BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – B.Sc.(MLT)-2022
Course Name – Clinical Microbiology & Bacteriology
Course Code - BMLTC402
(Semester IV)

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) Identify the correct example of eukaryotic microorganism
   a) E.coli
   b) Saccharomyces cerevisiae
   c) Thermophilus aquaticus
   d) Both option 2 and 3

(ii) Identify the cellular shape of Escherichia coli
   a) vibrioid
   b) monobacilli
   c) streptococcus
   d) helical

(iii) In which of the following phase secondary metabolites are produced during growth?
   a) Lag phase
   b) Log/Exponential phase
   c) Stationary phase
   d) Death phase

(iv) If you want to solidify a culture media, select from the following the correct ingredient
   a) Beef extract
   b) Peptone
   c) Agar Agar
   d) Yeast extract

(v) Select the instrument name within which high-pressure steam is used as a method of sterilization.
   a) Autoclaving
   b) Chemical sterilization
   c) Dry heat sterilization
   d) Filtration

(vi) Select from the following that is used for fumigation in OT. Sterilizing instrument
   a) Halogen
   b) Formaldehyde
   c) Alcohol
   d) UV ray

(vii) What is the approximate size of the bacterial cell?
   a) 2mm in diameter
   b) 1mm in diameter
   c) 2 micrometer in diameter
   d) 0.5 to 1.0 micrometer in diameter

(viii) Identify the maximum magnification of electron Microscope
   a) 400,000X
   b) 100,000X
   c) 15000X
   d) 100X

(ix) The association of endotoxin in Gram negative bacteria is a result of the presence of which of the following:

a) Peptidoglycan
b) Lipopolysaccharides
c) Calcified proteins
d) Sterol

(x) Which of the following is suitable for visualization of live cells

a) Compound microscope
b) Electron microscope
c) Phase contrast microscope
d) SEM

(xi) Select the correct action that best describes the effect of disinfectants on microorganisms.

a) Eliminating
b) Encouraging
c) Protecting
d) Enriching

(xii) 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

(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) Select the disease which can be diagnosed using ZN staining

a) Tuberculosis
b) Malaria
c) Typhoid fever
d) Cholera

(xv) In case of exponential phase of bacterial growth, n= 3.3(logN- logN0). Select correct option which denotes n

a) Growth rate
b) Generation time
c) Number of generation
d) Log of generation

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Discuss the term Microaerophilic with respect to bacterial physiology (3)
3. Moist heat is more useful than dry heat for sterilization purpose- Explain the statement with proper justification (3)
4. Differentiate resolution and magnification with respect to microscopy (3)
5. Differentiate between sarcinae and staphylococcus (3)
6. You want to identify Escherichia coli from a urine sample with the help of the MacConkey agar medium. Explain the reason for using MacConkey agar medium but not the Nutrient agar medium. (3)

OR

You want to detect Vibrio cholerae from stool samples. Explain the details of the culture medium regarding Vibrio cholerae detection (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Distinguish between Gram positive and Gram Negative bacteria with suitable examples (5)
8. Classify bacterial culture media depending on physical state (5)
9. Discuss briefly the structure of the endospore with the help of diagrammatic representation (5)
10. Analyze the observation of bacterial colony and interpret the possible result- Large grey colonies on Nutrient agar, NLF colourless colies on MacConkey agar, green coloured colonies on HE agar and gave pink colour rod shape coloies after Gram staining. (5)

11. In the case of the log phase of the bacterial growth curve, the bacterial population increases at an exponential rate and gives n= 3.3(logN- logN0). Deduce the mathematical expression (5)

12. Dr. Das wants to prevent bacterial aminoacylation during protein synthesis and Dr. Chakraborty wants to inhibit the formation of 30S initiation complex. Analyze and explain the name and mode of action of antibiotics for their experimnt. (5)

OR

Bacteria A needs a special supplement blood to grow and Bacteria B can grow with high salt concentration. Now plan a culture media to isolate such bacterial colonies. (5)

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