

ENTRANCE EXAMINATION FOR ADMISSION, MAY 2011.

M.Sc. (MEDICAL MICROBIOLOGY)

COURSE CODE : 503

Register Number :

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*Signature of the Invigilator  
(with date)*

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COURSE CODE : 503

Time : 2 Hours

Max : 400 Marks

*Instructions to Candidates :*

1. Write your Register Number within the box provided on the top of this page and fill in the page 1 of the answer sheet using pen.
2. Do not write your name anywhere in this booklet or answer sheet. Violation of this entails disqualification.
3. Read each question carefully and shade the relevant answer (A) or (B) or (C) or (D) in the relevant box of the ANSWER SHEET using HB pencil.
4. Avoid blind guessing. A wrong answer will fetch you -1 mark and the correct answer will fetch 4 marks.
5. Do not write anything in the question paper. Use the white sheets attached at the end for rough works.
6. Do not open the question paper until the start signal is given.
7. Do not attempt to answer after stop signal is given. Any such attempt will disqualify your candidature.
8. On stop signal, keep the question paper and the answer sheet on your table and wait for the invigilator to collect them.
9. Use of Calculators, Tables, etc. are prohibited.

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1. Reed Frost Model is a mathematical model of
  - (A) Infectious disease transmission and herd immunity
  - (B) Health insurance and community premium
  - (C) Infant mortality rate and life expectancy
  - (D) Consanguinity and congenital abnormalities
  
2. Allocation concealment is related to
 

(A) Cross sectional surveys	(B) Case control studies
(C) Prospective studies	(D) Randomized controlled trials
  
3. Berkson's Bias is a form of
 

(A) Selection Bias	(B) Observer Bias
(C) Classification Bias	(D) Recall Bias
  
4. Data cleaning is usually done
 

(A) At every data entry	(B) Before Master Chart preparation
(C) After Master Chart preparation	(D) If analysis points to outliers
  
5. One of the following is NOT an effect measure
 

(A) Attributable fractions	(B) Risk differences
(C) Rate ratios	(D) Exposure association
  
6. The distribution used to describe the occurrence of rare events in a large population is
 

(A) Log normal distribution	(B) Skewed distribution
(C) Geometric distribution	(D) Poisson distribution
  
7. Control group is used in experiments to reduce the impact of
 

(A) Randomization	(B) Methodological flaws
(C) Small sample size	(D) Extraneous variables
  
8. Which one is a measure of variation?
 

(A) Median	(B) Mode
(C) Mean	(D) Standard Deviation
  
9. What does 'P' in "P value" mean?
 

(A) Proportionate	(B) Probability
(C) Percentile	(D) Predetermined

10. Random allocation refers to assigning animals to different
- (A) Groups alternatively
  - (B) Treatments randomly
  - (C) Cages randomly
  - (D) Experiments haphazardly
11. Power of a study is calculated from
- (A) Level of significance
  - (B) Type 2 error
  - (C) Confidence interval
  - (D) Type 1 error
12. Frequency polygon is obtained by joining the mid-points of
- (A) Pie chart
  - (B) Simple bar chart
  - (C) Multiple bar chart
  - (D) Histogram
13. The following statements are true of null hypothesis EXCEPT
- (A) It states that the relationship predicted in the experimental hypothesis does not exist
  - (B) The results obtained are not due to consistent relationship between two variables
  - (C) The experimenter has to support this hypothesis to prove his prediction
  - (D) The null hypothesis is different from experimental hypothesis
14. All of the following conditions should be met before applying 't' test EXCEPT
- (A) The data should follow normal distribution
  - (B) Populations should have equal SD
  - (C) Samples must be chosen randomly
  - (D) The data must be nominal type
15. Incidental sampling technique
- (A) Is the same as random sampling
  - (B) Is difficult to do
  - (C) Easily accessible subjects are not selected
  - (D) Mayor may not be representative of the population
16. Which of the following is NOT a principle of medical ethics?
- (A) Ambiguity
  - (B) Beneficence
  - (C) Non maleficance
  - (D) Justice and equality

