The candidate should ensure that Question Paper Booklet No. of the Question Paper Booklet and Answer Sheet must be same after opening the Paper Seal / Polythene bag. In case they are different, a candidate must obtain another Question Paper. Candidate himself shall be responsible for ensuring this.

INSTRUCTIONS FOR CANDIDATES

1. Answer all questions.
2. All questions carry equal marks.
3. Only one answer is to be given for each question.
4. If more than one answers are marked, it would be treated as wrong answer.
5. Each question has four alternative responses marked serially as 1, 2, 3, 4. You have to darken only one circle or bubble indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.
6. The OMR Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars carefully with blue ball point pen only.
7. 1/3 part of the mark(s) of each question will be deducted for each wrong answer. A wrong answer means an incorrect answer or more than one answers for any question. Leaving all the relevant circles or bubbles of any question blank will not be considered as wrong answer.
8. Mobile Phone or any other electronic gadget in the examination hall is strictly prohibited. A candidate found with any of such objectionable material with him/her will be strictly dealt as per rules.
9. Please correctly fill your Roll Number in O.M.R. Sheet. 5 Marks can be deducted for filling wrong or incomplete Roll Number.

Warning: If a candidate is found copying or if any unauthorized material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would liable to be prosecuted. Department may also debar him/her permanently from all future examinations.
1. The specificity of an antibody is due to:
   (1) its valence
   (2) the heavy chains
   (3) the Fe portion of the molecule
   (4) the variable portion of the heavy and light chain

2. The mononuclear phagocyte system does not include:
   (1) Endothelial cells
   (2) Kidney mesangial cells
   (3) Kupffer cells
   (4) Lymph node medullary macrophages

3. Monoclonal antibodies are routinely used in all of the following, EXCEPT:
   (1) The classification of leukemias.
   (2) The identification and epidemiological study of infectious microorganisms.
   (3) The identification of tumor antigens.
   (4) The manipulation of the immune response.

4. Which of the following is used for typing when a patient is being prepared for an organ transplant?
   (1) MHC class I molecules
   (2) MHC class II molecules
   (3) MHC class III molecules
   (4) All of these

5. Which of the following species of Pasteurella species has been associated with infections of the female genital tract and of newborn?
   (1) Pasteurella multocida
   (2) Pasteurella pneumotropica
   (3) Pasteurella ureae
   (4) Pasteurella bettyae

6. Each of the following statements concerning the Gram stain is correct EXCEPT:
   (1) Escherichia coli stains pink because it has a thin peptidoglycan layer.
   (2) Streptococcus pyogenes stains blue because it has a thick peptidoglycan layer.
   (3) Mycoplasma pneumoniae is not visible in Gram’s stain because it does not have a cell wall.
   (4) Mycobacterium tuberculosis stains blue.

7. An 8 year old girl was playing in a slowly moving stream when she cut her foot on a sharp object. Three days later she was brought to the emergency room of a hospital because of pain and swelling at the site of the wound and drainage of pus from it. The most likely cause of the infection is:
   (1) Vibrio vulnificus
   (2) Escherichia coli
   (3) Aeromonas hydrophila
   (4) Salmonella typhimurium
8. 16 bacteria are produced by 1 bacterium after-
   (1) 2 generation
   (2) 4 generation
   (3) 5 generation
   (4) 3 generation

9. Creutzfeldt-Jakob disease (CJD), Kuru, Scrapie, and Mad Cow diseases are caused by:
   (1) Viroids
   (2) Retroviruses
   (3) DNA viruses
   (4) Prions

10. Resistance of Staphylococcus aureus to methicillin is most often caused by -
    (1) Alternation of the major target for the drug
    (2) Cell membrane impermeability
    (3) Decreased uptake of the antibiotic
    (4) Synthesis of a potent Beta Lactamase

11. Which one of the following factors, released by heating a suspension of sheep erythrocytes, is required for the growth of Haemophilus Influenzae in chocolate agar?
    (1) Coagulase
    (2) Nicotinamide adenine dinucleotide (NAD)
    (3) Hemoglobin
    (4) Hemolysin

12. Which of the following bacteria are not most important causes of acute bacterial meningitis?
    (1) Neisseria meningitidis
    (2) Streptococcus pneumonia
    (3) Haemophilus influenza
    (4) Streptococcus pyogens

13. Cold agglutinin test is useful for the diagnosis of-
    (1) Mycoplasma pneumonia
    (2) H. influenza
    (3) N. meningitidis
    (4) Cryptococcus neoformans

14. A massive lesion caused by spread of Staphylococcus aureus infection (often on the neck and upper back) is called:
    (1) Boil
    (2) Abscess
    (3) Furuncle
    (4) Carbuncle

