



(University of Choice)
**MASINDE MULIRO UNIVERSITY OF SCIENCE AND
TECHNOLOGY
(MMUST)**

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

END OF FIRST TRIMESTER THIRD YEAR EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF MEDICINE AND BACHELOR OF SURGERY**

COURSE CODE: MPS 313

COURSE TITLE: SYSTEMIC PATHOLOGY

DATE: 21/4/2022

TIME: 3HRS

INSTRUCTIONS TO CANDIDATES

- i) Write your University Registration Number on every booklet you use.
- ii) DO NOT write your name(s) on any paper or booklet you use.
- iii) This paper consists of 3 sections (A, B, C).
- iv) Answer ALL Questions in Sections A, B and C in the booklet(s) provided
- v) Begin every answer on a new page of the booklet.

TIME: 3 HOURS

MULTIPLE CHOICE QUESTIONS (40 marks)

1. A 10-year-old boy presents to the hospital at night with coughing, wheezing and shortness of breath. He is clinically diagnosed with asthma. The following are true of Asthma, EXCEPT?
 - a. Causes irreversible airway narrowing
 - b. Bronchospasm, oedema and mucus plugging are commonly seen
 - c. Hypertrophy of bronchial smooth muscle may occur
 - d. Bronchodilators are important in Asthma management
2. The statements below are TRUE concerning Non-atopic asthma, EXCEPT:
 - a. A positive family history of asthma is less common
 - b. Viral respiratory infections are common triggers
 - c. Is mediated by IgE
 - d. Triggered by chemical irritants
3. Which ONE of the following is UNTRUE of Pulmonary Tuberculosis?
 - a. Is most commonly caused by Mycobacterium tuberculosis
 - b. Is associated with AIDS
 - c. Is histologically characterized by granulomas
 - d. Is associated with weight gain
4. The following are risk factors for lung cancer, EXCEPT:
 - a. Tobacco smoking
 - b. Exposure to asbestos
 - c. Young age
 - d. Genetic predisposition
5. One of the following is the most common lung tumour seen in smokers
 - a. Small cell carcinoma
 - b. Large cell carcinoma
 - c. Adenocarcinoma
 - d. Squamous cell carcinoma
6. A 6-year-old child is brought to you with complains of a persistent cough, drenching night sweats, and failure to thrive. The following tests are important in working up the patient for the possible diagnosis EXCEPT?
 - a. Sputum for AFBs
 - b. Chest Xray
 - c. Sputum for Gene X-pert
 - d. Skull Xray

13. TRUE concerning pneumonia
- 90-95% of lobar pneumonias are caused by Streptococcus Pneumoniae
 - Most lobar pneumonias are caused by pneumococci which enter the lung haematogenously
 - Bronchopneumonia is commonly caused by Chlamydia organisms
 - Gray hepatization is the first stage of the inflammatory response
14. A systemic disease of unknown aetiology characterized by non-caseating granuloma in many tissues and organs particularly in the hilar lymph nodes, and lungs:
- Silicosis
 - Idiopathic pulmonary fibrosis
 - Sarcoidosis
 - Asbestosis
15. A syndrome of Necrotizing hemorrhagic interstitial pneumonitis associated with proliferative glomerulonephritis:
- Goodpasture syndrome
 - Paraneoplastic syndrome
 - Horner's syndrome
 - Kartagener syndrome
16. What is the most common cause of right-sided heart failure?
- Left-sided heart failure
 - Cor pulmonale
 - Hypothyroidism
 - Pneumonia
17. The predominant mechanism of cell death in Myocardial Infarction is
- Reperfusion injury
 - Ischemic coagulative necrosis
 - Apoptosis
 - Liquefactive necrosis
18. Which of the listed below is MOST commonly affected in Rheumatic heart disease?
- Tricuspid valve
 - Mitral valve
 - Aortic valves
 - Pulmonary valve
19. A 67-year-old man presents at the Emergency Department with breathlessness upon exertion, orthopnoea, and oedema of legs. Which ONE of the following concerning heart failure is true?
- Is when the heart is unable to maintain cardiac output or can do so only by increasing filling pressure
 - Right-sided heart failure is more common than left-sided failure
 - Is not a complication of myocardial infarction
 - Is not associated with valve disease

