



(University of Choice)

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

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2023/2024 ACADEMIC YEAR

FIRST TRIMESTER EXAMINATIONS

FOR THE DEGREE

OF

BACHELOR OF SCIENCE IN PHYSIOTHERAPY

COURSE CODE: BSP 434

COURSE TITLE: BASIC SCIENCES PAPER II

DATE: 5TH DECEMBER 2023

TIME: 8:00AM – 10:00AM

INSTRUCTIONS TO CANDIDATES

Answer all Sections

Sec A: Multiple Choice Questions (MCQ) (20 Marks)

Sec B: Short Answer Questions (SAQ) (40 Marks)

Sec C: Long Answer Questions (LAQ) (40 Marks)

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over.



SECTION A: MULTIPLE CHOICE QUESTIONS (MCQs)

(10 marks)

GENERAL PATHOLOGY

1. The condition in which the size of the RBC's are large and immature, mostly occurs due to folic acids and vitamin b-12 is referred to as?
 - A. Microcytic anaemia
 - B. Macrocytic anaemia
 - C. Normocytic anaemia
 - D. Marasmus
2. Identify a mendelian disorder from the following:
 - A. Down's syndrome
 - B. Klinefelter's syndrome
 - C. Turner's syndrome
 - D. Phenylketonuria
3. Which of the following will be present in chronic bacterial infection?
 - A. Neutrophilia
 - B. Lymphocytosis
 - C. Eosinophilia
 - D. Monocytosis
4. A two-week-old boy develops persistent projectile vomiting. The most likely diagnosis is:
 - A. Pyloric stenosis
 - B. Esophageal atresia
 - C. Annular pancreas
 - D. Incomplete rotation of the gut
5. Which of the following conditions is Marfan's syndrome most commonly associated with?
 - A. Endocarditis
 - B. Restrictive cardiomyopathy
 - C. Arrhythmia
 - D. Aortic dissection
 - E. GI tract pathology
 - F. MCQs
 - G. The most common cause of intestinal obstruction is:1)
 - H. A. volvulus
 - I. B. neoplasm
 - J. C. intussusception
 - K. D. hernia
 - L. E. adhesions
 - M. A filling defect on a barium examination of the gastrointestinal tract means:2)
 - N. A. the lumen is locally dilated or there is an outpouching
 - O. B. something protruding into the lumen displaces the barium
 - P. C. both
 - Q. D. neither
 - R. 3.Each of the following applies to Hirschsprung's disease except:
 - S. A. intestinal obstruction
 - T. B. absence of ganglion cells in myenteric plexus
 - U. C. treated by removal of distended segment of bowel

- V. D. toxic megacolon as complication
- W. E. narrow, more distal segment exhibits characteristic deficiency of development
- X. 4. A two-week-old boy develops persistent projectile vomiting. The most likely diagnosis is:
 - Y. A. pyloric stenosis
 - Z. B. esophageal atresia
 - AA. C. annular pancreas
 - BB. D. incomplete rotation of the gut
- 6. Ascites
 - A. Is due to lymphatic obstruction
 - B. Involves percolation of hepatic lymph into the peritoneal cavity
 - C. Does not involve renal retention of sodium and water
 - D. Involves increased vascular permeability
- 7. What is the most common cause of Cushing's syndrome?
 - A. Glucocorticoid treatment (iatrogenic)
 - B. Ectopic ACTH production
 - C. Pituitary adenoma
 - D. Adrenal adenoma
- 8. What is the most common cause for the overproduction of growth hormone in acromegaly?
 - A. Hypothalamic lesion
 - B. Pituitary adenoma
 - C. Hyperplasia of the pituitary stalk
 - D. Pituitary lesion
- 9. The muscular wasting (hypotrophy) usually develops with disease in:
 - A. Upper motor neuron
 - B. Lower motor neuron
 - C. Cerebellar
 - D. Caudate
- 10. The lymphokines secreted by cytotoxic t-lymphocytes increase the activity of
 - A. Red blood cells
 - B. Brain cells
 - C. Macrophages
 - D. B-lymphocytes

SAQS (5 MARKS)

1. Describe the Pathogenesis and predisposing factors of endocarditis (5 marks)

GENERAL SURGERY

Multiple Choice Questions (MCQs) 15 Marks

1. The incidence of obstruction is higher in which one of the following hernia types?
 - A. Femoral
 - B. Direct inguinal
 - C. Paraumbilical
 - D. Incisional
 - E. A and C

