

Bachelor of Science (B.Sc.)-I First Semester  
**MIC-02 - Microbiology Paper-II (Microscopy and Microbial Techniques)**

P. Pages : 2

Time : Three Hours



**GUG/W/18/1217**

Max. Marks : 50

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Notes : 1. All questions are compulsory and carry equal marks.

1. Discuss in detail working mechanism of compound light microscope. Add a note on its applications. **10**

**OR**

Explain principle and procedure of Gram staining.

2. Describe in detail methods used for the preservation of pure culture. **10**

**OR**

Discuss in detail mechanism of cell injury.

3. a) Describe resolving power of the compound light microscope. **2½**  
b) Classify the stains. Give examples. **2½**  
c) Write streak plate method for isolation of pure culture. **2½**  
d) Describe temperature as a microbial control agent. **2½**

**OR**

- e) Draw well labelled diagram of the dark field microscope. **2½**  
f) Describe acid fast staining. **2½**  
g) Write the characteristics of pure culture. **2½**  
h) Write the characteristics of ideal disinfectant. **2½**
4. a) Add a note on SEM. **2½**  
b) Write the method of fungal staining. **2½**  
c) Explain the use of selective and differential media for isolation of the pure culture. **2½**  
d) Describe the mode of action of penicillin antibiotics. **2½**

**OR**

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|----|---|----|
| e) | Describe optical parts of compound light microscope.      | 2½ |
| f) | Discuss physical theories of staining.                    | 2½ |
| g) | Write the roles of stock culture collection centres.      | 2½ |
| h) | Explain the mode of action of halogens on microorganisms. | 2½ |

**5. Attempt any ten.**

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|----|---|---|
| a) | Define numerical aperture.                                | 1 |
| b) | What is TEM.  | 1 |
| c) | Which oil is used for working of oil immersion objective? | 1 |
| d) | What is chromophore?                                      | 1 |
| e) | Which stains are used for capsule staining?               | 1 |
| f) | Give two examples of acidic and basic dye respectively.   | 1 |
| g) | Write the device used for single cell isolation.          | 1 |
| h) | What is saline?   | 1 |
| i) | Define axenic culture?                                    | 1 |
| j) | Define sterilization?                                     | 1 |
| k) | Name the gases used for gaseous sterilization?            | 1 |
| l) | What is disinfectant?                                     | 1 |

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