15. Which of the following are not the characteristics of impetigo?
    (1) Common in children
    (2) Can be caused by Streptococcus pyogenes
    (3) Is highly contagious
    (4) Can be caused by pseudomonads
16. The bacteria that multiply in blocked skin pores, metabolize sebum, and can lead to the development of acne are:
   (1) Pseudomonas aeruginosa
   (2) Propionibacterium spp.
   (3) Serratia marcescens
   (4) Streptococcus pyogenes

17. Gram-negative bacteria, responsible for food poisoning are:
   (1) Salmonella
   (2) Pseudomonas
   (3) Clostridia
   (4) None of these

18. The inflammatory disease of the middle ear caused by Moraxella species is known as:
   (1) Deafness
   (2) Ear disorder
   (3) Hearing impairment
   (4) Otitis media

19. The minimum time for doubling of E.coli generation is approximately:
   (1) 1 hour
   (2) 30 minutes
   (3) 40 minutes
   (4) 20 minutes

20. In the death phase, there is a remarkable decrease in the number of:
   (1) Bacteria
   (2) Viable bacteria
   (3) Dividing bacteria
   (4) Progeny

21. A cluster of polar flagella is called:
   (1) Lophotrichous
   (2) Amphitrichous
   (3) Monotrichous
   (4) Petritrichous

22. Which of the following inference(s) indicate(s) the ability of an organism to utilize citrate as a sole source of carbon in Simmon's citrate medium?
   (1) Blue colour
   (2) Appearance of growth
   (3) Both Blue colour and Appearance of growth
   (4) None of these

23. A positive Mantoux test indicates an area of induration of:
   (1) 4-9 mm in diameter
   (2) 1-4 mm in diameter
   (3) 10 mm or more in diameter
   (4) None of these

24. The bacteria which cause(s) tuberculosis in man is/are:
   (1) M bovis
   (2) Mycobacterium tuberculosis
   (3) M africanum
   (4) All of these
25. The bacteria which is microaerophilic on primary isolation, is:
   (1) M fortuitum
   (2) Mycobacterium tuberculosis
   (3) M bovis
   (4) None of these

26. Example of a Saprophytic bacteria is:
   (1) M xenopi
   (2) Msmeagnatis
   (3) Mycobacterium chelonei
   (4) M marinum

27. Ascoli's thermoprecipition test helps in confirming the laboratory diagnosis of:
   (1) Tetanus
   (2) Anthrax
   (3) Typhoid
   (4) Cholera

28. The test(s) which can be used to differentiate anthrax bacilli from anthracoid bacilli is/are:
   (1) presence of medusa-head colony
   (2) presence of capsule
   (3) susceptibility to gamma phage
   (4) All of these

29. The toxin of Staphylococcus aureus that may result into scalded skin syndrome is:
   (1) Enterotoxin
   (2) Leucocidin
   (3) Epidermolytic toxin
   (4) Haemolysin

30. Which of the following test(s) may establish retrospective diagnosis of streptococcal infection?
   (1) Anti-DNase B test
   (2) ASO test
   (3) Streptozyme test
   (4) All of these

31. Which of the following Staphylococcal haemolysins does not possess leucocidal activity?
   (1) α haemolysin
   (2) γ haemolysin
   (3) β haemolysin
   (4) δ haemolysin

32. Streptococcus pyogenes can be differentiated from other haemolytic Streptococci on the basis of:
   (1) Bacitracin sensitivity
   (2) Erythromycin sensitivity
   (3) Aminoglycosides sensitivity
   (4) Penicillin sensitivity

33. Which of the following test indicates the susceptibility to streptococcal pyrogenic exotoxin?
   (1) Schick test
   (2) Disk test
   (3) ASO test
   (4) Precipitation test
34. Which is most likely to be exposed on the surface of a gram-negative bacterium?
   (1) Pore protein (porin)
   (2) Protein involved in energy generation
   (3) Lipoteichoic acid
   (4) Phospholipids

35. The next to last step in peptidoglycan biosynthesis is:
   (1) synthesis of the NAM-peptide subunit.
   (2) removal of the subunit from bacitrapin.
   (3) linking the sugar of the disaccharide-peptide unit to the growing peptidoglycan chain.
   (4) cross-linking the peptide side chains of peptidoglycan.

36. Implicit factors:
   (1) depend on developing microflora
   (2) can be synergistic
   (3) both depend on developing microflora and can be synergistic
   (4) None of these

37. The enzyme, which hydrolyses the murein is:
   (1) Peroxidase
   (2) Tannase
   (3) Lysozyme
   (4) None of these

38. Coliform bacteria on fermentation of carbohydrates yields:
   (1) Lactic acid
   (2) Acetic acid
   (3) Formic acid
   (4) All of these

39. Which of the following cross-reacts with cell wall carbohydrate of Streptococcus pyogenes?
   (1) Cardiac valves
   (2) Synovial fluid
   (3) Myocardium
   (4) Vascular intima