2. In a contaminated wound left open to heal without closure, healing is effected by:
 - A. First intention
 - B. Second intention
 - C. Third intention
 - D. Purely by epithelization
3. Which of the following are the most common microorganisms of surgical infection?
 - A. Viruses
 - B. Staphylococcus
 - C. Clostridia
 - D. Candida
 - E. Entamoeba
4. The commonest type of gall bladder stone is:
 - A. Cholesterol
 - B. Oxalate
 - C. Mixed
 - D. Pigment
5. Best route for nutritional support
 - A. Enteral nutrition
 - B. Total Parenteral nutrition(TPN)
 - C. Peripheral Parenteral nutrition(PPN)
 - D. combined
6. Reactionary haemorrhage, all true except
 - A. Occur within 24 hours after operation
 - B. Usually caused by slippage of ligature
 - C. Not associated with wound infection
 - D. May need re-exploration
7. Transplantation terminology contains terms to describe the relationship of the graft donor to the graft recipient. Historical terms such as "homograft" and "heterograft" have been replaced by less ambiguous terms. The correct modern terminology for a graft between genetically nonidentical members of the same species is:
 - A. Allogeneic graft.
 - B. Autogeneic graft.
 - C. Isogeneic graft.
 - D. Syngeneic graft.
 - E. Xenogeneic graft
8. All are the causes of uniform abdominal distention except
 - A. Intestinal obstruction
 - B. Massive ascities
 - C. Morbid obesity
 - D. Pregnancy
9. Large volumes of urine in the early postoperative course of renal transplant patients may not be due to:
 - A. Result from osmotic stimuli to diuresis.
 - B. May signify irreversible polyuric acute tubular necrosis.
 - C. Should be replaced by administration of equal volumes of crystalloid.
 - D. Facilitate the diagnosis of rejection and obstruction of the renal artery and/or collecting system.
10. Which of the following is not surgical risk in a diabetic patient
 - A. Infection

- B. Myocardial infarction
 - C. Pressure sore
 - D. Poor wound healing
 - E. Pain control
11. Which of the following is not a sign of a tension pneumothorax.
 - A. Dyspnoea
 - B. Trachea displaced towards the affected lung
 - C. Tympanitic percussion note on the affected side
 - D. Absent breath sounds over the affected side
 12. Which of the following conditions has increased risk of breast carcinoma?
 - A. Breast cyst
 - B. Duct ectasia
 - C. Atypical duct or lobular hyperplasia
 - D. Fibroadenoma
 13. The most life threatening chest wall lesion is ?
 - A. Diaphragmatic disruption
 - B. Myocardial contusion
 - C. Esophageal disruption
 - D. Cardiac tamponade
 14. Indicate method of diagnostic “ cancer in situ”
 - A. Histology
 - B. Cytology
 - C. US
 - D. X-ray
 15. In pain intervention using cryotherapy after an acute injury, which receptors are stimulated?
 - A. Meissner’s corpuscles
 - B. Krausel’s end bulbs
 - C. Ruffini’s end organ
 - D. Pacinian corpuscles

Short answer questions (SAOs) 10 Marks

1. Outline the precautions to take when ambulating a patient with a thoracic underwater seal drainage in situ.
2. Discuss the anti – contracture positions of the following regions following a burn lesion
 - i. Neck
 - ii. Antecubital space
 - iii. Ankle
 - iv. Hip
 - v. Forearm

PHARMACOLOGY

The science which deals with the drug and their action on human body is called-

- (a) Physiology
- (b) Pathology

(c) Pharmacology

(d) Microbiology

2. The study of absorption, distribution, metabolism and excretion of drug is known as-

(a) Pharmacy

(b) Pharmacokinetics

(c) Pharmacodynamics

(d) Pharmacopoeia

3. The science which is concerned with the study of mechanism of action of drug and pharmacological effects produced on the human body is known as-

(a) Pharmacokinetics

(b) Toxicology

(c) Pharmacology

(d) Pharmacodynamics

4. The substances produced by or derived from living organisms that are used to kill bacteria or prevent their multiplication is called-

(a) Antibiotics

(b) Antidotes

(c) Hormones

(d) Enzymes

5. Drugs are excreted from the body through-

(a) Kidney

(b) Breast milk, saliva, sweat & bile.

(c) Intestine

(d) All of the above.

