

MEDICAL MICROBIOLOGY
MCQ PAPER

DATE: JANUARY 10, 2014

TIME: 11.30 A.M. - 1.00 P.M.

INSTRUCTIONS

1. Write your registration number of 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. What is the most common cause of aseptic meningitis of viral etiology?
 (a) Enteroviruses
 (b) Herpesviruses
 (c) Arboviruses
 (d) Retroviruses
 (e) Orthomyxoviruses
2. Which one of the following immunizations 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
3. 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 the hospital personnel during childbirth
 (e) Transplacental transmission of the virus.

4. All of the following picornaviruses are resistant to the acidity of the stomach except:

- (a) Coxsackievirus A
- (b) Coxsackievirus B
- (c) Echovirus
- (d) Poliovirus
- (e) Rhinovirus

5. In a chronic carrier of hepatitis B virus (HBV), which positive test is most indicative of high infectivity?

- (a) Hepatitis B surface Antigen (HB_sAg)
- (b) Hepatitis B core Antigen (HB_cAg)
- (c) Hepatitis B e Antigen (HB_eAg)
- (d) Anti-HB_sAg
- (e) Anti-HB_eAg

6. The subfamily for the HIV-1 virus is

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

7. 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 inactivated by detergent

8. Viruses are generally visualized

- (a) In cell culture in vitro
- (b) With regular magnifying glass
- (c) With light microscope
- (d) With an electron microscope
- (e) None of the above

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9. Enveloped viruses can bud from
- (a) Nuclear membranes
 - (b) Endoplasmic reticulum (ER)
 - (c) Golgi Apparatus
 - (d) Cell membranes
 - (e) All of the above
10. An example of a virus with broad host range is:
- (a) Influenza virus
 - (b) HIV-1
 - (c) Measles virus
 - (d) Poliovirus
 - (e) All of the above
11. Enveloped viruses can enter cells via
- (a) Endocytosis
 - (b) Exocytosis
 - (c) Lysis
 - (d) Budding
 - (e) None of the above
12. These viruses are always associated with latency
- (a) Herpesviruses
 - (b) Rabiesviruses
 - (c) Influenza viruses
 - (d) Coronaviruses
 - (e) Retroviruses
13. The following DNA virus replicates its genome in the cytoplasm of infected cell
- (a) Parvovirus
 - (b) Adenovirus
 - (c) Herpesvirus
 - (d) Papillomavirus
 - (e) Vaccinia virus

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14. 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 genomes of all RNA viruses can serve as infectious genomes
- (e) All dsDNA viruses are in the same group

15. 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 3 years after infection
- (d) Throughout the infection period
- (e) None of the above

16. 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) Rubella virus
- (b) Varicella-zoster virus
- (c) Parvovirus
- (d) Rubella virus
- (e) Herpes simplex virus

17. Infection with herpes simplex virus, a common human pathogen, is best described by which of the following statements?

- (a) The CNS and visceral organs are usually involved
- (b) It rarely recurs in a host who has a high antibody titer
- (c) It can be re-activated 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

18. 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 Epstein-Barr virus
- (d) Affected persons respond to treatment with the production of heterophile antibodies
- (e) Ribavirin is the treatment of choice

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19. Which ONE of the following is NOT an outcome of viral infection to host cell?
- (a) Transformation
 - (b) Lytic infection
 - (c) Persistence infection
 - (d) Latent infection
 - (e) Cell migration
20. Which one of the following virus families has a diploid (+) RNA as genetic material?
- (a) Togaviridae
 - (b) Retroviridae
 - (c) Coronaviridae
 - (d) Picornaviridae
 - (e) Filoviridae
21. The presence of HB_sAg in the blood of a patient indicates
- (a) Active replication of HBV
 - (b) HBV is no longer replicating
 - (c) Acute infection
 - (d) Immunity to HBV infection
 - (e) Chronic infection
22. These two viruses belong to the same family but one causes a localized infection while the other causes a systemic/localized infection
- (a) Influenza virus and parainfluenza virus
 - (b) Poliovirus and Rhinovirus
 - (c) Rift Valley fever virus and Dengue virus
 - (d) Hepatitis D virus and Rubella virus
 - (e) Rubella virus and measles virus
23. Influenza viruses and parainfluenza viruses
- (a) Belong to the same family
 - (b) Are both segmented viruses
 - (c) Can undergo both antigenic drift and antigenic shift
 - (d) Have same modes of transmission
 - (e) Have (+ ssRNA genomes)

