



SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY

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ROLL NUMBER

WRITTEN TEST FOR THE POST OF SCIENTIFIC.ASST. (LAB)
TO SR. SCIENTIFIC.ASST. (LAB)

DATE: 25/09/2024

Time: 09.30 To 10.30 AM

DURATION: 60 MINUTES

Total Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Write your Roll Number on the top of the Question Booklet and in the answer sheet.
2. Each question carries 1 mark.
3. There will not be any Negative Marking.
4. Write legibly the alphabet of the most appropriate answer (A, B, C or D) in the separate answer sheet provided.
5. Over-writing is not permitted.
6. Candidate should sign in the question paper and answer sheet.
7. Candidate should hand over the answer sheet and question paper to the invigilator before leaving the examination hall.

Signature of the Candidate

Kavya
25/9/24

MICROBIOLOGY – Scientific Assistant 1st MFCP

25th Sept 2024

- 1. Which of the following is NOT a general property of viruses?**
 - A. They can reproduce independently outside of a host cell.
 - B. They contain either DNA or RNA as their genetic material.
 - C. They lack cellular structure and are obligate intracellular parasites.
 - D. They can be crystallized and remain infectious.

- 2. Which of the following is NOT a common feature of Hepatitis B virus infection?**
 - A. Chronic liver disease
 - B. Transmission via contaminated food
 - C. Presence of viral surface antigens in the blood
 - D. Risk of liver cirrhosis and hepatocellular carcinoma

- 3. Which virus was recently associated with outbreaks in various regions and is known to cause severe birth defects when pregnant women are infected?**
 - A. Polio virus
 - B. Influenza virus
 - C. Zika Virus
 - D. Nipah Virus

- 4. Which advanced technique is used to detect and quantify the presence of viral RNA in a sample, providing a method for both detection and viral load measurement?**
 - A. Northern blotting
 - B. Enzyme-linked Immunosorbent Assay (ELISA)
 - C. Real-Time Polymerase Chain Reaction (qPCR)
 - D. Southern blotting

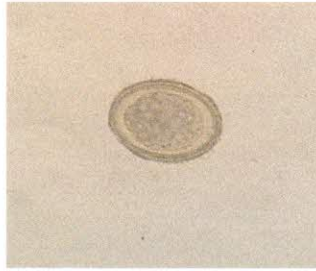
- 5. Which of the following best describes the syndromic approach to diagnostics in viral detection?**
 - A. Identification of viruses by their specific genetic sequences alone.
 - B. Diagnosis based on the overall pattern of symptoms and clinical presentation.
 - C. Culturing viruses in a specialized medium for detection.
 - D. Using only serological tests to identify viral infections.

- 6. What is the primary reason for the annual updates to the influenza vaccine composition?**
 - A. To include vaccines for newly discovered influenza viruses
 - B. To account for changes in influenza virus strain prevalence due to antigenic drift
 - C. To improve vaccine stability and shelf-life
 - D. To enhance the vaccine's effect on non-influenza viruses

- 7. In Western blotting, how is the presence of specific proteins detected after they have been transferred to a membrane?**
 - A. By using a specific antibody conjugated with a detectable enzyme or fluorophore.
 - B. By using a radioactive tracer to visualize the proteins.
 - C. By staining the proteins with a non-specific dye.
 - D. By applying a specific PCR reagent that amplifies the protein sequence

8. Which of the following antigens is associated with the primary diagnostic test for detecting Dengue Virus in clinical samples?
- A. MPT4
 - B. NS1
 - C. H1N1
 - D. Surface Antigen
9. What is the primary mode of transmission for Mpox?
- A. Airborne droplets
 - B. Direct contact with body fluids
 - C. Contaminated water
 - D. Mosquito bites
10. Which viral component is primarily responsible for binding to host cell receptors during the initial stage of infection?
- A. Capsid proteins
 - B. Viral RNA or DNA
 - C. Envelope glycoproteins
 - D. Matrix proteins
11. What is the primary target cell type for SARS-CoV-2 infection?
- A. Platelets
 - B. Alveolar macrophages
 - C. Respiratory epithelium
 - D. Hepatocytes
12. Which animal is the primary reservoir host for Crimean Congo Hemorrhagic fever virus, known for its role in the virus's ecology?
- A. Cattle
 - B. Rats
 - C. Dogs
 - D. Horses
13. Which vaccine is part of the Universal immunisation programme?
- A. Cholera vaccine
 - B. MMR vaccine
 - C. Rabies vaccine
 - D. S.Typhi vaccine
14. Which of the following viruses causes a highly contagious disease characterized by a rash, high fever, and Koplik spots?
- A. Measles virus
 - B. Mumps virus
 - C. Rubella virus
 - D. Varicella-zoster virus
15. In which stage of HIV infection is the p24 antigen test most effective in detecting the virus?
- A. During antiretroviral therapy
 - B. Chronic HIV infection
 - C. Advanced AIDS
 - D. Acute HIV infection (early stage)