40. Crystal violet blood agar is a selective medium for:
   (1) β-haemolytic streptococci
   (2) Staphylococcus aureus
   (3) Corynebacterium diphtheria
   (4) Mycobacterium tuberculosis

41. The most pathogenic Brucella spp. for man is:
   (1) B melitensis
   (2) B abortus
   (3) B suis
   (4) B canis

42. Which of the following can be identified by milk ring test?
   (1) Brucellosis
   (2) Salmonellosis
   (3) Bovine tuberculosis
   (4) All of these
43. Colonies resembling molar teeth are produced by:
   (1) Nocardia brasiliensis
   (2) N. asteroids
   (3) Actinomyces israelii
   (4) Actinomadura madurae

44. The commonest species of Bacteroides in fragilis group, which causes human infection is:
   (1) B vulgates
   (2) B fragilis
   (3) B ovatus
   (4) B merdae

45. Which of the following bacterial colonies fluoresce brick-red in UVlight?
   (1) B gingivalis
   (2) B melaninogenicus
   (3) Bacteroides fragilis
   (4) B levii

46. Which of the following bacteria is moderately saccharolytic?
   (1) Bacteroides fragilis
   (2) B gingivalis
   (3) B melaninogenicus
   (4) B levii

47. Nagler’s reaction is useful for the identification of:
   (1) C tetani
   (2) C perfringens
   (3) C botulinum
   (4) C difficile

48. Clostridium botulinum food poisoning is due to:
   (1) invasion of bacteria in the intestine
   (2) preformed toxin
   (3) both invasion of bacteria in the intestine and preformed toxin
   (4) None of these

49. Typical drumstick appearance of bacilli is generally seen in:
   (1) C perfringens
   (2) C botulinum
   (3) C tetani
   (4) C histolyticum

50. Which of the following bacteria is associated with food poisoning due to consumption of sea fish?
   (1) Vibrio parahaemolyticus
   (2) V alginolyticus
   (3) V vulnificus
   (4) All of these
51. Which of the following medium are used to differentiate the colonies of Vibrio cholerae and V parahaemolyticus?
   (1) Alkaline bile salt
   (2) Thiosulphate-citrate-bile-sucrose
   (3) MacConkey
   (4) All of these

52. The transport medium for Vibrio cholerae can be:
   (1) Venkatraman-Ramakrishnan medium
   (2) Selenite F broth
   (3) Tetrathionate broth
   (4) Nutrient broth

53. Which of the following toxin resembles cholera toxin?
   (1) Stable toxin of E. coli
   (2) Diphtheria toxin
   (3) Labile toxin of Escherichia coli
   (4) Tetanus toxin

54. Cord growth seen on mycobacterial culture is characteristic of:
   (1) Avirulent strains
   (2) Virulent strains
   (3) Saprophytic strains
   (4) Atypical mycobacteria

55. Which one of the following are constituent of Lowenstein Jensen media except:
   (1) Agarose
   (2) Malachite green
   (3) Mineral salts
   (4) Asparagine

56. Mutations in katG gene of Mycobacterium tuberculosis are responsible for resistance to:
   (1) INH
   (2) Rifampicin
   (3) Pyrazinamide
   (4) Streptomycin

57. All of the following are non photochromogens, except:
   (1) Mycobacterium ulcerans
   (2) Mycobacterium xenopi
   (3) Mycobacterium avium
   (4) Mycobacterium marinum

58. M. Bovis is also a causative agent for Tuberculosis in human and is transmitted by:
   (1) Cow’s milk
   (2) Goat’s milk
   (3) Camel’s milk
   (4) Poultry

59. Non-tuberculous mycobacteria are those that do not infect lungs and are also called as:
   (1) Atypical bacteria
   (2) Non disease causing
   (3) Facultative bacteria
   (4) Neutral bacteria
60. The Actinomycetes that causes abscesses in the brain and kidney in immunodeficient patients are:
   (1) Actinomycetes israelii
   (2) Nocardia asteroides
   (3) M. marinum
   (4) M. leprae

61. An elderly male presented with fever, chest pain and dry cough. Sputum was cultured on charcoal yeast medium, the organism identified will be:
   (1) H.influenza
   (2) Moraxella catarrhalis
   (3) Legionella
   (4) Burkholderia cepacia

62. Salmonella typhi is the causative agent of typhoid fever. The infective dose of S. typhi is:
   (1) One bacillus
   (2) 10(8)-10(10) bacilli
   (3) 10(2)-10(5) bacilli
   (4) 1-10 bacilli

63. Clostridium perfringens type A occurs as a natural flora of
   (1) Stomach
   (2) Mouth
   (3) Intestine
   (4) Eyes

64. Erythrasma is caused by which of the following microorganism?
   (1) Corynebacterium diphtheria
   (2) Corynebacterium ulcerans
   (3) Corynebacterium minutissimum
   (4) Listeria monocytogenes