17. In a single blind study of a drug
- (A) The examiner does not know the treatment allocation
  - (B) The participant does not know the treatment allocation
  - (C) The principal investigator does not know the treatment allocation
  - (D) The funding agency does not know the treatment allocation
18. Which of the following is true regarding a case-control study?
- (A) A group of study subjects are followed up after recruiting
  - (B) Confounding factors can be controlled and there is no chance for bias
  - (C) Usually retrospective
  - (D) Very expensive and time consuming
19. How many genes constitute the human genome?
- (A) More than 1 million
  - (B) 4 Mb
  - (C) About 30,000
  - (D) 23 pairs
20. A discrete collection of gene fragments on a stamp-sized chip is called
- (A) Reference sequence
  - (B) SNP profile
  - (C) Gene microarray
  - (D) Semiconductor
21. The bacteria used as a sterilization control for hot air oven is
- (A) *Bacillus stearothermophilus*
  - (B) *Bacillus subtilis*
  - (C) *Clostridium perfringens*
  - (D) *Clostridium tetani*
22. All the following are credited to Robert Koch EXCEPT
- (A) Discovery of *Vibrio cholerae*
  - (B) Discovery of *Mycobacterium tuberculosis*
  - (C) Discovery of *Bacillus anthracis*
  - (D) Introduction of staining techniques
23. All the statements are true for malaria EXCEPT
- (A) Formed best in solid media
  - (B) Agglutinate red blood cells of guinea pig
  - (C) Form surface pellicles in liquid media
  - (D) Function as organs of adhesion

24. Which of the following is FALSE regarding transduction?
- (A) Transfer of genetic material through bacteriophages
  - (B) Transfers only chromosomal DNA
  - (C) Plasmids containing penicillin resistance genes in *Staphylococcus aureus* are transferred through transduction
  - (D) Any segment of the donor DNA can be transduced
25. All are true regarding Mantoux test EXCEPT
- (A) Becomes positive in all cases of tuberculosis
  - (B) Involves injection of purified protein derivative
  - (C) Involves CD4 cells
  - (D) Is more sensitive than Tine test
26. All the following are true regarding bacterial spores EXCEPT
- (A) Resistant to antibiotics
  - (B) Allow bacteria to multiply during unfavourable conditions
  - (C) Mostly seen in gram negative bacteria
  - (D) Can be stained by gram stain
27. Epstein Barr virus is associated with
- (A) Nasopharyngeal cancer
  - (B) Oral cancer
  - (C) Maxilla cancer
  - (D) Skin cancer
28. Antigen variation is a defence mechanism in
- (A) *Streptococcus pneumoniae*
  - (B) *Neisseria meningitidis*
  - (C) *Borrelia recurrentis*
  - (D) *Brucella abortus*
29. CD3 antigen is a surface molecule found in
- (A) All T lymphocytes
  - (B) All B lymphocytes
  - (C) All natural killer cells
  - (D) Only on T helper cells
30. All the following toxins are produced by *Staphylococcus aureus* except
- (A) Enterotoxin
  - (B) Exfoliative toxin
  - (C) Pyrogenic exotoxin
  - (D) Toxic shock syndrome toxin

31. *Vibrio* species that ferments lactose is
- (A) *Vibrio vulnificus* (B) *Vibrio parahemolyticus*  
 (C) *Vibrio alginolyticus* (D) *Vibrio mimicus*
32. The antigen is used in the Brucella agglutination test is
- (A) *Brucella melitensis* (B) *Brucella abortus*  
 (C) *Brucella suis* (D) *Brucella ovis*
33. All the following are true of T cell dependent antigens EXCEPT
- (A) Structurally complex  
 (B) Immunogenic over a wide dose range  
 (C) Cause tolerance readily  
 (D) Induce all immunoglobulin classes
34. The antibiotic which acts exclusively on Gram positive bacteria is
- (A) Streptomycin (B) Gentamicin  
 (C) Vancomycin (D) Tobramycin
35. One of the following is not a cause of eumycotic mycetoma
- (A) *Streptomyces somaliensis* (B) *Pseudallescheria boydii*  
 (C) *Leptosphaera senegalensis* (D) *Aspergillus nidulans*
36. The fungi that cannot be cultivated in vitro is
- (A) *Rhinosporidium seeberi* (B) *Madurella gnsea*  
 (C) *Cladophialophora carrioni* (D) *Exophiala werneckii*
37. Endothrix hair infection is caused by all the following EXCEPT
- (A) *Trichophyton Schonleinii* (B) *Trichophyton Violaceum*  
 (C) *Trichophyton tonsurans* (D) *Trichophyton mentagrophytes*
38. In addition to *Candida albicans*, the other species which produces germ tube is
- (A) *Candida kefyri* (B) *Candida parapsilosis*  
 (C) *Candida dubliniensis* (D) *Candida lusitaniae*
39. *Mycobacterium tuberculosis* and *Vibrio cholerae* were discovered by
- (A) Loeffler (B) Welch  
 (C) Pfeiffer (D) Robert Koch

