercoralis
- (c) Ascaris lumbricoides
- (d) Necator americanus
- (e) Trichuris trichiura

77. Rectal prolapse is a feature of which parasite?

- (a) Ascaris lumbricoides
- (b) Trichuris trichiura
- (c) Enterobius vermicularis
- (d) Ancylostoma duodenale
- (e) Toxocara cati

78. Malnutrition is associated with which parasite?

- (a) Ascaris lumbricoides
- (b) Toxocara cati
- (c) Trichinella spiralis
- (d) Ancylostoma braziliensis
- (e) Toxocara canis

79. Sticky eggs are found in which parasite?

- (a) Trichinella spiralis
- (b) Ascaris lumbricoides
- (c) Ancylostoma duodenale
- (d) Necator americanus
- (e) Trichuris trichiura

80. Autoinfection is a feature of which parasites?


- (a) Taenia saginata
- (b) Ascaris lumbricoides
- (c) Trichinella spiralis
- (d) Necator americanus
- (e) Strongyloides stercoralis

81. Which of the following parasites is commonly associated with Pruritus ani?

- (a) Ascaris lumbricoides
- (b) Trichuris trichiura
- (c) Enterobius vermicularis
- (d) All of the above
- (e) None of the above

itch  
Utracadium  
 (E. ver)

82. Which of the following parasites has planoconvex eggs?

- (a) Ascaris lumbricoides
  - (b) Enterobius vermicularis
  - (c) Trichuris trichiura
  - (d) All of the above
  - (e) None of the above
- 

83. In which of the following infections are you not likely to find eggs in stool?

- (a) Trichuriasis
- (b) Ascariasis
- (c) Enterobiasis
- (d) All of the above
- (e) None of the above

84. Which of the following drugs would be most useful in treating heavy Ascaris lumbricoides infections in small children?

- (a) Mebendazole
- (b) Artemisinin
- (c) Albendazole - breakdown parasite
- (d) Praziquantel
- (e) All of the above

85. Which of the following parasites is associated with hepatobiliary obstruction?

- (a) Enterobius vermicularis
- (b) Trichuris trichiura
- (c) Ascaris lumbricoides
- (d) All of the above
- (e) None of the above

86. Which of the following parasites can cause auto-infection?

- (a) Trichuris trichiura
- (b) Ascaris lumbricoides
- (c) Enterobius vermicularis
- (d) None of the above
- (e) All of the above

87. Which of the following parasites has mammilated eggs?

- (a) Ascaris lumbricoides
- (b) Trichuris trichiura
- (c) Enterobius vermicularis
- (d) All of the above
- (e) None of the above



88. In diagnosis of which of the following parasite are you likely to find fully embryonated eggs?
- (a) *Ascaris lumbricoides*
  - (b) *Trichuris trichiura*
  - (c) *Enterobius vermicularis*
  - (d) All of the above
  - (e) None of the above
89. Which of the following parasites has a heart-lung migration in its life cycle?
- (a) *Ascaris lumbricoides*
  - (b) *Trichuris trichiura*
  - (c) *Enterobius vermicularis*
  - (d) All of the above
  - (e) None of the above
90. Which of the following parasites is also known as pin worm?
- (a) *Trichuris trichiura*
  - (b) *Enterobius vermicularis*
  - (c) *Ascaris lumbricoides*
  - (d) All of the above
  - (e) None of the above

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