65. The finding of large, multinucleated, clumps of cells in the bronchial secretions of a 2 year old girl with acute bronchopneumonia suggests that this infection is caused by:
   (1) Bordetella pertussis
   (2) Epstein-Barr virus
   (3) Rhino virus
   (4) Respiratory syncytial virus (RSV)

66. What is the most common cause of aseptic meningitis of viral etiology?
   (1) Enteroviruses
   (2) Herpesviruses
   (3) Arboviruses
   (4) Orthomyxoviruses

67. When a virus enters a cell but does not replicate immediately, the situation is called:
   (1) Lysogeny
   (2) Fermentation
   (3) Symbiosis
   (4) Synergism
68. Which of the following is semi-continuous (diploid) cell line?
   (1) HeLa
   (2) HEP-2
   (3) WI-38
   (4) KB

69. The viral DNA is removed from the host’s chromosomes and the lytic cycle occurs. The process is called:
   (1) Spontaneous induction
   (2) Inductive infection
   (3) Resultant induction
   (4) Spontaneous infection

70. In the simplest capsid, there is a capsomere at each of the 12 vertices. This capsomere, which is surrounded by five other capsomeres, is termed as:
   (1) Penton
   (2) Polyhedral
   (3) Icosahedral
   (4) Helical

71. Which one is not useful in the treatment of viruses EXCEPT:
   (1) Acyclovir
   (2) Interferon
   (3) Penicillin
   (4) Antibodies

72. The most popular indirect method of counting virus particles is by:
   (1) Hemagglutination assay
   (2) Plaque-assay
   (3) Counting plaque-forming units
   (4) Colony counting

73. Inclusion bodies of measles virus are:
   (1) Intracytoplasmic
   (2) Intranuclear
   (3) Both Intracytoplasmic and Intranuclear
   (4) None of these

74. Which of the following oncogenic viruses was first detected?
   (1) Rous sarcoma virus
   (2) Epstein-Barr virus
   (3) Herpes simplex virus type 2
   (4) Human T cell leukaemia virus

75. Which of the following viruses can rescue adenovirus in simian cells?
   (1) Rabies
   (2) Vaccinia
   (3) Simian virus 40
   (4) Cytomegalovirus

76. The extracellular phage number increases until a constant titer at the end of the multiplication cycle. This time interval is termed as:
   (1) Eclipse period
   (2) Rise period
   (3) Latent period
   (4) Burst size
77. Viral gastroenteritis in young children is caused by:
   (1) Echo virus
   (2) Rota virus
   (3) Coxsackie virus
   (4) Rhino virus

78. In the virion structure, the regulatory protein is present which is known as:
   (1) Tegument
   (2) Cell membrane
   (3) Antigen
   (4) Coat

79. The mutations that are valuable in determining the function of the viral gene is called:
   (1) Substitution
   (2) Frameshift mutation
   (3) Conditional lethal mutation
   (4) Point mutation

80. Which of the following viruses have a complex symmetry?
   (1) Alphavirus
   (2) Mobillivirus
   (3) Orthopoxvirus
   (4) Parvovirus

81. The human virus that has been associated with Burkett’s lymphoma (a malignant tumor of the jaw) is:
   (1) Cytomegalovirus
   (2) Human papilloma virus (HPV)
   (3) Retroviruses
   (4) Epstein- Barr virus

82. All the following viruses are disseminated throughout the body EXCEPT ONE:
   (1) HBV
   (2) Rabies virus
   (3) Yellow fever virus
   (4) Human papilloma virus

83. Each of the following diseases is associated with infection by picornaviruses EXCEPT ONE:
   (1) Myocarditis
   (2) Hepatitis
   (3) Meningitis
   (4) Mononucleosis

84. Epidemic pleurodynia and mycarditis are both caused by:
   (1) Group B Coxsackievirus
   (2) Polymavirus
   (3) RSV
   (4) Reovirus

85. Certain viruses have been associated with birth defects, these teratogenic viruses include all the following EXCEPT:
   (1) Rubella virus
   (2) CMV
   (3) Parvovirus B19
   (4) Rhino virus
86. All of the following association are true EXCEPT ONE:

(1) EBV can cause nasopharyngeal carcinoma
(2) CMV causes heterophil-negative mononucleosis
(3) Mumps virus can cause meningitis
(4) Astrovirus causes gastroenteritis only in adults

87. What are the safe methods of disposal of dead bodies of persons who have died of suspected or confirmed COVID-19?

(1) Cremation
(2) Burial
(3) Both Cremation & Burial
(4) None of these

88. All the RNA viruses contain single-stranded RNA except:

(1) Reovirus
(2) Retrovirus
(3) Human Immunodeficiency Virus (HIV)
(4) Hepatitis B virus (HBV)

89. Which of the following is an example of head-and-tail bacteriophage?

(1) M13
(2) Lambda phage
(3) Pbr322
(4) M16

90. Which infection cycle is characterized by retention of the phage DNA molecule in the host bacterium for many thousands of cell division?