40. Lipopolysaccharide is a major constituent of cell wall in  
(A) Gram-positive bacteria (B) Gram-negative bacteria  
(C) Fungi (D) None of the above
41. Sterols are present in the cytoplasmic membrane of  
(A) Mycoplasma (B) Bacillus  
(C) Clostridium (D) Proteus
42. MacConkey medium is an example of  
(A) Transport medium (B) Differential medium  
(C) Enrichment medium (D) Enriched medium
43. The bacteria that can grow in acidic pH is  
(A) Lactobacilli (B) Vibrio cholerae  
(C) Salmonella (D) Shigella
44. Amebic keratitis is caused by  
(A) Naegleria fowleri (B) Acanthamoeba spp.  
(C) Balamuthia mandrellaris (D) Naegleria astronyxis
45. The following statements are true about the Entero test EXCEPT  
(A) Used for the parasitic diagnosis of Giardia lamblia  
(B) Consists of a nylon string attached to a gelatin capsule  
(C) The capsule is introduced into the patient through his rectum  
(D) Contents of the duodenum are collected
46. Regarding kala-azar, the following statements are true EXCEPT  
(A) The disease is transmitted by the bite of an infected sandfly  
(B) Man is a definitive host of the parasite  
(C) The parasite is cultivated in the NNN medium incubated at 37°C  
(D) The condition can also be caused by L. infantum and L. chagasi
47. CNS infection occurs by all the parasites EXCEPT  
(A) Paragonimus westennanii (B) Schistosoma japonicum  
(C) Angiostrongylus cantonensis (D) Dracunculus medinensis

48. Which of the following parasite is variably acid fast in a modified acid fast stained smear of stool?
- (A) *Cyclospora cayetanensis* (B) *Isospora belli*  
 (C) *Cryptosporidium parvum* (D) *Cryptosporidium muris*
49. All of the following parasites are associated with malignancies EXCEPT
- (A) *Schistosoma haematobium* & carcinoma bladder  
 (B) *Clonorchis sinensis* & carcinoma of bile duct  
 (C) *Trichomonas vaginalis* & carcinoma cervix  
 (D) *Plasmodium falciparum* & leukemia
50. All of the following are parasitic zoonoses EXCEPT
- (A) Cystic echinococcosis (B) Balantidiasis  
 (C) Chaga's disease (D) Amebiasis
51. Maurer's clefts are seen in infection with
- (A) *Plasmodium vivax* (B) *Plasmodium falciparum*  
 (C) *Plasmodium ovale* (D) *Plasmodium malariae*
52. Loeffler's syndrome is seen in infection caused by
- (A) *Ascaris lumbricoides* (B) Hookworm  
 (C) *Enterobius vermicularis* (D) *Trichuris trichiura*
53. Calabar swellings are seen in infection with the
- (A) *Loa loa* (B) *Onchocerca volvulus*  
 (C) *Brugriya malayi* (D) *Mansonella ozzardi*
54. The definitive host of *Taenia solium* is
- (A) Cattle (B) Pig  
 (C) Man (D) Sheep
55. Mucocutaneous leishmaniasis is caused by
- (A) *Leishmania donovani* (B) *Leishmania braziliensis*  
 (C) *Leishmania tropica* (D) *Leishmania infantum*

