

**B. Sc. MEDICAL TECHNOLOGY (LABORATORY) (BMLT)
SEMESTER -IV EXAMINATION, JUNE-2026**

(BMLT403) HISTOLOGY & CYTOPATHOLOGY - ADVANCED

[Time allotted: Three Hours]

[Max Marks: 100]

Note: Read all the instructions carefully

Answer all questions in serial order. Draw suitable diagrams wherever necessary

Q. 1. Objective type questions: (Attempt All)**(10 x 02 = 20)**

(Very short/ short answer/ MCQ/ One liners/ Fill in the blanks/ True/False)

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| <p>a. The ideal time for fixation in 10% formalin is:</p> <ol style="list-style-type: none"> 30 minutes 6-8 hours 24-48 hours 72 hours <p>b. Which embedding medium is commonly used in routine histology?</p> <ol style="list-style-type: none"> Agar Paraffin wax Resin Celloidin <p>c. Decalcification is necessary for which type of tissue?</p> <ol style="list-style-type: none"> Liver Skin Bone Muscle <p>d. Which decalcifying agent also acts as a fixative?</p> <ol style="list-style-type: none"> Nitric acid Formic acid Hydrochloric acid EDTA <p>e. The most commonly used microtome in routine histology is the:</p> <ol style="list-style-type: none"> Sledge microtome Rotary microtome Ultramicrotome Freezing microtome | <p>f. A microtome knife with a wedge profile is used for:</p> <ol style="list-style-type: none"> Frozen sections Resin blocks Paraffin sections Ultrathin sections <p>g. Hematoxylin stains which cellular component?</p> <ol style="list-style-type: none"> Cytoplasm Lipids Nucleus Glycogen <p>h. Papanicolaou stain is mainly used in:</p> <ol style="list-style-type: none"> Bone marrow Cytological smears Muscle biopsy Frozen section <p>i. Which stain is used to detect amyloid?</p> <ol style="list-style-type: none"> Masson's trichrome PAS Congo red Prussian blue <p>j. Which stain is used to identify carbohydrates in tissues?</p> <ol style="list-style-type: none"> PAS Sudan III Alcian blue Silver stain |
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Q. 2. Short notes/ Short answer type questions (Attempt any Five)**(05 x 04 = 20)**

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| a. Name four commonly used fixatives in histopathology | (CO2, PO2). |
| b. Enumerate the types of hematoxylin with suitable examples | (CO2, PO2). |
| c. What are the different types of microtomes and their uses | (CO2, PO2). |
| d. What is amyloid? Name any four special stains for amyloid. | (CO2, PO2). |
| e. Define metachromasia. Name any two metachromatic dyes. | (CO2, PO2) |
| f. Explain the diagnostic importance of bone marrow examination. | (CO1, PO2) |
| g. What are endogenous and exogenous pigments? Give one example of each. | (CO2, PO2) |

Q. 3. Structured questions (Attempt any Three)**(03 x 10 = 30)**

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| a. Define decalcification and mention its indications. Compare and describe the chemical and physical methods of decalcification. Describe how end-point determination is done in decalcification. | (CO2, PO2) |
| b. Explain the working principle and types of microtomes. Discuss the care and maintenance of microtome knives. | (CO2, PO2) |
| c. Discuss the significance of using special stains in histopathological diagnosis. List commonly used special stains and their targets and describe any one of them in detail. | (CO2, PO2) |
| d. Discuss the various metal impregnation techniques and their uses. | (CO2, PO2) |

Q. 4. Long Answer/ Essay type questions (Attempt any Two)**(02 x 15 = 30)**

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| a. Define exfoliative cytology. Describe the methods of collection and fixation of cytological specimens. Discuss the advantages and limitations of cytology in disease diagnosis. Add a note on principle and method of PAP staining. | (CO2, PO2) |
| b. Describe the basic principle of microscopy and types of commonly used microscopes in histology. Discuss the role of microscopy in semen examination and bone marrow aspiration. | (CO1, PO2) |
| c. Discuss the complete workflow of histological specimen preparation, highlighting the principles and significance of fixation, processing, embedding, sectioning, staining, and microscopic evaluation. | (CO2, PO2) |