9 + 3 = 12

24. This antiviral drug interferes with the release of new virus particles from an infected cell
- (a) Amantadine
 - (b) Acyclovir
 - (c) Nevirapine
 - (d) Zanamivir
 - (e) Zidovudine
25. An effective vaccine based on purified viral proteins for this virus exists
- (a) HIV-1
 - (b) Human herpesvirus 1
 - (c) Hepatitis B virus
 - (d) Dengue virus
 - (e) Hantavirus
26. These two viruses are from different virus families, are primarily transmitted via the same route, but they cause different diseases
- (a) Rotavirus and Hepatitis A virus
 - (b) Measles virus and parainfluenza virus
 - (c) Measles virus and poliovirus
 - (d) Calicivirus and Rift Valley fever virus
 - (e) None of the above combinations
27. This virus, a member of Picornaviridae family, is primarily transmitted via contaminated surfaces
- (a) Poliovirus
 - (b) Hepatitis A virus
 - (c) Parainfluenza type 1 virus
 - (d) Rhinovirus
 - (e) Measles virus
28. Which of the following virological tests is considered a "direct detection test"
- (a) Antibody detection with ELISA
 - (b) Antigen detection with ELISA
 - (c) Cytopathic effect (CPE) in cell culture
 - (d) Haemagglutination Inhibition (HI) test
 - (e) None of the above

12 + 3 = 15

29. Which of the following is the causative agent of a variety of cutaneous warts (plantar, common, and flat) and is associated with cervical neoplasia?
- (a) Human papillomavirus
 - (b) West Nile virus
 - (c) Tick-borne encephalitis virus
 - (d) Polyomavirus
 - (e) Subacute sclerosing panencephalitis (SSPE)
30. Which of the following is a common cause of epidemic gastroenteritis, particularly aboard cruise ships and in summer camps? It may be detected by ELISA methods or by electron microscopy.
- (a) Rotavirus
 - (b) Adenovirus 40/41
 - (c) Norwalk virus
 - (d) Astrovirus
 - (e) Hepatitis A virus
31. Several antiviral compounds have been developed during the last decade. One such compound is ribavirin, a synthetic nucleoside structurally related to guanosine. Ribavirin therapy has been successfully used against
- (a) Respiratory syncytial virus
 - (b) Herpes simplex virus
 - (c) Hepatitis B virus
 - (d) Group A coxsackie virus
 - (e) Parvovirus
32. The presence of Negri inclusion bodies in host cells is characteristic of
- (a) Mumps
 - (b) Infectious mononucleosis
 - (c) Congenital rubella
 - (d) Aseptic meningitis
 - (e) Rabies
33. Rhino virus is primarily transmitted by
- (a) Droplet aerosolization
 - (b) Sexual activity
 - (c) Fecal-oral route
 - (d) Fomites
 - (e) Vertical transmission from mother to child

15 + 3 = 18

34. Adults who have had varicella as children occasionally suffer a recurrent form of the disease, shingles. The agent causing these diseases is a member of which of the following viral families?

- (a) Herpes virus
- (b) Pox virus
- (c) Adenovirus
- (d) Myxovirus
- (e) Paramyxovirus

35. Eastern equine encephalitis virus is associated with a high fatality rate. Control of the disease could be possible by eradication of

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

36. Meningitis is characterized by the acute onset of fever and stiff neck. A septic meningitis may be caused by a variety of microbial agents. During the initial 24 hour of the course of a septic meningitis, an affected person's cerebrospinal fluid is characterized by

- (a) Decreased protein content
- (b) elevated glucose concentration
- (c) Lymphocytosis
- (d) Polymorphonuclear leukocytes
- (e) Eosinophilia

37. Which virus is the leading cause of the croup syndrome in young 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

38. One of the most common sexually transmitted diseases that may lead to cervical carcinoma is caused by which of the following viruses?