56. The most widespread *Plasmodium* species causing malaria in India is  
 (A) *Plasmodium vivax* (B) *Plasmodium falciparum*  
 (C) *Plasmodium ovale* (D) *Plasmodium malariae*
57. Proliferative neoplasm-like infiltration of the liver is produced due to infection by  
 (A) *Echinococcus granulosus* (B) *Echinococcus multilocularis*  
 (C) *Echinococcus vogeli* (D) *Echinococcus oligarthosus*
58. The ovo-viviparous nematodes is  
 (A) *Ascaris lumbricoides* (B) *Dracunculus medinensis*  
 (C) *Strongyloides stercoralis* (D) *Enterobius vermicularis*
59. The egg that does not float in saturated solution of common salt is  
 (A) Egg of *Ascaris lumbricoides* (B) Egg of hookworm  
 (C) Egg of *Taenia* (D) Egg of *Trichuris trichiura*
60. The causative agent of eosinophilic meningitis is  
 (A) *Necator americanus* (B) *Trypanosoma brucei*  
 (C) *Heterophyes heterophyes* (D) *Angiostrongylus cantonensis*
61. Which of the following *Clostridium* species is non motile?  
 (A) *Clostridium septicum* (B) *Clostridium tetani*  
 (C) *Clostridium perfringens* (D) *Clostridium histolyticum*
62. Which of the following viral enzymes is also called receptor destroying enzyme?  
 (A) Integrase (B) Polymerase  
 (C) Protease (D) Neuraminidase
63. Acute haemorrhagic conjunctivitis is caused by  
 (A) Enterovirus 68 (B) Enterovirus 69  
 (C) Enterovirus 70 (D) Enterovirus 71
64. The bacteria which requires the largest infective dose is  
 (A) *Salmonella Typhi* (B) *Shigella dysenteriae*  
 (C) *Campylobacter jejuni* (D) *Vibrio cholerae*

65. Example of combined immuno deficiency disease is  
 (A) Di George syndrome (B) Bruton's agammaglobulinemia  
 (C) Wiskott-Aldrich syndrome (D) Chronic granulomatous disease
66. One of the following is an example of passive natural immunity  
 (A) Sub-clinical infections producing immunity to infection  
 (B) Transfer of maternal antibodies in colostrums to the child  
 (C) Administration of anti-tetanus serum  
 (D) Administration of BCG vaccine
67. The mechanism of complement mediated lysis of cell is  
 (A) Enzymatic digestion of the cell membrane  
 (B) Activation of adenylate cyclase  
 (C) Insertion of complement proteins into the cell membrane  
 (D) Inhibition of elongation factor
68. Allo graft rejection is an example of  
 (A) Delayed type hypersensitivity (B) Immediate hypersensitivity  
 (C) Graft versus host reaction (D) Schwartzman reaction
69. Episomes in bacteria are  
 (A) Protein structures (B) Not essential for the life of cell  
 (C) Sites of bacterial metabolism (D) Vacuolar structures
70. The following are true for cholera toxin EXCEPT  
 (A) It is exotoxin  
 (B) It is a protein with molecular wt. 84,000  
 (C) It is not antigenic  
 (D) It acts by cyclic adenosine 3'5' monophosphate (CAMP) pathway
71. The habitat of meningococci in carriers is  
 (A) Hands and fingers (B) Perianal skin  
 (C) Conjunctiva (D) Nasopharynx

72. Indirect coomb's test is done to
- (A) To detect sensitized foetal cells
  - (B) To detect antibodies in foetal serum
  - (C) To detect sensitized maternal cells
  - (D) To detect antibodies in maternal serum
73. The following is not a feature of autoimmune disease
- (A) Demonstrable autoantibodies
  - (B) Accumulations of lymphocytes at site of lesion
  - (C) Normal level of immunoglobulins
  - (D) Chronicity
74. The parasite that causes endemic haematuria is
- (A) *Schistosoma haematobium*
  - (B) *Schistosoma avium*
  - (C) *Schistosoma japonicum*
  - (D) *Schistosoma mansoni*
75. The yeast with a round structure, a double refractile wall and a single broad-based bud
- (A) *Cryptococcus neoformans*
  - (B) *Candida albicans*
  - (C) *Coccidioides immitis*
  - (D) *Blastomyces dermatitidis*
76. The genome of influenza virus consists of
- (A) Double stranded segmented DNA
  - (B) Single stranded segmented DNA
  - (C) Double stranded segmented RNA
  - (D) Single stranded segmented RNA
77. The causative agent of eosinophilic meningitis is
- (A) *Angiostrongylus cantonensis*
  - (B) *Angiostrongylus costaricensis*
  - (C) *Ancylostoma braziliensis*
  - (D) *Ancylostoma duodenale*
78. The swollen belly syndrome is caused by
- (A) *Strongyloides fulleborni*
  - (B) *Necator americanus*
  - (C) *Entamoeba histolytica*
  - (D) *Ancylostoma duodenale*

