



**PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

Faculty of Health, Applied Sciences and Natural Resources

Department of Health Sciences

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| QUALIFICATION: BACHELOR OF MEDICAL LABORATORY SCIENCES | |
| QUALIFICATION CODE: 08BMLS | LEVEL: 6 |
| COURSE: ANATOMICAL PATHOLOGY 2B | COURSE CODE: ANP621S |
| DATE: JANUARY 2023 | SESSION: THEORY |
| DURATION: 3 HOURS | MARKS: 100 |

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| SUPPLEMENTARY / SECOND OPPORTUNITY EXAMINATION QUESTION PAPER | |
| EXAMINER(S) | Ms Roselin Tsauses |
| MODERATOR: | Ms Ndeshipewa Hamatui - Valombola |

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| INSTRUCTIONS | |
| <ol style="list-style-type: none">1. Answer all questions.2. Please write neatly and legibly.3. Do not use the left side margin of the exam paper. This must be allowed for the examiner.4. No books, notes and other additional aids are allowed.5. Mark all answers clearly with their respective question numbers. | |

Permissible material

Non programmable calculator is allowed.

THIS EXAMINATION PAPER CONSISTS OF 7 PAGES (Excluding this front page)

Section A (20 marks)

Question 1

[10]

1. Evaluate the statements in each numbered section and select the most appropriate answer. Write "true" or "false" next to the corresponding number.
- 1.1 Specimens received in the cytology laboratory are usually unfixed and are regarded as bio-hazardous. (1)
- a) True
b) False
- 1.2 Most cytology specimens are received as direct smears or cell suspensions. (1)
- a) True
b) False
- 1.3 In humans, the female reproductive system is already mature at birth. (1)
- a) True
b) False
- 1.4 The full range of epithelial cells can be identified by their morphology and staining properties. (1)
- a) True
b) False
- 1.5 Cytolysis is predominantly observed in an atrophic smear. (1)
- a) True
b) False
- 1.6 Dysplasia is a cancerous type of abnormal cell growth characterized by the loss of normal tissue arrangement and cell structure. (1)
- a) True
b) False
- 1.7 The majority of gynaecological specimens are cervical smears, followed by smears of the vagina or vulva. (1)
- a) True
b) False

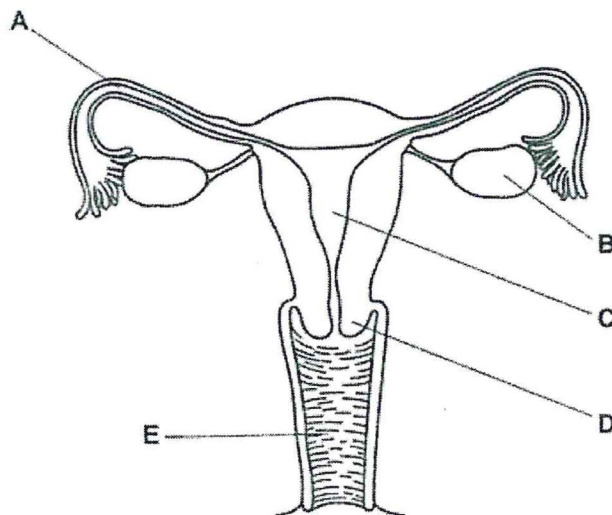
- 1.8 Many women with HPV infection develop CIN or cervical cancer. (1)
 a) True
 b) False
- 1.9 A tumor is a cluster of abnormal cells, forming a mass or lump of tissue that may resemble swelling that is always cancerous. (1)
 a) True
 b) False
- 1.10 Alcohol fixation is the first step in the Papanicolaou staining procedure. (1)
 a) True
 b) False

Section B (28 marks)

Question 2

[10]

- 2.1 Study the diagram of the female reproductive system below and relate the structures labelled A - E with the following lining. Write the correct letter and structure next to the corresponding number.



