

  
**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 255: CYTOLOGY AND CYTOPATHOLOGY

**STREAM: Y2S2**

**TIME: 3 HOURS**

**DAY: TUESDAY, 9:00-12:00 PM**

**DATE: 12/09/2017**

**INSTRUCTIONS**

1. *Do not write anything on this question Paper.*
2. *Answer ALL questions in section A [20 marks].*

From choices A-D below, select the correct Pap stain dye responsible for the effects shown in questions 1-3

- A. Haematin
  - B. Eosin Azure (EA)36
  - C. Light Green SF yellowish
  - D. Orange G 6
1. This dye is responsible for staining keratinized cells important in the diagnosis of keratinizing squamous cell carcinomas
  2. It is the polychromatic dye used as the primary counter stain in Papanicolaou staining procedure.
  3. When combined with a mordant, this dye is important in irreversible staining the nuclear histone proteins of the cell in both H&E as well as Papanicolau staining techniques
  4. The difference between coverslip mounting and slide mounting techniques is that:
    - A. The former is a manual procedure while the later id automated
    - B. The former utilises a glass coverslip while the later uses a thin film of cellulose
    - C. In the former, the coverslip is placed on the bench surface, a mountant applied followed by the slide bearing the specimen
    - D. In the later, the coverlip is placed on the bench surface, mountant applied and specimen-bearing specimen inverted onto the mountant

5. Which of the following accessories of cyto-centrifuge is responsible for producing a clean background in Liquid based cytology (LBC) preparations?
  - A. Cyto-trager micro-slides
  - B. Double funnel
  - C. Filter paper
  - D. 8-position Rotor
6. Normal glandular endometrial cells may be ignored in smears of child-bearing women. However, they must be reported when seen in smears of women above 40 years particularly when out-of-phase because:
  - A. These women tend to be menopausal
  - B. The risk of squamous cell carcinoma is high
  - C. The cells are evidence of malignancy
  - D. These cells may be associated with endometrial abnormalities
7. Which of the following is NOT true about both the regressive H&E as well as the regressive Papanicolaou staining protocols?
  - A. The bluing up step is compulsory
  - B. The differentiation step is a must
  - C. There are two counter staining steps
  - D. The nuclear stain is haematoxylin
8. When is it recommended to take a Pap smear?
  - A. 2 weeks after the LMP
  - B. 4 days after menses in basal cells
  - C. 2 days after the LMP
  - D. 28 days after LMP
9. Which of the following wet fixatives is ideal for lysing bloody cytological smears before staining?
  - A. Methanol 100%
  - B. Glacial acetic acid 10%
  - C. Ethanol 95%
  - D. Alcohol: Ether mixture in a ratio of 1:1
10. When preparing to transport cytology specimen from a location away from the cytology laboratory eg during the world medical lab Day, the best fixation method, for subsequent Papanicolaou staining, would be:
  - A. Air drying
  - B. Spray fixation followed by wet fixation
  - C. Wet fixation (15 mins) followed by air drying
  - D. Saline rehydration followed by air drying
11. The following cells belong to the breast EXCEPT;
  - A. Ductal cells
  - B. Foam cells
  - C. Apocrine cells
  - D. Follicular cells
12. In the Bethesda 2001 system for reporting cervical cytology, a sample may be considered unsatisfactory for evaluation when:
  - A. The squamous component exceeds 5000 cells
  - B. The slide is broken
  - C. Obscuring factors cover 50% of the epithelial component
  - D. The request form lacks sufficient patient biodata and pertinent clinical history

13. Which of the following is NOT true about samples collected for anal cytology
- A. A dacron swab, moistened in water is inserted 20cm into the anal canal
  - B. The specimens are evaluated using similar terminologies to cervical cytology, i.e. ASCUS, ASC-H, LSIL, HSIL, SCC
  - C. Sample procurement is simple and does not require an anoscope
  - D. The specimen may be collected when the patient is in the dorsal lithotomy or lateral recumbent position
14. Squamous metaplasia presents on cytology as which of the following?
- A. The "3Ms"
  - B. Cobalt stone arrangement
  - C. Owl's eye appearance
  - D. Soap bubbles
15. The main reason why slides in cytology are pre-labeled prior to specimen collection is:
- A. To save time
  - B. To avoid cornflaking
  - C. To maximize slide use
  - D. For QA purposes
16. The biological potential of a cell examined under the microscope, can be deduced from:
- A. The nuclear features
  - B. Cytoplasmic characteristics
  - C. "The Big Picture"
  - D. Background architecture
17. Which of the following is a smear reporting method for quality check?
- A. Monolayer
  - B. Turret
  - C. Longitudinal
  - D. Stepwise
18. Which of the following squamous abnormalities is associated with the Human Papilloma Virus types 6 and type 11?
- A. High grade squamous intraepithelial neoplasia
  - B. Atypical squamous cells cannot exclude a high grade lesion
  - C. Low grade squamous intraepithelial neoplasia
  - D. Atypical squamous cells of undetermined significance
19. An accurate diagnosis of thyroid aspirates depends on all of the following factors EXCEPT:
- A. The the specimen must be representative of the aspirated lesion
  - B. The specimen must be inadequate in amount
  - C. The specimen must be technically well-prepared
  - D. Interpretation must take clinical context and practice setting into consideration
20. The presence of abundant colloid and few cells in a thyroid nodule may signify:
- A. Hashimotos thyroiditis
  - B. Folliculat carcinoma
  - C. Papillary carcinoma of the thyroid
  - D. Goiter

**SECTION B ANSWER ALL QUESTIONS. (20 MARKS)**

1. Outline the collection method for each of the following cytology specimens: (5marks)
  - a) Washings
  - b) Brushings
  - c) Balloon sample
  - d) Endoscopic fine needle aspirate
  - e) Sponge sample
2. Using appropriate illustrations, describe the cytomorphology and significance of five (5) different types of chromatin patterns in Papanicolaou stained smears. **(5 marks)**
3. The cervical mucosa reacts to stimuli in different ways. Describe the cytomorphology of five (5) such reactions that serve as a protective mechanism for the cervix. **(5 marks)**
4. Elucidate the following statement with respect to the Pap smear: *"A properly completed requisition form is critical for excellent patient management"* **(5 marks)**

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

1. Using appropriate examples, discuss the the normal cytology of the cervical epithelium. Illustrate diagrammatically as appropriate. **(15 marks)**
2. A pleural effusion arrives in the Non-gynaecological cytology section where you are stationed. On macroscopic examination of the fluid, you observe no evidence of clot formation. Discuss the systematic approach to preparing a cell block for subsequent microscopic demonstration of the bacilli: *Mycobacterium tuberculosis* **(15 marks)**
3. Explain how a cytologist would arrive at the conclusion of "No evidence of malignancy" and "Negative for Intraepithelial Lesion" during microscopic evaluation of a fine needle aspirate and a Pap smear respectively **(15 marks)**