(1) Lysogenic cycle
(2) Lytic cycle
(3) Integrative phase
(4) Protein synthesis

91. Which herpes virus is most commonly associated with a dangerous fetal infection?

(1) Herpes simplex
(2) Herpes zoster
(3) EBV
(4) CMV

92. Which of the following is true about hepadnaviruses?

(1) All have double stranded RNA
(2) All have reverse transcriptase
(3) All have V oncoprotein
(4) All have double capsid

93. Bacteriophage are readily counted by the process of:

(1) Immunoassays
(2) ELISA
(3) Plaque assays
(4) Tissue cell culture
94. A type of cell culture that can reproduce for an extended number of generations and is used to support viral replication is a:

(1) Primary cell culture
(2) Continuous cell line
(3) Cell strain
(4) Diploid fibroblast cell

95. Aspergillosis is recognized in tissue by the presence of:

(1) Metachromatic granules
(2) Pseudohyphae
(3) Septate hyphae
(4) Budding cells

96. Infection with dermatophyte is most often associated with:

(1) Intravenous drug abuse
(2) Inhalation of the organism from contaminated bird feces
(3) Adherence of the organism to perspiration moist skin
(4) Fecal-oral transmission

97. Fungal cells that reproduce by budding are seen in the infected tissues of patients with:

(1) Candidiasis, cryptococcosis, and sporotrichosis
(2) Mycetoma, candidiasis and mucormycosis
(3) Tinea corporis, tinea unguium, and tinea versicolor
(4) Sporotrichosis, mycetoma and aspergillosis

98. Each of the following statements concerning *Cryptococcus neoformans* are correct EXCEPT:

(1) Its natural habitat is the soil, especially associated with pigeon feces.
(2) Budding yeasts are found in the lesions.
(3) The initial site of infection is usually the lung.
(4) Pathogenesis is related primarily to the production of exotoxin A.

99. Fungi often colonize lesions due to other causes. Which of the following is least likely to be present as colonizer:

(1) Candida
(2) Sporothrix
(3) Mucor
(4) Aspergillus

100. A 35-year-old man with a CD4 count of 50 presents with a skin nodule on his chest. The nodule is about 3 cm in diameter and is not red, hot, or tender. He says it has been slowly growing bigger for the past 3 weeks. You biopsy the nodule, and the pathologist calls to say that the patient has disseminated cryptococcosis. Which one of the following is the BEST description of what the pathologist saw in the biopsy specimen?

(1) Non-septate hyphae
(2) Spherules
(3) Septate hyphae with low-angle branching
(4) Budding yeasts with a thick capsule
101. Each of the following statements concerning mucormycosis is correct EXCEPT:

(1) Tissue sections from a patient with mucormycosis show budding yeasts.

(2) Ketoacidosis in diabetic patients is a predisposing factor to mucormycosis.

(3) Hyphae typically invade blood vessels and cause necrosis of tissue.

(4) The fungi that cause mucormycosis are transmitted by airborne asexual spores.

102. Which one of the following fungi is MOST likely to be found within reticuloendothelial cells?

(1) Cryptococcus neoformans

(2) Histoplasma capsulatum

(3) Candida albicans

(4) Sporothrix schenckii

103. Each of the following statements concerning fungi is correct EXCEPT:

(1) Thermally dimorphic fungi exist as yeasts at 37°C and as molds at 25°C.

(2) Molds are fungi that have elongated filaments called hyphae.

(3) Yeasts are fungi that reproduce by budding.

(4) Both yeasts and molds have a cell wall made of peptidoglycan.

104. To inhibit synthesis of DNA which drug is used?

(1) Caspofungin

(2) Micafungin

(3) Parafungin

(4) None of these

105. A girl who pricked her finger while pruning some rose bushes develops a local pustule that progresses to an ulcer. Several nodules then develop along the local lymphatic drainage. The most likely agent is:

(1) Aspergillus fumigates

(2) Sporothrix schenckii

(3) Cryptococcus neoformans

(4) Candida albicans

106. The host of Penicillium marneffii is:

(1) Bugs

(2) Bamboo rats

(3) Wild rats

(4) Cats

107. A network of fine white filaments in the vegetative part of the fungus is called:

(1) Septa

(2) Hyphae

(3) Mycelium

(4) Conidia
108. The natural habitat for the Paracoccidioides brasiliensis is -
   (1) Soil
   (2) Skin
   (3) Mud
   (4) Water

109. The fungal cell membrane in contrast to human cell membrane is composed of
   (1) Sterol
   (2) Lipids
   (3) Cholesterol
   (4) Ergosterol

110. The fungus responsible for ergotism belongs to which of the following fungal divisions?
   (1) Deuteromycota
   (2) Oomycota
   (3) Zygomycota
   (4) Ascomycota

111. Each of the following statements concerning Candida albicans is correct, EXCEPT:
   (1) C. albicans is a budding yeast that forms pseudohyphae when it invades tissue.
   (2) C. albicans causes thrush.
   (3) C. albicans is transmitted primarily by respiratory aerosol.
   (4) Impaired cell mediated immunity is an important predisposing factor to disease.