16. Identify the parasite:



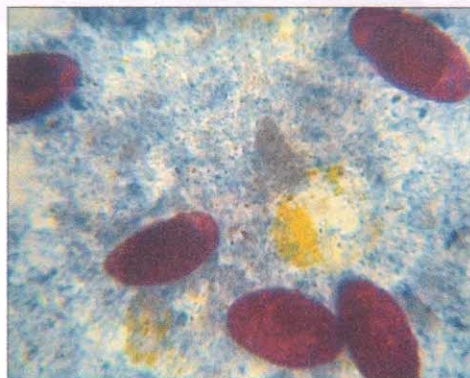
- A. *Necator americanus*
- B. *Trichuris trichiura*
- C. *Balantidium coli*
- D. *Ascaris lumbricoides*

17. Identify the parasite



- A. *Entamoeba histolytica*
- B. *Giardia intestinalis*
- C. *Blastocystis hominis*
- D. *Acanthamoeba castellani*

18. Identify the parasite



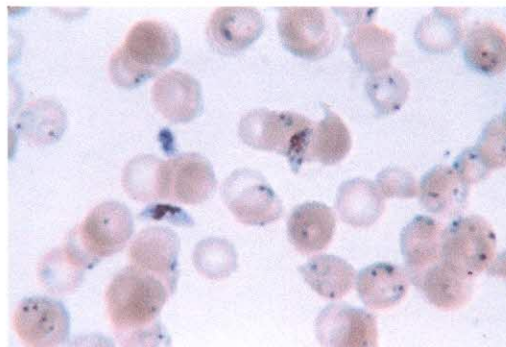
- A. *Cryptosporidium parvum*
- B. *Cytoisospora belli*
- C. *Cyclospora cayetanensis*
- D. *Acanthamoeba castellani*

19. Identify the parasite



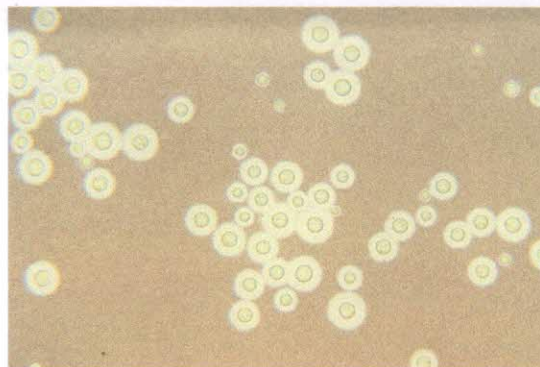
- A. *Ancylostoma duodenale*
- B. *Hymenolepis nana*
- C. *Enterobius vermicularis*
- D. *Trichuris trichiura*

20. Identify the parasite



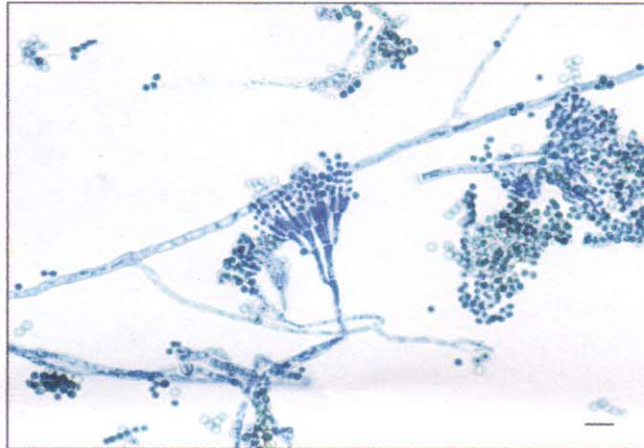
- | | |
|---------------------------------|-------------------------------|
| A. <i>Plasmodium falciparum</i> | C. <i>Trypanosoma cruzi</i> |
| B. <i>Babesia microti</i> | D. <i>Plasmodium knowlesi</i> |

