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(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)
UNIVERSITY EXAMINATIONS (MAIN PAPER) 2023/2024 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER EXAMINATIONS

FOR THE DIPLOMA IN MEDICAL BIOTECHNOLOGY

COURSE CODE: BBD 316

COURSE TITLE: HISTOPATHOLOGY AND CYTOPATHOLOGY TECHNIQUES

DATE: 7TH DECEMBER 2023 **TIME: 2.00-4.00PM**

INSTRUCTIONS TO CANDIDATES

This paper is divided into three sections, **A B** and **C,** carrying respectively: Multiple Choice Questions (**MCQs**), Short Answer Questions (**SAQs**) and Long Answer Questions (**LAQs**). Answer all questions.
DO NOT WRITE ON THE QUESTION PAPER

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over

SECTION A: Multiple Choice Questions (20Marks)

1. Which one of the following is a histopathology specimen?
   - A. Biopsy
   - B. Bone marrow
   - C. Fine needle aspirate
   - D. Skin

2. The following is an instrument used for cutting histopathology tissues.
   - A. Microtome
   - B. Scissors
   - C. Scapel blade
   - D. Saw

3. Which one of the following is a gynecological specimen?
   - A. Pap smear
   - B. Urine
   - C. Sputum
   - D. Synovial fluid

4. Malignancy is best described as_____
   - A. Abnormal increase in cell size
   - B. Abnormal increase in organ size
   - C. Abnormal growth of cells
   - D. Disorderly organization of cells in the tissue

5. Stains commonly used in histopathology include_____
   - A. Hematoxylin and Eosin
   - B. Perl's Prussian blue
   - C. Periodic acid Schiff
   - D. Giemsa

6. The stage where the tissue is hardened by wax before sectioning is called_____
   - A. Fixation
   - B. Hardening
   - C. Embedding
   - D. Infiltration

7. Clearing in histopathology is_____
   - A. Removing a fixative from the tissue
   - B. Removing a dehydrating agent from the tissue
   - C. Removing decalcifying agent from the tissue
   - D. Removing embedding material from the tissue

8. Autolysis refers to----------
   - A. Self -destruction of the cell by hydrolytic enzymes
   - B. Destruction of cell by phagocytic mechanism
   - C. Destruction of cell by water
   - D. Destruction of cell by alcohol

9. Fragmentation of the nucleus that occurs during autolysis is called_____
   - A. Karyolysis
   - B. Granulation
   - C. Pyknosis
   - D. Karyorrhexis

10. The cell organelle involved with protein synthesis is called_____

A. Mitochondria
B. Ribosomes
C. Golgi apparatus
D. Endoplasmic reticulum

11. The function of the cell membrane include_____
    A. Communication
    B. Selective permeability
    C. Cell wall synthesis
    D. Immunological identity
12. Post-mortem specimens are referred to as_____
    A. Autopsies
    B. Biopsies
    C. FNA
    D. Tissue extracts

13. A thin slice of fresh tissue put on a glass slide and forcefully covered with a cover glass is referred to as_____
    A. Teased preparation
    B. Squashed preparation
    C. Smears
    D. Frozen section
14. The cell organelle containing powerful digestive enzymes is_____
    A. Lysosomes
    B. Golgi apparatus
    C. Endoplasmic reticulum
    D. Ribosomes
15. A simple fixative include the following_____
    A. Formal saline
    B. Zenker
    C. Eosin
    D. HCL
16. A compound fixative refers to_____
    A. More concentrated simple fixative
    B. Two or more simple fixative working together
    C. A fixative mixed with a decalcifying agent
    D. A fixative mixed with an appropriate staining solution
17. Which one of the following statements is true?
    A. A tissue should take two hours before fixation in order to get good results
    B. For accurate results, the tissue should be fixed immediately after removal from body
    C. For better results, the tissue fluids should to be allowed to drain out first before fixation
    D. A tissue has to be cut into smaller pieces before fixation
18. The study of diseased body cells is referred to as_____
    A. Histopathology
    B. Cellopathology
    C. Cytopathology
    D. Immunology

19. Powder free examination gloves are preferred in a Histopathology lab.in order to_____

A. Preserve the integrity of the sample
B. Manipulate the sample easily
C. Avoid interfering with the concentration of dehydrating agents
D. Maintain the tissue in a life like state

20. The instrument used to cut tissues into thin sections is_____
A. Mincer
B. Tissue processor
C. Microtome
D. Embedding oven

SECTION B: Short Answer Questions (40 Marks)

1. Define the following terms:
   a) Autopsy (2 mks)
   b) Biopsy (2 mks)
2. State four characteristics of a good fixative (4 mks)
3. Explain the effect of the following on fixation:
   (a) Temperature (2 mks)
   (b) Concentration of a fixative (2 mks)
4. State **FOUR** reasons that can lead to rejection of a histopathology specimen (4 mks)
5. Explain the following terms:
   b) Open biopsy (2 mks)
   c) Closed biopsy (2 mks)
6. a) Explain tissue Fixation in histopathology. (4 mks)
   b) Explain any FOUR properties of a good Fixative (8 mks)
7. Describe how the following specimens are fixed:
   i) The human small intestines (4 mks)
   ii) The human liver (4 mks)

SECTION C: Long Answer Questions (60 Marks)

1. (a) State four methods of tissue decalcification (4 mks)
   (b) Explain the criteria of a good decalcifying agent (4 mks)
   (c) Describe the chemical method for determining end point of decalcification (12 mks)
2. a) Explain the meaning of tissue impregnation (2 mks)
   b) Explain briefly the procedure of tissue impregnation (6 mks)
   c) Explain the factors that influence the rate of tissue impregnation (12 mks)
3. Describe the Papanicolau staining method in Cytopathology. (20 mks)