- (a) Cytomegalovirus
- (b) Papillomavirus
- (c) Epstein-Barr virus
- (d) Herpes simplex virus
- (e) Adenovirus

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39. A 39 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) Herpesvirus
- (c) Picornavirus
- (d) Orthomyxovirus
- (e) Paramyxovirus

40. Delta hepatitis only occurs in patients who 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 virus

41. Minimum inhibitory concentration

- (a) Is the lowest concentration of an antimicrobial agent that kills the organism.
- (b) Can be directly determined by Kirby-Bauer test.
- (c) Is determined by the lowest concentration of the drug with no turbidity
- (d) Cannot be derived from agar-dilution test.
- (e) Can directly be determined using stokes method

42. Normal flora of the mouth which is commonest in transient bacteraemia is

- (a) *Streptococcus agalactiae*
- (b) *Staphylococcus epidermidis*
- (c) *Enterococcus faecalis*
- (d) *Streptococcus viridians*
- (e) *Staphylococcus aureus*

43. In the lag phase of bacterial cell growth

- (a) Nutrients in the media are depleted
- (b) Generation time is constant
- (c) Cell division progressively slows down
- (d) Metabolic rate is high
- (e) There is maximal growth rate

4 = 26

44. The following are characteristics of pathogenic staphylococcus except

- (a) Produce toxins that contribute to tissue damage
- (b) Coagulase production
- (c) Beta-haemolysis
- (d) Are susceptible to penicillin
- (e) Mannitol fermentation

45. The following is true of *Haemophilus influenzae* except

- (a) Serotype 'b' is the strain responsible for most of the infection
- (b) Is a common cause of influenza
- (c) Requires both factor X and V for growth
- (d) Pathogenic serotypes are prevented by vaccination
- (e) Non-capsulated strains are present as part of the normal flora in the upper respiratory tract

46. Which of the following is true of *Streptococcus pneumoniae*?

- (a) Gram negative diplococci
- (b) Undergoes autolysis
- (c) Bacitracin sensitive
- (d) Optochin resistant
- (e) Catalase positive

47. Enrichment media include

- (a) Blood agar
- (b) Thayer Martin medium
- (c) Nutrient broth
- (d) Triple sugar iron medium
- (e) Alkaline peptone water

48. Antibiotics that act on the cell membrane:

- (a) Colistin
- (b) Vancomycin
- (c) Amikacin
- (d) Ciprofloxacin
- (e) Trimethoprim

49. In antibiotic susceptibility testing:
- (a) agar dilution test is a qualitative test
 - (b) minimum inhibitory concentration is a quantitative test
 - (c) the number of bacteria is standardized regardless of the method used
 - (d) Tube dilution test is qualitative
 - (e) Minimum bactericidal concentration is obtained before the minimum inhibitory concentration
50. Which of the following is not an acquired mechanism of antibiotic resistance?
- (a) Altered target
 - (b) Lack of a target
 - (c) Drug modification
 - (d) Altered permeability
 - (e) Altered metabolic pathway
51. Ciprofloxacin acts by inhibition of
- (a) cell wall synthesis
 - (b) RNA synthesis
 - (c) folic acid synthesis
 - (d) 30 S ribosomal sub unit
 - (e) DNA synthesis
52. Septic shock complicating bacteremia with *Neisseria meningitidis* is caused
- (a) capsular polysaccharide
 - (b) peptidoglycan
 - (c) outer membrane proteins
 - (d) pili
 - (e) lipopolysaccharide
53. Group B streptococcus
- (a) is bacitracin sensitive
 - (b) is a common causative agent of pharyngitis
 - (c) is capsulated
 - (d) produces an autolysin
 - (e) is sensitive to optochin

27 + 1 = 28

54. Inherent mechanisms of antibiotic resistance include

- (a) Active transport out of the cell by efflux pumps
- (b) enzymatic inactivation
- (c) reduced uptake due to changes in the porin channels
- (d) lack of an aminoglycoside transport system in *Enterococcus*
- (e) production of beta-lactamases

55. Bacterial cell wall component susceptible to lysozyme is

- (a) Teichoic acid
- (b) lipoteichoic acid
- (c) peptidoglycan
- (d) periplasmic space
- (e) outer membrane

