



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya

Tel: +254(0) 799 529 958, +254(0) 799 529 959, + 254 (0) 712 524 293,

Website: info@must.ac.ke Email: info@must.ac.ke

University Examinations 2024/2025

**THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF MEDICAL LABORATORY SCIENCES**

SECOND YEAR FIRST SEMESTER BACHELOR OF MEDICAL LABORATORY SCIENCE

HML 3317/HMU 3217: HISTOLOGY AND CYTOPATHOLOGY

DATE: JANUARY 2025

TIME: 3 HOURS

INSTRUCTIONS:

Answer *All* questions

Ensure that all your answers are properly numbered

Part I multiple Choice Questions (MCQ): Write the correct answer on the space provided in the answer booklet. Each MCQ is one mark

Part II: Short Answer Questions – Answer questions following each other on the answer booklet

Part III: Long Answer Questions – Answer each question on the answer booklet

SECTION A: MULTIPLE CHOICE QUESTIONS (20 marks)

- 1) When a chemical splashes in the eye rinse for
 - a) 10 seconds
 - b) 5 minutes
 - c) 30 seconds
 - d) 15 minutes
- 2) Is NOT a responsibility of a technologist.
 - a) Specimen preservation.

- b) Specimen labeling
 - c) logging and identification.
 - d) Screening to make in order to make a diagnosis
- 3) All of these factors described are characteristics for fixation except;
- a) Arrests autolysis
 - b) Activate bacteria decomposition
 - c) Minimizes loss of soluble cytoplasmic components
 - d) Stabilizes tissue for further processing and treatment
- 4) Which statement about formal aldehyde is false?
- a) Most commonly used aldehyde fixative
 - b) It is water soluble
- 5) When preparing a tissue for Histopathology which methods precedes clearing the specimen with organic solvent
- a) Staining
 - b) Fixing
 - c) Embedding
 - d) Dehydration
- 6) All are examples of a simple fixative EXCEPT
- a) Formaldehyde
 - b) Glutaraldehyde
 - c) Mercuric Chloride
 - d) Xylene
- 7) Paraffin embedded sections are cut by
- a) Electron beam
 - b) Short knife
 - c) Laser
 - d) Microtome

- 8) Points to be remembered during use of paraffin wax
- a) It should be free from dust, grit and other foreign matter.
 - b) It should not contain water, which causes it to crystallize and turn it white.
 - c) The wax has to be filtered before use by use of ordinary filter paper.
 - d) Higher melting point waxes are hard to ribbon.
- 9) All are used as lubricants for honing EXCEPT
- a) Wax
 - b) Soap water
 - c) Liquid paraffin
 - d) Castor oil
- 10) Which one is not a type of a microtome
- a) Hand microtomes
 - b) Rocking microtome
 - c) Rotating microtome
 - d) Freezing microtome
- 11) What stain is best for lipid detection?
- a) Sudan 111 IV
 - b) Berlin blue
 - c) Colloid gold
 - d) Haematoxylin
- 12) What splits the ribbons floating on water into individuals or group of sections?
- a) Sharp blade
 - b) Microtome knife
 - c) Forceps
 - d) Tooth pick
- 13) Is not a reason for sections showing thin and thick horizontal lines.
- a) A loose knife

- b) A short knife
 - c) A blunt knife
 - d) Extremely hard tissue
- 14) When staining the sections, first must be deparaffinized in xylene and rehydrate through a series of decreasing concentrations of ethanol and finally rinsed out in distilled water.
- a) True
 - b) False
- 15) What is tissue impregnation
- a) It is the deposition of salts of heavy metals around tissue constituents
 - b) Staining of tissues with haematoxylin
 - c) Removing of excess water from a tissue
 - d) Waxing of tissues with paraffin wax to facilitate easy cutting
- 16) Whats a general tissue staining STAIN?
- a) Toluidine blue
 - b) Sudan iv
 - c) Eosin
 - d) Haematoxylin and eosin
- 17) What stain is best for staining hemosiderin?
- a) Sudan 111 IV
 - b) Berlin blue
 - c) Colloid gold
 - d) Haematoxylin
- 18) When staining the sections, first must be deparaffinized in xylene and rehydrate through a series of decreasing concentrations of ethanol and finally rinsed out in distilled water.
- a) True
 - b) False
- 19) Whats a general tissue staining STAIN?

- a) Toluidine blue
- b) Sudan iv
- c) Eosin
- d) Haematoxylin and eosin

20) What is a mordants

- a) Substance that causes certain staining reactions to take place by forming a link between the tissue and the stain
- b) Substance to link tissue elements with the stain
- c) Substance to facilitate staining of tissue structure
- d) Substance to link tissue elements with other stains

SECTION B: SHORT ANSWER ALL QUESTIONS (40 MARKS)

1. Describe ways of obtaining histological specimens (6 marks)
2. Using diagrams demonstrate various types of microtome knives (8 marks)
3. Critique various fixing agents used in histology laboratory (5 marks)
4. Describe factors affecting decalcification. (5 marks)
5. Explain faults of section cutting and their remedies (8 marks)
6. Describe uses of different staining methods. (8 marks)

SECTION C: LONG ANSWER TWO QUESTIONS (40 MARKS)

1. Identify various types of histology equipment and their principal (20 marks)
2.
 - a) Discuss safety measures in histology laboratory (11 marks)
 - b) Discuss the technique of honing and stropping during microtomy (9 marks)
3.
 - a) Define decalcification and describe various decalcifying agents (10 marks)
 - b) Explain the importance and methods of embalming (5 marks)