112. The medium of choice for culturing yeast form of dimorphic fungi is
   (1) Brain – heart infusion
   (2) Sabouraud’s
   (3) Sabouraud’s plus antibiotics
   (4) Any medium incubated at 35-37 °C

113. What would be the best temperature to incubate fungi like Candida albicans and Aspergillus fumigatus for antifungal susceptibility testing?
   (1) 25°C
   (2) 28°C
   (3) 30°C
   (4) 35°C

114. A 19-year-old migrant worker from south India is brought to the family doctor complaining of cough, pleuritic chest pain, fever, and malaise. He also complains of a backache and headache. He is found to have an erythematous skin rash on his lower limbs. A chest radiograph reveals several calcifying lesions. Which of the following structures is most likely to be found?
   (1) Broad-based budding yeast.
   (2) Septate hyphae branching dichotomously at acute angles.
   (3) Spherules with endospores.
   (4) Non-septate hyphae with broad angles.
115. Each of the following parasite is transmitted by mosquitoes EXCEPT:

(1) Leishmania donovani
(2) Wuchereria bancrofti
(3) Plasmodium vivax
(4) Plasmodium falciparum

116. Each of the following statements concerning kala-azar is correct EXCEPT:

(1) Kala-azar is caused by *Leishmania donovani*.
(2) Kala-azar is transmitted by the bite of sandflies.
(3) Kala-azar occurs primarily in rural India.
(4) Kala-azar can be diagnosed by finding amastigotes in bone marrow.

117. Pigs or dogs are the source of human infection by each of the following parasites EXCEPT:

(1) *Echinococcus granulosus*
(2) *Taenia solium*
(3) *Ascaris lumbricoides*
(4) *Trichinella spiralis*

118. The stool of the patient infected with what parasite is described as steatorrheic or grelly?

(1) Balantidium coli
(2) *Entamoeba histolytica*
(3) *Chilomastix mesnili*
(4) *Giardia lamblia*

119. Associated with uveitis or ulceration of the cornea:

(1) *Acanthamoeba culbertsoni*
(2) *Entamoeba histolytica*
(3) *Balantidium coli*
(4) *Naegleria fowleri*

120. *Entamoeba histolytica* can be cultured in:

(1) Diamonds medium
(2) CLED medium
(3) NNN medium
(4) Ma conkey agar

121. Which of the following acts as a main reservoir of *Balantidium coli* infection in human beings?

(1) Man
(2) Monkey
(3) Cow
(4) Pig

122. Which protozoan has a unique appearance, with a blue halo, when viewed using ultraviolet fluorescence microscopy?

(1) *Giardia lamblia*
(2) *Cryptosporidium hominis*
(3) *Cyclospora cayetanensis*
(4) *Entamoeba histolytica*
123. A non-segmented worm is found during a routine colonoscopy of an individual who reported having abdominal cramps, nausea and vomiting. This worm is likely which of the following?

(1) Nematode
(2) Fluke
(3) Trematode
(4) Annelid

124. Sabin - Feldman dye test is used in the diagnosis of

(1) Toxoplasmosis
(2) Amoebiasis
(3) Cryptosporidiosis
(4) Trypanosomiasis

125. What is the smallest tapeworm infecting man?

(1) Taenia sanginata
(2) Taenia solium
(3) Hymenlophis nana
(4) Diphyllobothrium latum

126. Primary amoebic meningoencephalitis is caused by:

(1) Acanthamoeba
(2) Balamuthia spp
(3) Naegleria fowleri
(4) Iodamoeba buetschlii

127. In the mode of transmission for Schistosoma mansoni, the penetration is in:

(1) Mucous
(2) Intestine
(3) Skin
(4) Blood

128. A 30-year-old woman presents to her gynecologist with complaints of vaginal itching and a frothy, yellow discharge. She also complains of painful urination. She admits to being sexually active with several men in the past two weeks. Cultures are negative for bacterial growth, but organisms are visible via a wet preparation on low power. The most likely causal agent is:

(1) Giardia lamblia
(2) Trichomonas vaginalis
(3) Candida albicans
(4) Chlamydia trachomatis

129. The examination of sputum and stool may be necessary to diagnose infections with:

(1) Paragonimus westermani
(2) Trichinella spiralis
(3) Wuchereria bancrofti
(4) Fasciola hepatica

130. The specimen that is LEAST LIKELY to provide recovery of Trichomonas vaginalis is:

(1) Urine
(2) Urethral discharge
(3) Prostatic discharge
(4) Feces
131. Each of the following statements concerning *Ascaris lumbricoides* is correct except:
(1) *Ascaris lumbricoides* is one of the largest nematode.
(2) *Ascaris lumbricoides* can cause pneumonia.
(3) Both dogs and cats are intermediate host of *Ascaris lumbricoides*.
(4) A lumbricoides is transmitted by ingestion of eggs.