56. Factors that influence antibiotic disc susceptibility test include:

- (a) size of the Petri dish used
- (b) room temperature
- (c) ability of the organism to form spores
- (d) depth of the agar
- (e) gram stain characteristics of the organism

57. The following bacterial anatomic structures are involved in virulence except

- (a) sex pili
- (b) capsule
- (c) fimbriae
- (d) mesosome
- (e) plasmid

58. The capacity of pathogenic bacterial to cause tissue damage is referred to as:

- (a) Infection
- (b) Colonization
- (c) Invasiveness
- (d) Virulence
- (e) Pathogenesis

59. Exotoxin production by *Corynebacterium diphtheriae* is determined by

- (a) Site infected
- (b) Source of infection
- (c) Transformation
- (d) Volutin granules
- (e) Lysogeny

60. *Bacillus anthracis* may be differentiated from anthracoides by
- (a) Spore stain
 - (b) Motility test
 - (c) colonial morphology
 - (d) Gram's stain
 - (e) Ability to grow in air
61. Which of these drugs is useful for treating *Ancylostoma duodenale* infection
- (a) Metronidazole
 - (b) Diethyl carbamazine (DEC)
 - (c) Quinine
 - (d) Albendazole
 - (e) None of the above
62. Microfilariae of all of these parasites have a sheath except
- (a) *Wuchereria bancrofti*
 - (b) *Brugia malayi*
 - (c) *Brugia timori*
 - (d) *Loa loa*
 - (e) *Onchocerca volvulus*
63. 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*
64. Muscle biopsy is useful for diagnosis of which of the following:-
- (a) *Onchocerca volvulus*
 - (b) *Loa loa*
 - (c) *Trichinella spiralis*
 - (d) *Wuchereria bancrofti*
 - (e) None of the above
65. The following may be a clinical manifestation of *Wuchereria bancrofti*
- (a) Hydrocele
 - (b) Elephantiasis
 - (c) Chyluria
 - (d) Splenomegaly
 - (e) Tropical pulmonary eosinophilia

66. Which of the following parasitic infections is only found in Africa
- (a) *Brugia malayi*
 - (b) *Onchocerca volvulus*
 - (c) *Loa loa*
 - (d) *Wuchereria bancrofti*
 - (e) All of the above
67. Which of these parasites have microfilariae with nucleus not reaching tip of the tail
- (a) *Onchocerca volvulus*
 - (b) *Brugia malayi*
 - (c) *Brugia timori*
 - (d) *Wuchereria bancrofti*
 - (e) None of the above
68. 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
69. Which of these parasites presents with cutaneous larval migrans
- (a) *Strongyloides stercoralis*
 - (b) *Necator americanus*
 - (c) *Ancylostoma duodenale*
 - (d) *Ancylostoma braziliense*
 - (e) All of the above
70. Which of these parasites present with calabar swellings?
- (a) *Mansonella perstans*
 - (b) *Onchocerca volvulus*
 - (c) *Loa loa*
 - (d) *Wuchereria bancrofti*
 - (e) *Brugia malayi*
71. Which of the following are NOT infective to man?
- (a) Filariform larvae
 - (b) Plerocercoid
 - (c) Rhabdiform larvae
 - (d) Microfilariae
 - (e) Cercariae

72. Which of the following is true of *Trichuris trichiura* infection?
- (a) Blood examination is useful in the diagnosis
 - (b) Infection is by penetration of skin by larvae
 - (c) The adult worms are partially embedded in the small intestines mucosa
 - (d) Prolapse of the rectum

73. Both adult and larval stages may occur in man in which of the following?

- (a) *Taenia taeniaformis*
- (b) *Taenia saginata*
- (c) *Diphylidium caninum*
- (d) *Taenia solium*
- (e) *Echinococcus granulosus*

74. Filariform larvae are infective stage of?

- (a) *Ascaris lumbricoides*
- (b) *Strongyloides stercoralis*
- (c) *Trichuris trichiura*
- (d) *Toxocara canis*
- (e) *Enterobius vermicularis*

75. Which of the following are transmitted through uncooked meat?

- (a) *Diphyllobothrium latum*
- (b) *Wuchereria bancrofti*
- (c) *Echinococcus granulosus*
- (d) *Onchocerca volvulus*
- (e) *Entamoeba coli*