- 2.1.1 Lined by a columnar epithelium and some epithelial cells have cilia. (1)

- 2.1.2 The actual endometrial epithelial surface of columnar cells, some of which are ciliated, is not prominent. Endometrium consists of glands and stroma. (1)
- 2.1.3 Lined by a stratified squamous mucosa containing abundant glycogen. There is no epithelial keratin layer. (1)
- 2.1.4 The adult ovary consists of a cortex and a medulla. It also has a mesothelium, also known as the germinal epithelium. (1)
- 2.1.5 Outer cervix lined by a stratified squamous mucosa containing abundant glycogen. At the os, the squamous epithelium changes to a tall columnar mucinous epithelium. (1)
- 2.2 Describe the criteria used to determine the type of epithelial cells seen in a cervical smear. (5)

Question 3

[18]

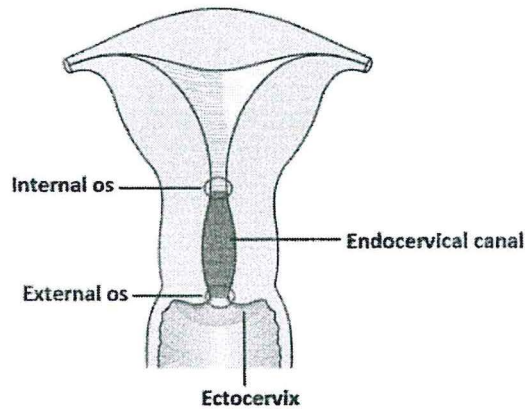
- 3.1 Apply your knowledge about the criteria used to distinguish between normal and neoplastic cells and sketch neatly labelled drawings of the following normal epithelial cells depicting distinct cytological morphological features.
- 3.1.1 Superficial squamous cell (3)
- 3.1.2 Intermediate squamous cell (3)
- 3.1.3 Parabasal cell (3)
- 3.1.4 Endocervical cells (3)
- 3.1.5 Endometrial cells (3)
- 3.1.6 Metaplastic cells (3)

Section C (24 marks)

Question 4

[18]

- 4.1 Discuss how different hormones regulate the female reproductive system. (8)
- 4.2 By using the below diagram as a guide to critically assess the anatomical regions of the cervix, describe the anatomy and cytological morphology of the following regions as far as possible:



- 4.2.1 Endocervical canal (1)
- 4.2.2 Ectocervix (2)
- 4.2.3 Transformation zone (3)
- 4.2.4 Squamacolumnar junction (2)
- 4.2.5 Internal os (1)
- 4.2.6 External os (1)

Question 5

[6]

- 5.1 Demonstrate your practical knowledge about distinct cytological features portrayed by different agents of infection and match the following features with the correct agent. Write the correct name of the agent next to the corresponding number.

- 5.1.1 Colonizes intra-uterine devices. (1)
- 5.1.2 Hazy blue appearance referred to as clue cells by cytologists. (1)
- 5.1.3 Dormant form exists as a population of spores. (1)
- 5.1.4 *Trichomonas vaginalis* and this organism together have been referred to as "spaghetti and meatballs." (1)
- 5.1.5 Cells have a thickened uneven rim of dense cytoplasm giving them a 'wire loop' appearance. (1)
- 5.1.6 Tiny pink granules may also be visible within the cytoplasm of the organism. (1)

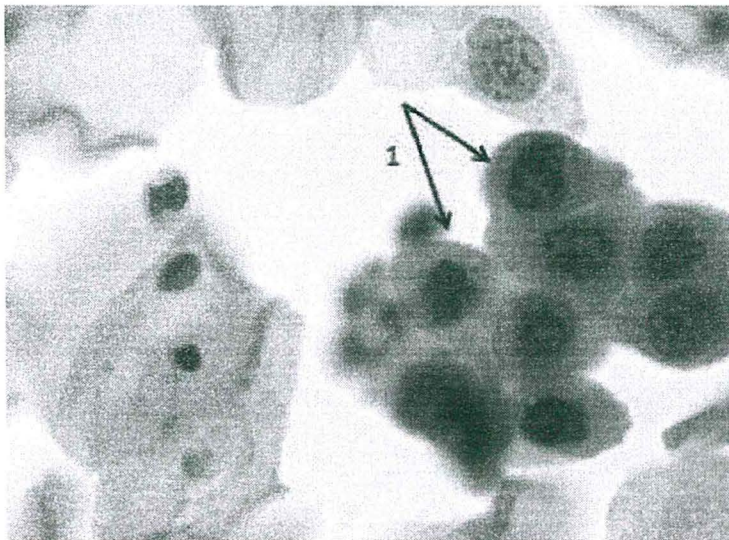
Section D (38 marks)