132. Which of the following nematode is a ovo – viviparous?
(1) *Enterobius vermicularis*
(2) *Trichinella spiralis*
(3) *Strongyloides stercoralis*
(4) *Dracunculus medinensis*

133. Which of the following is not a bile stained egg?
(1) *Ascaris lumbricoides*
(2) *Trichuris trichiura*
(3) *Taenia solium*
(4) *Ancylostoma duodenale*

134. A 35-year-old captain in the army reserves has been plagued by a painful, erosive lesion near his ear lobe since his return from Operation Desert Storm several years ago. He denies exposure to the toxic by-products of burning oil fields. Punch biopsy of the leading edge of the erosion reveals macrophages distended with oval amastigotes. How was this infection acquired?
(1) Contact with contaminated drinking water
(2) Bite of reduviid bug
(3) Bite of tsetse fly
(4) Bite of sandfly

135. Nystatin is produced from the strain
(1) *Streptomyces noursei*
(2) *Streptomyces aureofaciens*
(3) *Streptomyces kanamyceticus*
(4) *Streptomyces fradiae*

136. Acycloguanosine is a nucleoside analog which is active against
(1) Influenza A virus
(2) HIV virus
(3) Herpes virus
(4) Influenza B virus

137. Which of the following is a drug that interferes with the process of DNA production in the virus that causes genital herpes?
(1) Erythromycin
(2) Vancomycin
(3) Amantadine
(4) Acyclovir

138. By which of the following means antifungal chemotherapeutic agents may affect fungi?
(1) Interfere with nuclear division by preventing the aggregation of microtubules needed for mitosis.
(2) Interfere with normal nucleic acid synthesis.
(3) Interfere with ergosterol biosynthesis and thus alter the structure of the cytoplasmic membrane as well as the function of several membrane-bound enzymes like those involved in nutrient transport and chitin synthesis.
(4) All of these
139. Who developed the concept of specific toxicity?
   (1) Pasteur
   (2) Fleming
   (3) Watson
   (4) Ehrlich

140. Treatment of municipal water supplies is based upon:
   (1) Coagulation, filtration, chlorination
   (2) Chlorination, filtration, coagulation
   (3) Filtration, coagulation, chlorination
   (4) Coagulation, chlorination, filtration

141. Who discovered transposons (jumping genes)?
   (1) Abelson
   (2) Harvey
   (3) McClintock
   (4) Griffith

142. The cloning step in PCR/sequencing analysis of microbial communities is necessary for:
   (1) the amplification process
   (2) preventing contamination by outside DNA
   (3) separating the different rRNA gene sequences in the mixture
   (4) None of these

143. Factors influencing the nosocomial infection are:
   (1) Patient susceptibility
   (2) Microbial agent
   (3) Environment factors
   (4) All of these

144. What are the types of hospital acquired infection?
   (1) Ventilator associated pneumonia
   (2) Surgical site infection
   (3) Central line associated blood stream infection
   (4) All of these

145. Which one of the following is most characteristic of Mycoplasma pneumoniae infection?
   (1) Infection results in a fever of sudden onset accompanied by a productive cough.
   (2) Infection most commonly occurs in the upper respiratory tract.
   (3) Infection is definitively diagnosed by direct microscopic examination of sputum.
   (4) Re-infection is rare and less severe than primary infection.

146. Each of the following organisms is an important cause of urinary tract infections except:
   (1) Klebsiella pneumoniae
   (2) Escherichia coli
   (3) Bacteroides fragilis
   (4) Proteus mirabilis
147. Candida Albicans present as normal flora in mouth colon and
(1) Vagina
(2) Intestine
(3) Uterus
(4) Skin

148. Lactobacillus is a human pathogen that is also part of normal flora and found in:
(1) Colon
(2) Mouth
(3) Genital Tract of female
(4) All of these

149. Which of the following is not a toxic type of food poisoning?
(1) Staphylococcus aureus
(2) Bacillus cereus
(3) Clostridium botulinum
(4) Campylobacter jejuni

150. A Child who has not been vaccinated with H.influenza comes to the OPD at 14 months. How many doses, including booster would you like to give to this child?
(1) 4 doses
(2) 3 doses
(3) 2 doses
(4) Only one dose

151. For the prevention of human rabies, immediate flushing and washing the wound(s) in animal bite cases, with plenty of soap and water, under running tap should be carried out for how much time?
(1) 2 minutes
(2) 1 minute
(3) 15 minutes
(4) 5 minutes

