



BRAINWARE UNIVERSITY

Term End Examination 2023-2024

Programme – M.Sc.(MLT)-2023

Course Name – Diagnostic Microbiology & Parasitology

Course Code - MMTC02002

(Semester II)

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Which part of the compound microscope helps in gathering and focusing light rays on the specimen to be viewed
- a) Condenser lens
b) Magnifying lens
c) Objective lens
d) Eyepiece lens
- (ii) Select the correct temperature range for mesophilic bacteria
- a) 0-20 degree Celsius
b) 25-40 degree Celsius
c) 45-60 degree Celsius
d) more than 60 degree Celsius
- (iii) Identify the correct morphological name of oval shaped bacteria with grapes bunch like arrangements
- a) Streptococci
b) Pleomorphic
c) Sarcinae
d) Staphylococcus
- (iv) In fluorescence microscopy, which of the following performs the function of removing all light except the blue light?
- a) Exciter filter
b) Barrier filter
c) Dichroic mirror
d) Mercury arc lamp
- (v) A soup container was forgotten in the refrigerator and shows contamination. Select contaminants which may be probably present ?
- a) Thermophiles
b) Acidophiles
c) Mesophiles
d) Psychrotrophs
- (vi) Which of the following tests is a rapid point-of-care test for detecting Chlamydia trachomatis infection?
- a) CBNAAT RT-PCR
b) TruNat

- c) CLIA
 (vii) CBNAAT (Cartridge-Based Nucleic Acid Amplification Test) utilizes which technology for pathogen detection?
 a) Enzyme-linked immunosorbent assay (ELISA) b) Real-time polymerase chain reaction (RT-PCR)
 c) Agglutination test d) Chemiluminescence
- (viii) Which of the following bacteria is known to cause cholera?
 a) Escherichia coli b) Vibrio cholerae
 c) Salmonella sp. d) Shigella sp.
- (ix) Which class of antibiotics acts by inhibiting bacterial protein synthesis?
 a) Macrolides b) Penicillins
 c) Quinolones d) Sulfonamides
- (x) Choose the microscopy technique that would be best suited for visualizing specific proteins labeled with dyes
 a) Phase-contrast microscopy b) Electron microscopy
 c) Fluorescence microscopy d) Darkfield microscopy
- (xi) How do fungi reproduce sexually?
 a) By binary fission b) By budding
 c) By forming spores d) By conjugation
- (xii) Select the best term to describe bacteria that grow in clusters
 a) Streptococci b) Staphylococci
 c) Diplococci d) Bacilli
- (xiii) Select the primary purpose of blood agar
 a) To differentiate between Gram-positive and Gram-negative bacteria b) To support the growth of fastidious microorganisms
 c) To detect hemolysis patterns of bacteria d) To inhibit the growth of unwanted bacteria
- (xiv) Which antibiotic class interferes with bacterial cell membrane integrity?
 a) Beta-lactams b) Macrolides
 c) Tetracyclines d) Polymyxins
- (xv) Identify the type of flagella present in Vibrio cholerae
 a) Peritrichous b) Lophotrichous
 c) Amphitrichous d) Monotrichous

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Evaluate the risk factors, clinical presentation, and diagnostic methods for urinary tract infections (UTIs) caused by different pathogens. (3)
3. Explain the staining procedure for gram staining. (3)
4. Discuss the pathophysiology of malaria. (3)
5. Define antibiotic susceptibility. (3)
6. Elaborate on the definition of disinfection and classify different methods of disinfection, highlighting their respective modes of action. (3)

OR

Analyze the efficacy and limitations of different disinfection methods concerning various types of equipment and materials used in microbiological laboratories. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Outline the steps involved in performing a sterility test using the BACTEC system (5)
8. Differentiate between the different types of intestinal worms (nematodes) based on their morphology and life cycles (5)
9. A child presents with symptoms of abdominal pain and diarrhea. Upon stool examination, helminth eggs are found. Discuss the life cycle, clinical manifestations, and treatment options for common intestinal helminths in children (5)
10. Analyze the pathophysiology of HIV infection and its impact on the immune system. (5)
11. What are the main symptoms of a urinary tract infection (UTI) caused by E. coli? (5)
12. Patient presents with symptoms of dysentery. What are the diagnostic methods to differentiate between Entamoeba histolytica and non-pathogenic intestinal amoebae? (5)

OR

Aspergillus fumigatus is a fungus that can cause serious lung infections. Briefly describe two groups of people who might be at higher risk for such infections (5)
