



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

UNIVERSITY EXAMINATIONS

2022/2023 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER MAIN EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES
(DIRECT ENTRY & UPGRADING)**

COURSE CODE: BML422

COURSE TITLE: SYSTEMIC PATHOLOGY

DATE: 18TH APRIL 2023

TIME: 8.00 AM– 10.00AM

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 5 Printed Pages. Please Turn Over

SECTION A : Multiple Choice questions (20Marks)

1. A 20-year-old healthy man incurs blunt force trauma to the abdomen in a motor vehicle accident. On physical examination he has upper abdominal tenderness. An abdominal CT scan reveals a splenic hematoma. Special staining for RBC inclusions by the PPB reaction is positive. At laparotomy a splenectomy is performed. Following splenectomy, which of the following peripheral blood morphologic findings is most likely to be present?
 - A. Basophilic stippling
 - B. Sickle cells
 - C. Macro-ovalocytes
 - D. Pappenheimer bodies.
2. A 29-year-old woman develops a high fever with dyspnea, non-productive cough, headaches, and loss of smell over the past 2 days. On exam her temperature is 39°C. Her peripheral blood oxygen saturation is 80%. Her BMI is 30 kg/m². A chest radiograph shows extensive interstitial infiltrates and ground glass opacifications. A single-stranded RNA virus is recovered from respiratory tract secretions. She recovers, but 3 months later continues to have myalgias, along with dyspnea, headaches, fatigue, joint pains, and memory loss. She is most likely infected with which of the following viruses?
 - A. Adenovirus
 - B. Coronavirus (COVID-19).
 - C. Cytomegalovirus
 - D. Epstein-Barr virus
3. 19-year-old university student notes the sudden onset of severe discomfort in his scrotum late one evening. No position is comfortable for him to sit or lie down. Aspirin and beer have no effect. He has a friend drive him to the emergency room. On physical examination his vital signs include temperature 37°C, respirations 22/minute, pulse 80/minute, and blood pressure 100/65 mm Hg. His left testis is slightly enlarged and exquisitely tender. There is no inguinal adenopathy. A doppler ultrasound scan shows decreased blood flow in the left testis. Which of the following conditions is he most likely to have?
 - A. Choriocarcinoma
 - B. Testicular torsion
 - C. Lithiasis
 - D. Varicocele
4. A 28-year-old sexually active woman undergoes a routine examination. Pelvic examination reveals no abnormalities. A Pap smear is obtained. The cytopathology report indicates the presence of severely dysplastic cells (high grade squamous intraepithelial lesion, or HSIL). A biopsy of the cervix is performed, and on microscopic examination shows cervical intraepithelial neoplasia III (CIN III). Infection with which of the following organisms is most likely to cause her disease?
 - A. Herpes simplex virus infection
 - B. Epstein-Barr virus
 - C. *Candida albicans*
 - D. Human papillomavirus.
5. A 40-year-old woman notes increasing enlargement and discomfort in her neck over the past week. The nurse practitioner palpates diffuse, symmetrical enlargement with tenderness in the region of the thyroid gland. Thyroid function tests show serum TSH of 0.8 mU/L and thyroxine of 11.9 micrograms/dL. She is referred to an endocrinologist, but the next available appointment is in 8 weeks. When examined by the endocrinologist her thyroid is no longer palpable and there is no pain. Repeat thyroid function tests reveal a serum TSH of 3.8 mU/L and thyroxine of 5.7 micrograms/dL. Which of the following thyroid diseases is most likely to produce these findings?
 - A. Nodular goiter
 - B. Non-Hodgkin lymphoma
 - C. DeQuervain disease
 - D. Hashimoto thyroiditis