76. Which of the following parasites are zoonotic?

- (a) *Trichinella spiralis*
- (b) *Trichuris trichiura*
- (c) *Entamoeba coli*
- (d) *Ancylostoma duodenale*
- (e) *Enterobius vermicularis*

77. Which of the following may present with chest infections?

- (a) *Hymenolepis diminuta*
- (b) *Trichuris trichiura*
- (c) *Enterobius vermicularis*
- (d) *Leishmania donovani*
- (e) *Taenia saginata*

78. Which of the following are true regarding *Strongyloides stercoralis*?

- (a) Transmitted by faecal-oral route
- (b) Hyperinfection may occur
- (c) Infective stage in rhabdiform larva
- (d) Inhabits the large intestines
- (e) Metronidazole is useful in its treatment

79. All the following are true of *Trichuris trichiura* except?

- (a) Inhabits the small intestines
- (b) May cause rectal proplase
- (c) Eggs have polar plugs on both ends
- (d) Albendazole its useful in its treatment
- (e) Adults resemble a whip

80. All of the following are true regarding *Ascaris lumbricoides* except?

- (a) It is an intestinal nematode
- (b) May cause intestinal obstruction
- (c) Inhabits the small intestines
- (d) Eggs have an operculum
- (e) Mebendazole is useful in its treatment

81. Which of the following parasites causes hepato-billiary obstruction

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

82. Which of the following parasites requires lengthy treatment?

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

83. Which of the following drugs is commonly used in treatment of intestinal nematodes?

- (a) Praziquantel
- (b) Albendazole
- (c) Ketoconazole
- (d) Miconazole
- (e) None of the above

84. Which of the following parasites is most commonly associated with dysentery syndrome?

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

85. Which of the following parasites is also known as whip worm?

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

86. Which of the following parasites is associated with Loeffler's syndrome?

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

87. In diagnosis of which of the following infections are you likely to find fully embryonated eggs?

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

42 + 3 = 45

88. Rectal prolapse is commonly associated with infections with

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

89. In diagnosis of which of the following infections is colonoscopy most useful?

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

90. Which of the following parasites has plano convex eggs?

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

91. Albendazole is useful for treatment of which parasitic infection

- (a) *Ascaris lumbricoides*
- (b) *Toxoplasma*
- (c) *Toxocara cati*
- (d) *Entamoeba histolytica*
- (e) *Giardia lamblia*

92. Which of the following may cause intestinal obstruction?

- (a) *Toxocara canis*
- (b) *Ascaris lumbricoides*
- (c) *Trichinella spiralis*
- (d) *Trichuris trichiura*
- (e) *Strongyloides stercoralis*

93. Which parasites penetrate intact skin?

- (a) *Trichinella spiralis*
- (b) *Toxocara canis*
- (c) *Trichuris trichiura*
- (d) *Toxocara canis*
- (e) *Necator americanus*

45 75
= 50

94. Intestinal parasites may cause

- (a) GIT bleeding
- (b) Malnutrition
- (c) Skin ulceration
- (d) Oesophagitis
- (e) Pharyngitis

95. Eggs that show mammillation are found in which disease

- (a) Ascariasis
- (b) Strongyloidiasis
- (c) Trichinellosis
- (d) Trichuriasis
- (e) Taeniasis

96. Surgery may be useful in which of these diseases?

- (a) Strongyloidiasis
- (b) Ascariasis
- (c) Taeniasis
- (d) Hookworm
- (e) Toxocariasis

97. Oral faecal transmission is associated with which of these parasites?

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

98. Which of the following will affect the adult *Ascaris* in the gut?

- (a) Type of food eaten
- (b) pH of stomach
- (c) Temperature of the body
- (d) Presence of other nematodes
- (e) Water

50 + 2 = 52

99. Rectal prolapse is common in which parasitic infection

- (a) *Ascaris lumbricoides*
- (b) *Trichinella spiralis*
- (c) *Trichuris trichiura*
- (d) *Strongyloides stercoralis*
- (e) *Necator americanus*

100. Protein energy malnutrition (PEM) is associated with

- (a) Strongyloidiasis
- (b) Taeniasis
- (c) Amoebiasis
- (d) Ascariasis
- (e) Trichinosis

$$52 + 1 = 53$$