6. Which of the following is a source for obtaining drugs-
- (a) Animals and plants
 - (b) Micro-organisms
 - (c) Synthetic origin
 - (d) All of the above
7. The rate of absorption of a drug is affected by
- (a) Route of drug administration
 - (b) Solubility of the drug
 - (c) Site of administration
 - (d) All of the above
8. Putting a drug in liquid form into a body cavity or body orifice, is known as-
- (a) Inhalation
 - (b) Instillation
 - (c) Insertion
 - (d) Insufflation
9. Application of the drug to the skin usually by a friction is known as-
- (a) Insertion
 - (b) Insufflation
 - (c) Instillation
 - (d) Inunction
10. Nitroglycerine is administered by which route
- (a) By sublingual route
 - (b) By inhalation
 - (c) By parenteral route
 - (d) By insertion

SAQ: Paper A

1. Make short on Ibuprofen under the following subheadings
 - a. Classification 1 mark
 - b. Dosage 1 mark
 - c. Mode of action 3 marks

GENERAL MEDICINE

SECTION A: MULTIPLE CHOICE QUESTIONS (MCQ)

1. A 40-year-old consults the doctor for his routine medical check-up. He is not in any pain. He is overweight, blood pressure is 130/70, smokes 5 cigarettes per day, and his serum cholesterol is 250mg/dl. He has no family history of ischemic heart disease. What is the best advice for him?
 - A. He should reduce his weight to achieve a BMI of 24
 - B. He should start drinking alcohol in moderation
 - C. He should reduce smoking
 - D. He should take regular exercises
 - E. A and d
2. A 25-year-old woman presented with fatigue. The only sign on physical examination was pallor. Her Hb was 9.3 g/dl and MCV was 70 fl. Her white cell count was normal and platelets were $550 \times 10^9/l$. Choose the most accurate statement.
 - A. The most likely diagnosis is megaloblastic anaemia
 - B. The most likely diagnosis is iron deficiency
 - C. The most likely diagnosis is thalassaemia
 - D. An elevated platelet count is common in megaloblastic anaemia
 - E. Thalassaemia is common in Caucasians
3. Which of the following statements is most likely to be true?
 - A. To separate iron deficiency from thalassaemia the red cell folate is helpful
 - B. A normal serum ferritin always excludes iron deficiency
 - C. Serum iron of $< 10 \mu g/l$ is almost always due to iron deficiency
 - D. The history is usually very helpful in making a diagnosis of iron deficiency.
 - E. An elevated platelet count is rare in iron deficiency.
4. A pregnant patient who is a carrier for hemophilia presents for prenatal counseling and delivery planning. Which of the following statements is true
 - A. Vaginal delivery is recommended based on the low overall risk of bleeding with vaginal delivery in a neonate with severe hemophilia
 - B. Cesarean delivery is recommended based on the increased risk of intracerebral hemorrhage associated with a trial of labor
 - C. The patients should have maternal factor levels drawn regardless of planned delivery route
5. Which one is false regarding the risk factors for ischaemic heart disease
 - A. Regular aerobic exercises protect against ischaemic heart disease
 - B. Elevated serum homocysteine levels are an independent risk factor
 - C. A parent with IHD at the age of 70 years is a risk factor for an individual to develop IHD
 - D. Blood pressure lowering reduces the risk
6. A 35-year-old woman presents with chest pain on exertion. She has no risk factors
 - A. A normal resting ECG excludes the presence of ischaemic heart disease
 - B. She should be started on aspirin