6. All of the following are associated with myocarditis in connective tissue except:
 - A. Rheumatoid arthritis and Lupus erythematosus
 - B. Polyarteritis nodosa and Scleroderma.
 - C. Diffuse and Giant cell (idiopathic granulomatous) type myocarditis.
 - D. D.Dermatomyositis
7. Which of the following is the most common type of heart failure?
 - A. Backward heart failure
 - B. Forward heart failure
 - C. Right sided heart failure
 - D. Left sided heart failure
8. Chronic ischaemic heart disease is most often due to:
 - A. A. Coronary atherosclerosis
 - B. B. Repetitive coronary vasospasm
 - C. C. Embolisation to coronary branches
 - D. D. Stenosis of coronary ostia
9. The most common histologic type of cervical cancer is:
 - A. Well-differentiated keratinising squamous cell carcinoma
 - B. Moderately-differentiated non-keratinising squamous cell carcinoma
 - C. Small cell undifferentiated carcinoma
 - D. Adenocarcinoma
10. According to the Bethesda system, the squamous intraepithelial lesions for the grades of cervical cytology are:
 - A. Two
 - B. Three
 - C. Four
 - D. Five
11. Pap smear of a 30 years old woman is found to have atypical cells suggestive of HPV infection. Which of the following abnormalities describes the characteristic cytologic feature caused by HPV infection in Pap smear?
 - A. Acanthosis
 - B. Parakeratosis
 - C. Hyperkeratosis
 - D. Koilocytosis
12. Common causes of myxoedema are as under except:
 - A. Follicular adenoma
 - B. Ablation of thyroid by surgery
 - C. Thyroid cancer
 - D. Autoimmune thyroiditis
13. There is considerable depletion of colloid in the follicles in the following thyroid disease:
 - A. Graves' disease
 - B. Hashimoto's thyroiditis
 - C. Nodular goitre
 - D. Follicular adenoma
14. Following thyroid cancer has the worst prognosis:
 - A. Anaplastic carcinoma
 - B. Medullary carcinoma
 - C. Papillary carcinoma
 - D. Follicular carcinoma
15. At times, the urologist is surprised to find that a prostate gland that he had thought to be benign, is not only found to be carcinomatous on histological and other examinations (elevated serum PAP/PSA), but also metastatic to bones and or lymph nodes. This type of PCa is called:
 - A. Occult.

- B. Latent
 - C. Clinical
 - D. Incidental.
16. Which of the following is not a developmental anomaly of the penis?
- A. Balanitis xerotica obliterans
 - B. Hypospadias
 - C. Phimosis
 - D. Epispadias
17. Idiopathic (primary) varicocele which is the dilatation, elongation and tortuosity of the veins of the pampiniform plexus in the spermatic cord is frequently found in:
- A. Dead men
 - B. Young men
 - C. Middle aged men.
 - D. Baby boys
18. For therapeutic purposes, bronchogenic carcinoma can be classified into the following major groups, except:
- A. Small cell carcinomas, SCC
 - B. Non-small cell carcinomas, NSCC
 - C. Large cell carcinoma.
 - D. Combined/mixed patterns .
19. The type of pulmonary hamartoma that is associated with fibrous and adipose tissue admixed with bronchial epithelium, shows nodules of cartilage and forms a solitary, spherical mass is called:-
- A. Haematoma .
 - B. Leiomyomatous ...
 - C. Fibromatous...
 - D. Chondromatous
20. Transmission of tuberculosis occurs by which of the following methods?
- A. Local spread by macrophages carrying the bacilli into the surrounding tissues
 - B. Inhalation of organisms present in fresh cough droplets or in dried sputum from an open case of pulmonary tuberculosis
 - C. By the natural passages
 - D. Haematogenous & Lymphatics

SECTION B: Short Answer Questions (40 Marks)

1. a). Outline 4 syndromes associated with ischemic heart disease (4marks)
b). Citing appropriate examples, distinguish myocarditis from cardiomyopathies (6marks)
2. a). Briefly outline morphologic appearance of two lung hamartomas. (4marks)
b). Based on anatomic region, clinical settings and etiology, describe the classification of pneumonias (6marks)
3. a). Classify prostatic carcinoma based on when detected and name one condition associated with each of the four prostate zones (4 marks)
b). Describe 3 developmental and 3 inflammatory disorders of the penis (6marks)
4. a). Citing classic examples, classify thyroiditis based on onset and duration of disease.(6marks)
b). Describe two important morphologic and epidemiologic forms of goitre (4marks)

SECTION C: Long Answer Questions (60 Marks)

1. Detail the systematic approach to reporting erythrocyte abnormalities in well-spread, Romanowsky-stained peripheral blood film and explain the significance of neutrophil shifts (20 marks).
2. Discuss the characteristic features the benign and malignant tumors of the breast and describe four age-related changes of gynaecomastia (20marks)
3. Discuss the inflammatory conditions of fallopian tubes, cervix, breast and testes (20 marks)