152. Which of the following antibiotics works by blocking RNA synthesis?
(1) Ofloxacin
(2) Rifampicin
(3) Chloramphenicol
(4) Tetracycline

153. Adjuvant used in DPT is:
(1) Silica
(2) B. Magnesium
(3) C. Manganese
(4) D. Aluminum

154. Which of the following is a causative agent of acute endocarditis?
(1) Salmonella typhi
(2) Haemophilus influenza
(3) Staphylococcus aureus
(4) Pseudomonas spp
155. Which of the following is an important disinfectant on account of effectively destroying gram-positive and gram negative bacteria, viruses and even spores at low pH levels
   (1) Phenol
   (2) Alcohol
   (3) Chlorine
   (4) Hexachlorophene

156. Phenol co-efficient indicates:
   (1) Efficacy of a disinfectant
   (2) Dilution of a disinfectant
   (3) Quantity of a disinfectant
   (4) Purity of a disinfectant

157. Prokaryotic cells are more resistant to osmotic shock than eukaryotic cells because:
   (1) Their cell wall is composed of peptidoglycan.
   (2) They are selectively permeable.
   (3) They contain osmoregulating porins.
   (4) They block water molecules from entering the cell.

159. Electron microscope studies does not help in identifying the section of bacterial spore:
   (1) Core
   (2) Spore cortex
   (3) Capsule
   (4) All of these

160. Cell cycle regulated by:
   (1) Cyclins
   (2) Cdk
   (3) Cyclins and Cdk
   (4) None of these

161. Which of these is a trace element for bacteria?
   (1) Mg^{2+}
   (2) Na^{+}
   (3) Ca^{2+}
   (4) Mn^{2+}

162. The protein moiety of an enzyme is known as:
   (1) Holo enzyme
   (2) Apo enzyme
   (3) Co-enzyme
   (4) Enzyme

163. Which one of the following mineral elements play an important role in biological nitrogen fixation?
   (1) Copper
   (2) Magnesium
   (3) Zinc
   (4) Molybdenum
164. The process of formation of mesozygote is called
(1) Meromixis
(2) Exozygote
(3) Mitosis
(4) Meiosis

165. The genetic material in HIV is:
(1) dsDNA
(2) ssDNA
(3) sRNA
(4) None of these

166. Humans normally have 46 chromosomes in skin cells. How many autosomes would be expected in a kidney cell?
(1) 46
(2) 23
(3) 47
(4) 44

167. Genomic DNA is extracted, broken into fragments of reasonable size by a restriction endonuclease and then inserted into a cloning vector to generate chimeric vectors. The cloned fragments are called
(1) Clones
(2) Genomic library
(3) mRNA
(4) None of these

168. Following substance may act as an antigen:
(1) Egg albumin
(2) RBC and serum
(3) Vegetable protein
(4) Snake venom

169. Which antibody is called millionaire molecule?
(1) IgA
(2) IgM
(3) IgG
(4) IgD

170. After the contact with foreign antigens, body produces specific antibody. These specific antibodies are readily detectable in serum following primary contact with antigen after:
(1) 10 min
(2) 1 h
(3) 5-7 days
(4) 3-5 weeks

171. An anamnestic response involves a/an:
(1) effector response
(2) high intensity
(3) rapid memory
(4) All of these

172. The membrane attack complex in the complement pathway consists of:
(1) C3b, C3b, Bb
(2) C5b, 6, 7, 8, 9
(3) C6, C7, C8, C9
(4) OH
173. One principal function of complement is to:

(1) bind antibodies attached to cell surfaces and to lyse these cells
(2) cross link allergens
(3) inactivate perforins
(4) mediate the release of histamine

174. Which of the following is useful to STIMULATE antibody production?

(1) An adjuvant
(2) A hapten
(3) Anti serum
(4) Purified antigen

175. Agammaglobulinemia is an immunodeficiency disease due to a deficiency in:

(1) T cells
(2) IgE
(3) Cytokines
(4) B cells

176. Which disease would be most similar to AIDS in its pathology?

(1) SCID
(2) Di-George syndrome
(3) Agammaglobulinemia
(4) ADA deficiency

177. All of the following are true with respect to IgE molecules, EXCEPT which one?

(1) They are involved in mediating anti-parasitic immune responses.
(2) They are the principal immunoglobulin class involved in allergic reactions.
(3) They can affect the release of histamine and other chemical mediators.
(4) They will cross the placenta and fix complement.

178. Fusion between a plasma cell and a tumor cell creates a:

(1) Myeloma
(2) Lymphoblast
(3) Lymphoma
(4) Hybridoma

179. A living microbe with reduced virulence that is used for vaccination is considered:

(1) A toxoid
(2) Dormant
(3) Virulent
(4) Attenuated

180. The ability of the immune system to recognize self antigens versus nonself antigen is an example of:

(1) Specific immunity
(2) Tolerance
(3) Cell mediated immunity
(4) Antigenic immunity