- C. The likelihood of an exercise ECG being positive is very low
 D. A coronary angiogram should be arranged
7. Which of the following statements are true about Sickle Cell disease?
 A. Heterozygotes are always severely anaemic.
 B. Homozygotes can have a normal Hb.
 C. Sickle cell disease never occurs with another haemoglobinopathy in the same patient.
 D. The life expectancy of a homozygote is normal with modern treatment.
 E. Sickle Cell disease can be treated with hydroxyurea.
8. Which of the following infections is INCORRECTLY matched with the mode of transmission
 A. Meningococcal infection: fecal oral spread
 B. Legionellosis: water aerosols
 C. Giardiasis: fecal oral
 D. Listeriosis: ingestion of cheese
9. The following infections are matched with their diagnostic technique. Which one is matched INCORRECTLY?
 A. Rectal scrape microscopy: Entamoeba histolytica
 B. Lung biopsy: Pneumocystis carinii
 C. Bone marrow culture: Pneumococcal infection
 D. Rising titre of IgM antibodies: Mycobacterium tuberculosis
 A. Hepatitis B
10. Which of the following statements is true regarding classification of HIV infection
 A. Group A: Acute Seroconversion simulating glandular fever
 B. Group B: Persistent generalized lymphadenopathy
 C. Group C: Constitutional symptoms and oral candidiasis
 D. Group D: Asymptomatic infection
11. In a patient with AIDS, cryptococcal meningitis is
 A. Characterized by abrupt onset of classical features of a bacterial meningitis
 B. Typically associated with a high CSF polymorph count
 C. The commonest cause of meningitis
 D. None of the above
12. The following statement about non-accidental poisoning is true
 A. 50% of episodes are associated with alcohol intoxication
 B. Most patients are intent on suicide and do not plan to survive
 C. Most patients are middle aged or elderly
 D. Most of the patients repeat self-poisoning within 12 months
13. The oral glucose tolerance test is
 A. Diabetic if any plasma glucose exceeds 12mmol/L
 B. Undertaken following 3 days of dietary carbohydrate restriction
 C. Diabetic if fasting plasma glucose >7.8 mmol/L
14. In the dietary management of diabetes mellitus
 A. 90% of patients also require hypoglycemic drug therapy
 B. Ice cream and chocolates should never be consumed
 C. In obese patients, caloric intake should not exceed 600 kcal/day
 D. Carbohydrate intakes should be 50-55% of total calorie intake
15. The daily essential requirement in man includes all the following EXCEPT
 A. 1-2 mg vitamin D, K and B₁₂
 B. 1 kg water
 C. 50g protein

D. 50mg vitamin C

SAQ

1. The patient is a 60-year-old white female presenting to the emergency department with acute onset shortness of breath. Symptoms began approximately 2 days before and had progressively worsened with no associated, aggravating, or relieving factors noted. Social history is positive for smoking tobacco use at 30 pack years. She quit smoking 2 years ago due to increasing shortness of breath. She denies all alcohol and illegal drug use. Pulmonary examination reveals: No respiratory status distress at this time, tachypnea present, (+) wheezing noted, bilateral rhonchi, decreased air movement bilaterally. The patient was barely able to finish a full sentence due to shortness of breath. Describe the **BEST** breathing exercise for this patient (5 marks)
2. Outline the WHO clinical staging of HIV/AIDS stating the symptoms expected in each stage (5 marks)

RESEARCH METHODS, BIOSTATISTICS & EPIDEMIOLOGY

SECTION A –MCQs (10 MARKS)

1. Correlation is a statistical tool for
 - A. Discovering and measuring the relationship and expressing it in a brief formula.
 - B. Measuring dispersion.
 - C. Calculation of variation.
 - D. Locating the point around which variables cluster.
2. The points of scatter plots will seem randomly distributed among the quadrants when little _____ exists between the variables.
 - A. Difference
 - B. Correlation
 - C. Regression
 - D. Association
3. The specific characteristic of a subject that assumes one or more different values is called as
 - A. Data
 - B. Variable
 - C. Hypothesis
 - D. Scale
4. Seasonal variation of a disease can be assessed by
 - A. Comparing the prevalence of disease
 - B. Comparing the incidence of disease
 - C. Calculating the survival rate
 - D. Calculating the mortality rate
5. All of the following diseases require surveillance according to WHO except:
 - A. Chicken-pox
 - B. Yellow fever
 - C. Malaria
 - D. Rabies
6. Which of the following characteristics are true for a 'Case Control Study'?

- A. Both exposure and outcome have occurred before start of a study.
 - B. It cannot test causal hypothesis.
 - C. Relative risk can be calculated.
 - D. A long period of follow up is required.
7. A *specific* case definition is one that:
- A. Is likely to include only (or mostly) true cases
 - B. Is considered “loose” or “broad”
 - C. Will include more cases than a *sensitive* case definition
 - D. May include mild cases
8. Which type of research aims to describe a social situation, social event, social system, social structure etc.?
- A. Basic research
 - B. Descriptive research
 - C. Empirical research
 - D. Explanatory research
9. Why do you need to review the existing literature?
- A. To make sure you have a long list of references
 - B. Because without it, you could never reach the required word-count
 - C. To find out what is already known about your area of interest
 - D. To help in your general studying
10. What are the core elements of a Research Process?
- A. Introduction; Data Collection; Data Analysis; Conclusions and Recommendations
 - B. Executive Summary; Literature Review; Data Gathered; Conclusions; Bibliography
 - C. Research Plan; Research Data; Analysis; References
 - D. Introduction; Literature Review; Research Methodology; Results; Discussions and Conclusions.

SECTION B –SAQs (10 MARKS)

- 1. Describe the traditional disease causational model (5 Marks)
- 2. Describe bias as used in Research (5 Marks)