79. The filarial worm that causes pulmonary infection in human is  
 (A) *Dirofilaria immitis* (B) *Mansonella streptocerca*  
 (C) *Onchocerca volvulus* (D) *Loa loa*
80. Maltese-cross sign is characteristically seen in  
 (A) *Babesia microti* (B) *Echinococcus granulosus*  
 (C) *Plasmodium knowlesi* (D) *Leishmania donovani*
81. The specimen of choice for demonstration of *Salmonella* antigen in diagnosis of carriers in enteric fever is  
 (A) Blood (B) Faeces  
 (C) Sputum (D) Urine
82. Owl's eye is the characteristic feature of the cell infected by  
 (A) Herpes simplex virus (B) Epstein-Barr virus  
 (C) Cytomegaloviruses (D) Human herpes virus 8
83. Which of the following is NOT true regarding plasmids?  
 (A) Not essential for the life of the bacteria  
 (B) Can transmit characters like drug resistance and toxigenicity  
 (C) Is not capable of independent replication  
 (D) Are important vectors in genetic engineering
84. Water constitutes what percentage of the weight of a bacterial cell?  
 (A) 60% (B) 70%  
 (C) 80% (D) 90%
85. Which of the following fungi CANNOT be cultivated in vitro?  
 (A) *Rhinosporidium seeberi* (B) *Madurella grisea*  
 (C) *Cladophialophora carrioni* (D) *Exophiala werneckii*
86. Which of the following is the largest pathogenic bacterium of man?  
 (A) *Bacillus anthracis* (B) *Clostridium tetani*  
 (C) *Listeria monocytogenes* (D) *Arcanobacterium hemolyticum*

87. The most capnophilic species of *Brucella* is  
 (A) *Brucella suis* (B) *Brucella melitensis*  
 (C) *Brucella abortus* (D) *Brucella canis*
88. The most pathogenic species of *Aspergillus* is  
 (A) *Aspergillus nidulans* (B) *Aspergillus niger*  
 (C) *Aspergillus fJavus* (D) *Aspergillus fumigatus*
89. Which of the following is an example of passive agglutination test?  
 (A) Widal test (B) Paul-gunnel test  
 (C) Rose Waaler test (D) Weil-Felix test
90. Which of the following bacteria can be observed by Gram staining?  
 (A) *Leptospira* (B) *Treponema*  
 (C) *Borrelia* (D) *Rickettsia*
91. Which one of these immunologic abnormalities is NOT a consequence of loss of helper T (CD4) cells?  
 (A) Decreased in vitro lymphocyte proliferation response to alloantigens  
 (B) Decreased ability to mount an antibody response to a T-dependent antigen  
 (C) Decreased or negative skin tests  
 (D) Decreased anaphylaxis
92. The following statement are true for atopy EXCEPT  
 (A) It is a naturally occurring familial hypersensitivity  
 (B) The antigens commonly involved are inhalarant or ingestants  
 (C) It is difficult to induce artificially  
 (D) It is not genetically determined
93. Bacteraemia due to the following *Streptococcus* is associated with colon cancer  
 (A) *Streptococcus faecalis* (B) *Streptococcus agalactiae*  
 (C) *Streptococcus faecium* (D) *Streptococcus bovis*
94. In lepromatous leprosy lepromin test is usually  
 (A) Positive (B) Negative  
 (C) Strong positive (D) Equivocal