7. A condition of the lung characterized by abnormal permanent enlargement of the air space distal to the terminal bronchiole, accompanied by distraction of their walls without fibrosis leading clinically to a dyspnoeic patient presenting with a barrel chest (pink buffer):
- Emphysema
 - Pleural effusion
 - Bronchogenic carcinoma
 - Pulmonary Tuberculosis
8. All are types of emphysema EXCEPT
- Centriacinar
 - Panacinar
 - Paraseptal
 - Intraseptal
9. Bronchiectasis
- Is manifested by copious amounts of sterile sputum
 - Is due to reversible bronchial dilation
 - Is mostly due to obstruction and infection
 - Is always associated with abnormal structure of cilia
10. The commonest site of primary TB in the lung is
- Apex
 - Base
 - Hilum
 - Lower zone of upper lobe
11. A 64-year-old man had a 90-pack year history of smoking. For the past 5 years, he has had a cough productive of copious amounts of mucoid sputum for over 3 months at a time. He had episodes of pneumonia with *Streptococcus pneumoniae* and *Klebsiella pneumoniae* cultured. His last episode of pneumonia was complicated by septicemia and brain abscess and he died. At autopsy, his bronchi microscopically demonstrated mucus gland hypertrophy. ONE of the following conditions most likely explains this clinical course
- Small cell carcinoma
 - Chronic bronchitis
 - Bronchial asthma
 - Bronchiectasis
12. A 54-year-old male develops sharp chest pain and shortness of breath suddenly while in the hospital recovering from surgical repair of a fractured ankle. While being examined, he goes into cardiac arrest and cannot be resuscitated. Of the following, what is the most likely diagnosis?
- Cerebral infarct
 - Acute myocardial infarct
 - Pulmonary embolism
 - Foreign body aspiration

20. A 60-year-old man presents with recurrent chest pain that develops whenever he attempts to mow his yard. He reports that the pain goes away after a couple of minutes if he stops and rests. He also states that the pain has not increased in frequency nor duration in the last several months. Which is the most likely diagnosis?
- Unstable angina
 - Stable angina
 - Myocardial infarction
 - Atypical angina
21. Below is a characteristic of stable angina:
- Chest pain on exertion and/or emotional stress
 - Chest pain at rest
 - Bradycardia
 - Severe and crushing chest pain (>20 mins)
22. The following statements are TRUE about unstable angina, EXCEPT:
- Usually due to rupture of an atherosclerotic plaque with thrombosis and incomplete occlusion of a coronary artery
 - Represents reversible injury to myocytes
 - Low risk progression to myocardial infarction
 - ECG shows ST-segment depression due to subendocardial ischemia
23. ONE of the statements below is UNTRUE concerning congenital heart defects
- VSD is the most common
 - ASD is a left to right shunt
 - Transposition of great vessels is associated with maternal diabetes
 - PDA is a right to left shunt
24. A 21-year-old woman gives birth at term to a 2800g infant with no apparent external anomalies. The next day, the infant develops increasing respiratory distress and cyanosis and dies. At autopsy, a slit-like left ventricular chamber, small left atrium and atretic aortic and mitral valves are seen. Through which of the following structures could oxygenated blood most likely have reached the infant's systemic circulation?
- Anomalous venous return
 - Foramen ovale
 - Aortic stenosis
 - Patent ductus arteriosus
25. The statements below are true of ventricular septal defects EXCEPT one, which one?
- Cause a left-to-right shunt
 - Cause tachypnoea
 - Cause pansystolic murmur
 - Are the least common of all congenital heart diseases
26. Which one of the following statements correctly describes the flow of blood in an individual with an atrial septal defect who develops Eisenmenger syndrome?
- Right atrium to left atrium to left ventricle to aorta to right atrium
 - Left atrium to right atrium to right ventricle to lungs to left atrium

- c. Aorta to pulmonary artery to lungs to left atrium to left ventricle to aorta
 - d. Right ventricle to left ventricle to aorta to right atrium to right ventricle
27. A 50-year-old obese man experiences episodes of severe chest pain every time he performs a task that requires moderate exercise. The episodes have become more frequent and severe over the past year, but they can be relieved by sublingual nitroglycerin. On physical examination, he is afebrile, his pulse is 78 beats/min and regular, and there are no murmurs or gallops. Laboratory studies show normal glucose, normal creatinine, and elevated total serum cholesterol. Which of the following cardiac lesions is most likely to be present?
- a. Rheumatic mitral stenosis
 - b. Coronary atherosclerosis
 - c. Viral myocarditis
 - d. Restrictive cardiomyopathy
28. Below are the general pathophysiological categories of cardiomyopathy, EXCEPT:
- a. Dilated
 - b. Hypertrophic
 - c. Invasive
 - d. Restrictive
29. A 10-year-old boy with a 2-week history of an upper respiratory infection was admitted to the hospital with malaise, fever, joint swelling, and diffuse rash. The patient is treated and discharged. However, the patient suffers from recurrent pharyngitis and, a few years later, develops a heart murmur. This patient's heart murmur is most likely caused by exposure to which of the following pathogens?
- a. Beta-haemolytic streptococcus
 - b. Candida albicans
 - c. Epstein-Barr virus
 - d. Staphylococcus aureus
30. What is the most common cause of sudden cardiac death?
- a. Cocaine use
 - b. Ventricular arrhythmia
 - c. Cardiomyopathy
 - d. Mitral valve prolapse

SHORT ASSAY QUESTIONS (10 marks each)

1. Enumerate physiological effects of smoking on the respiratory system
2. Write short notes on Reid's Index
3. Blood supply of the heart
4. Classify valvular heart diseases

LONG ASSAY QUESTIONS (15 marks each)

1. Compare and contrast chronic bronchitis and emphysema
2. A) Classify congenital heart defects
B) Give an example of congenital heart defects and how it affects newborns and adults