

**KISII**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**SECOND YEAR EXAMINATION FOR THE AWARD OF THE  
DEGREE OF BACHELOR OF SCIENCE IN MEDICAL LABORATORY  
SCIENCE**

**SECOND SEMESTER 2017/2018  
(MAY - AUGUST, 2017)**

**MELS 254: HISTOLOGY AND HISTOPATHOLOGY**

**STREAM: Y2S2**

**TIME: 3 HOURS**

**DAY: MONDAY, 2:00-5:00 PM**

**DATE: 11/09/2017**

**INSTRUCTIONS**

- 1. Do not write anything on this question Paper.**
- 2. Answer ALL questions in section A.**

- The following relate to paraffin embedding EXCEPT:
  - A. Blocking
  - B. Casting
  - C. Mounting
  - D. External support
- Define a verbal autopsy
  - A. It is done for the purpose of theoretical teaching students of anatomy about causes of death
  - B. It endeavors to find the genetic cause of death by gene sequencing
  - C. It does not involve the dissection of the decedent but instead utilizes structured interviews to gather information as to the cause of death
  - D. It is carried out under radiologic guidance such as computed tomography and magnetic resonance imaging
- In order to demonstrate *Helicobacter pylori* in tissue, its necessary to utilize which of the following special stains:
  - A. Grocott's Methanamine Silver
  - B. May-Grunwald Giemsa
  - C. Ziehl Nelsen
  - D. Congo Red
- Yolk Sac neoplasms are demonstrated which of the following immunohistochemical antibodies:
  - A. Alpha fetal protein antibody
  - B. Thyroid transcription factor 1
  - C. Vimentin
  - D. High molecular weight cytokeratins
- The main purpose of interpenetration during tissue processing is to:
  - A. provide the tissue with internal integrity
  - B. allow penetration of xylene
  - C. provide secondary fixation
  - D. provide external support
- The fixative of choice for tissues processed for routine histology is:

- A. 10% buffered formal saline
  - B. 40% formaldehyde
  - C. 4% gluteraldehyde
  - D. 95% ethyl alcohol
7. Tissue processors characterized by reagents arranged in a circular carousel plan are called:
- A. Carousels
  - B. Tissue basket
  - C. Fluid transfer
  - D. Tissue transfer
8. What is surface decalcification?
- A. The use of radiation on bone surface
  - B. The technique used in ion exchange process
  - C. A method of dealing with small unexpected deposits of calcium that may be encountered in paraffin blocks after trimming the block in the microtome to expose the specimen
  - D. A method of testing the end point of decalcification
9. Which of the following statements best describes frozen sections?
- A. The cells are intentionally squashed or crushed onto a slide to reveal their contents before vital staining and microscopy
  - B. The preparations are interpenetrated with the aid of CO<sub>2</sub> and electro-thermal cooling and sectioned with the aid of a cryostat
  - C. The specimen is immersed in isotonic solution in a petri-dish/ watch glass and carefully dissected with a needle
  - D. The paraffin blocks are sectioned using a steel blade on a rotary microtome
10. Evisceration is the process of organ removal in 3 separate blocks through a midline "Y" shaped incision, that runs from the sternum to the pubis. during post Mortem. However, the following are removed separately
- A. Cardio-thoracic
  - B. Genital-urinary
  - C. Gastro-intestinal
  - D. Brain and intestines
11. Why is the x40 objective lens sometimes called "High-Dry"?
- A. It must be dried after using immersion oil
  - B. It is the objective that provides nuclear and cytoplasmic details and must be kept dry for efficient functioning
  - C. It must be stored in dry cabinets high above bench level
  - D. It is used for scanning dried slide preparations
12. The histopathology report that is issued in emergency situations, (such as intra-operative surgical consultations), pending the final report is called:
- A. Amended
  - B. Supplementary
  - C. Provisional/preliminary
  - D. Corrected
13. Fixatives that preserve the relationship of cells to each other and the intercellular matrix are called

- A. Simple
  - B. Compound
  - C. Additive
  - D. Anatomical
14. The reason why tissue sections are cut up 3-5microns is
- A. To match the diameter of a red cell
  - B. To provide a one-cell thick layer to allow effective microscopy
  - C. To provide 3-5 ribbons of sections
  - D. To ensure effective floating in a warm water bath
15. The following is true about the general requirements for successful examination of tissue under bright field microscopy that uses a system of lenses. Which one is false?
- A. The cells must be preserved in lifelike manner as possible
  - B. The cellular components must be differentially stained
  - C. The specimen must be rendered opaque to allow light to bounce back
  - D. The section must lie flat on the slide so that a mono-layer of cells is present
16. Which of the following is NOT a dehydrating agent
- A. Acetone
  - B. Glycol Ethers
  - C. Alcohols
  - D. Benzene
17. If Uncle Roger and auntie Rose have died, and their bodies are being collected on the same day, what should the embalmer do to prevent uncle Roger from looking like auntie Rose to the mourners?
- A. Shave off the fuzz from uncle Roger
  - B. Perform cavity embalming on both decedents
  - C. Apply translucent make-up as subtly as possible especially on uncle Roger
  - D. Skip pre-embalming of auntie Rose
18. The type of autopsy performed when there is sudden death to determines the genetic cause of death is termed:
- A. Clinical
  - B. Forensic/medico-legal
  - C. Molecular
  - D. Virtual
19. What purpose do histochemical (special) stains and immunohistochemical stains serve in histopathological diagnoses?
- A. They define pigments/structures or microorganisms and localize specific antigens in tissues respectively
  - B. The former define antibodies and enzymes while the later show chemical reactions in tissues
  - C. Both are routine techniques used prior to H&E staining
  - D. They are ancillary techniques of minimal value in the histopathology lab
20. The expression "bring section to water" involves which of the following?
- A. Placing sections on a warm water bath to straighten them up
  - B. Oven incubation, deparaffinization and progressively descending in graded of alcohol
  - C. Trimming thin sections of tissue during grossing and placing them in a water jar

- D. A two-step de-waxing in changes of xylene followed by treatment of sections in ascending grades of alcohol

**SECTION B-SHORT STRUCTURED QUESTIONS (ANSWER ALL QUESTIONS)-20 MARKS**

1. Describe the collection of histological biopsies. (5marks)
2. Describe the purposes of any five (5) major equipments used in the histopathology laboratory. (5marks)
3. Elucidate the components of a biopsy report (5marks)
4. Explain how you would troubleshoot the Haematoxylin and Eosin staining method for any 5 possible errors (5marks)

**SECTION C - ESSAY QUESTIONS (QUESTION ONE IS COMPULSORY THEN CHOOSE ANY OTHER ONE QUESTION)-30 MARKS**

1. Discuss the systematic approach to preparing a gastric biopsy for microscopic examination of the bacteria: *Helicobacter pylori*. (15 marks)
2. Discuss the histo-technology process of decalcification (15 marks)
3. Distinguish embalming from autopsy ( 3 marks) and describe the process of the former (12 marks)