21. Identify the fungus



- | | |
|---------------------------------|-------------------------------|
| A. <i>Candida albicans</i> | C. <i>Cryptococcus gattii</i> |
| B. <i>Trichosporon beigelli</i> | D. <i>Blastomyces hominis</i> |

22. Identify the fungus

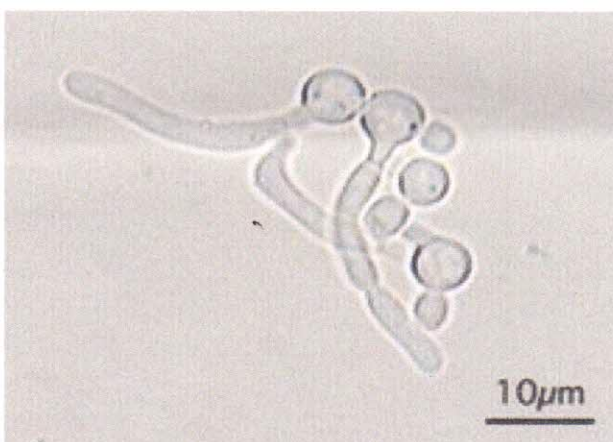


- A. *Aspergillus nidulans*
- B. *Penicillium citrinum*
- C. *Paecilomyces variotii*
- D. *Pseudallescheria boydii*

23. Which of the following is a dimorphic fungus?

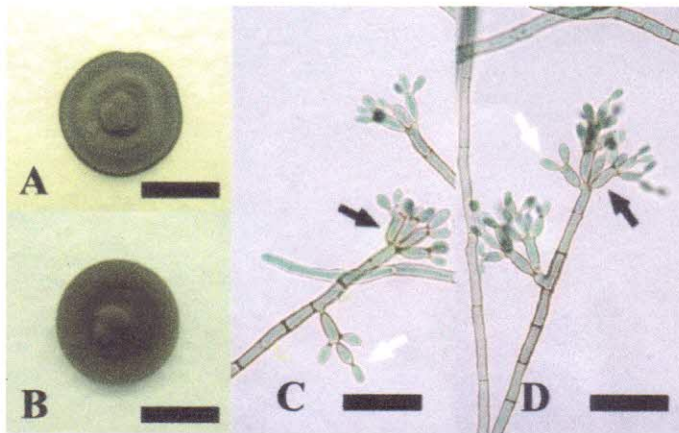
- A. *Fonsecaea pedrosoi*
- B. *Rhinocladiella mackenziei*
- C. *Sporothrix schenckii*
- D. *Wangiella dermatitidis*

24. Identify the fungus



- A. *Candida glabrata*
- B. *Trichosporon pullulans*
- C. *Saccharomyces cerevisiae*
- D. *Candida albicans*

25.



- A. *Fonsaceae pedrosoi*
- B. *Rhinocladiella mackenziei*
- C. *Sporothrix schenckii*
- D. *Exophiala jeanselmei*

26. Category 3 pathogens include :

- A. Those that have risk of spread in the community and have a definite treatment or prophylaxis
- B. Those that are easily spread by blood and do not have a definite treatment
- C. Serious disease to humans with no prophylaxis or treatment
- D. Those that do not have risk of spread, but have prophylaxis or treatment.

27. A Class 1 safety cabinet is needed for containment Level:

- A. 1
- B. 2
- C. 3
- D. 4

28. Internal Audit in a laboratory includes:

- A. Regular assessment of quality parameters
- B. Regular assessment of safety risks to the lab personnel
- C. Regular assessment and improvement loop
- D. Overall quality of medical care in a hospital

29. Syndromic testing is a novel concept in testing that involves:

- A. Wide, blind testing for all infectious diseases
- B. Panel testing based on a set of clinical signs and symptoms
- C. A single Test that covers bacteria , viruses and fungi
- D. Blood culture to identify the pathogen

30. CSF is a specimen that comes under the category:

- A. Unsterile
- B. With normal flora
- C. Sterile body fluid
- D. Clean Contaminated