Question 6

[16]

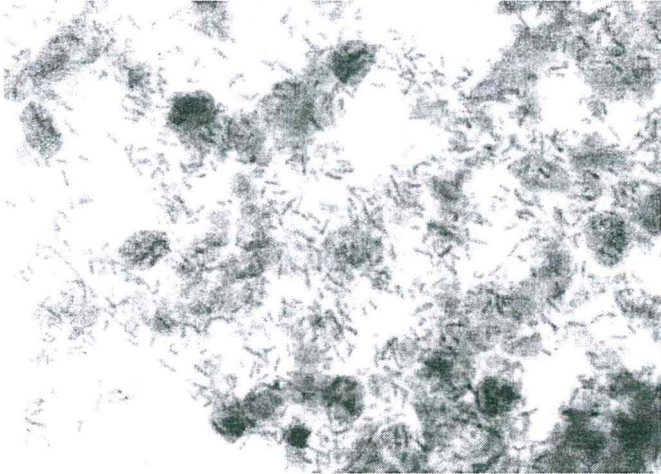
- 6.1 Study the slides below and interpret the cytological findings demonstrated on each slide. Give a differential diagnosis and substantiate your answer.

6.1.1



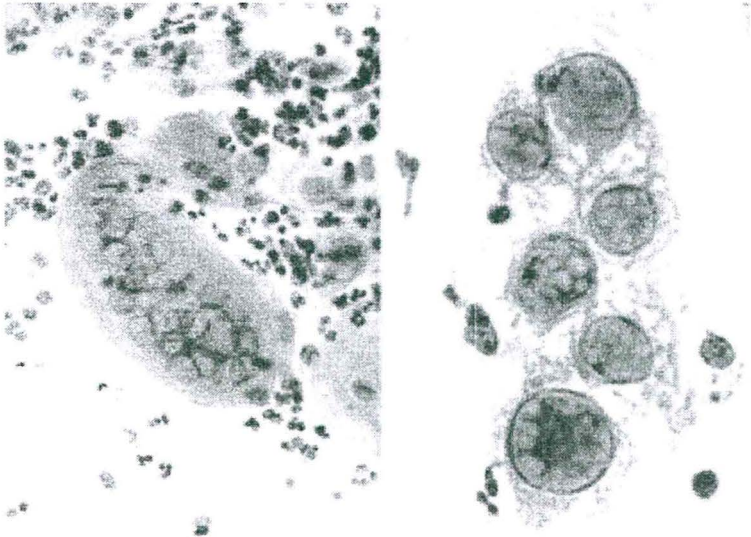
(4)

6.1.2



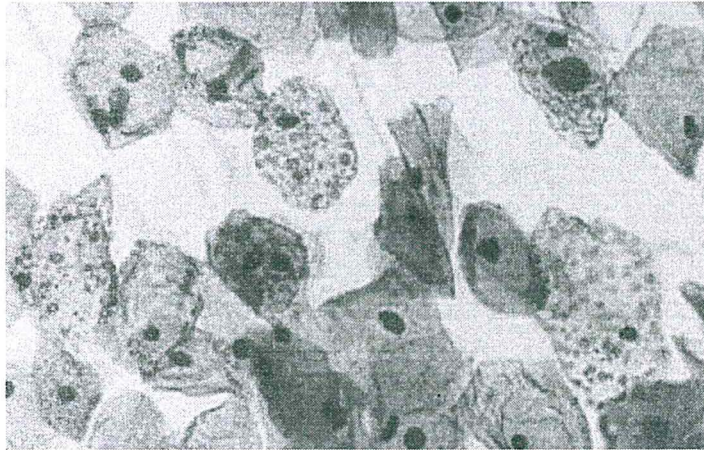
(4)

6.1.3



(4)

6.1.4



(4)

Question 7

[22]

- 7.1 Critique the importance of cell differentiation in cancer studies. (7)
- 7.2 Report the criteria used to recognize and distinguish between the three (3) grades of CIN? (14)
- 7.3 What does CIN stand for? (1)

GOOD LUCK!