31. Sequencing is a new area in Microbiology that helps to identify:
- A. Toxins
 - B. Important Antigens of a microorganism
 - C. Antibody response
 - D. Genetic mutations
32. The test that differentiates *Staphylococci* from *Micrococci*:
- A. Lysozyme test
 - B. Catalase test
 - C. Hippurate hydrolysis
 - D. Bile solubility
33. The genus *Enterobacter* is all the following except:
- A. VP negative
 - B. Motile
 - C. Ferment lactose
 - D. Citrate positive
34. The genus *Brucella* is characterised by:
- A. Catalase negative
 - B. Nitrate reduction negative
 - C. Urease positive
 - D. Lactose fermenting
35. The indicator dye used in the Urease test is:
- A. Andrade's reagent
 - B. Phenol red
 - C. Bromocresol purple
 - D. Methyl red
36. The species of the genus *Salmonella* that causes human infection is :
- A. Enteritidis
 - B. Typhi
 - C. enterica
 - D. Paratyphi A
37. The outer membrane seen in Gram negative bacteria that contains porins is made of:
- A. Protein
 - B. Polysaccharide
 - C. Lipopolysaccharide
 - D. Lipoteichoic acid
38. Following characteristics of *M. tuberculosis* complex distinguish it from other non-tuberculous mycobacteria, except:
- A. Slow growth
 - B. Inhibition by p-nitrobenzoic acid
 - C. Growth is inhibited at 41°C
 - D. Catalase positivity
39. GenExpert is a rapid test to detect *M. tuberculosis* in samples, using the principle of:
- A. ELISA
 - B. Spectroscopy
 - C. Biochemical reactions
 - D. Nucleic Acid amplification
40. The Elek's Gel precipitation test is used to demonstrate:
- A. Diphtheria antigen
 - B. Diphtheria toxin
 - C. Tetanus toxin
 - D. Pneumococcal antigen

- 41.** Antigen antibody reactions can be visualised by all the following Except:
- A. Flourescent tag
 - B. Enzyme-substrate reaction
 - C. Latex particles
 - D. Mordant dye complexes
- 42.** Gamma interferon is produced by:
- A. T Lymphocytes
 - B. B Lymphocytes
 - C. Monocytes
 - D. Platelets
- 43.** Auto immune diseases can be detected by:
- A. Presence of specific antigens
 - B. Fall in complement levels
 - C. Mantoux test
 - D. Presence of increased number of Eosinophils
- 44.** Anaphylactic reactions depend on the level of :
- A. IgA
 - B. IgE
 - C. IgG
 - D. IgM
- 45.** Window period is the period between infection and...
- A. Death
 - B. Recovery
 - C. Production of specific antibodies
 - D. Development of cell mediated immunity
- 46.** Hepatitis B surface antigen(HBsAg) is detected:
- A. In CSF
 - B. After recovery from Hep B infection
 - C. In serum
 - D. In urine
- 47.** Beta lactam antibiotics include all, Except:
- A. Cepheids
 - B. Penicillins
 - C. Vancomycin
 - D. Meropenem
- 48.** New Delhi Metallobetalactamase leads to:
- A. Resistance to Meropenem and Aztreonam
 - B. Resistance to Meropenem and Imipenem
 - C. Resistance to Colistin
 - D. Resistance to Ciprofloxacin
- 49.** ESBL can be detected by:
- a. Routine sensitivity testing
 - b. Latex agglutination test
 - c. Hourglass phenomenon in sensitivity plate
 - d. Nitrocefin test
- 50.** AmpC Beta lactamase is an enzyme that causes resistance to :
- a. Meropenem
 - b. Ceftriaxone
 - c. Colistin
 - d. Cefipime

MICROBIOLOGY – Scientific Assistant 1st MFCP

25th Sept 2024

Answer Key

- | | |
|-------|-------|
| 1. A | 37. C |
| 2. B | 38. D |
| 3. C | 39. D |
| 4. C | 40. B |
| 5. B | 41. D |
| 6. B | 42. A |
| 7. A | 43. B |
| 8. B | 44. B |
| 9. B | 45. C |
| 10. C | 46. C |
| 11. C | 47. C |
| 12. B | 48. B |
| 13. B | 49. C |
| 14. A | 50. B |
| 15. D | |
| 16. D | |
| 17. B | |
| 18. B | |
| 19. D | |
| 20. A | |
| 21. C | |
| 22. B | |
| 23. C | |
| 24. D | |
| 25. A | |
| 26. A | |
| 27. B | |
| 28. C | |
| 29. B | |
| 30. C | |
| 31. D | |
| 32. A | |
| 33. A | |
| 34. C | |
| 35. B | |
| 36. C | |

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MS 25/9/24