AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCE
DEPARTMENT OF REHABILITATION MEDICINE
BACHELOR OF SCIENCE IN PHYSIOTHERAPY
END OF MAY-AUGUST 2024 TRIMESTER EXAMINATIONS

UNIT CODE: PHT 322 UNIT NAME: CARDIOPULMONARY PHYSIOTHERAPY

DATE: MONDAY/ 12TH/ AUGUST
TIME: TWO HOURS
START: 11.15 AM STOP: 1.15PM

INSTRUCTIONS (physical exams)

1. **Do not write on this question paper**

(Marks and questions distribution as per program curriculum.)

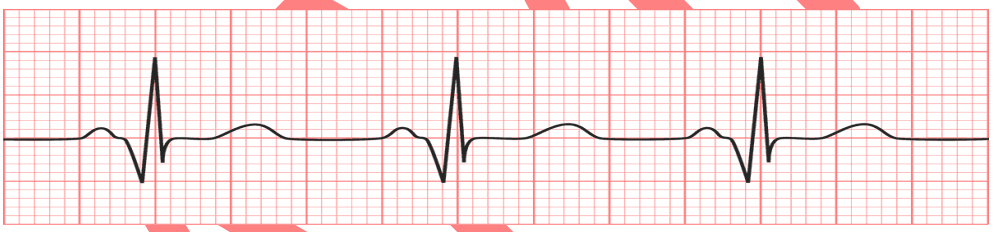
INSTRUCTIONS (Online examinations)

1. This exam is marked out of 70 marks
2. This Examination comprises 3 Sections
3. This online exam shall take 2 Hours
4. Late submission of the answers will not be accepted
5. Ensure your web-camera is on at all times during the examination period
6. No movement is allowed during the examination
7. Idling of your machine for 5 min or more will lead to lock out from the exam
8. The Learning Management System (LMS) has inbuilt integrity checks to detect cheating
9. Any aspect of cheating detected during and or after the exam administration will lead to nullification of your exam
10. In case you have any questions call the invigilator for this exam on Tel. 0705833434 and or the Head of Department on Tel 0720491032

For adverse incidences please write an email to: amiu.examinations@amref.ac.ke

SECTION A: MULTIPLE CHOICE QUESTIONS (MCQ) 30 MARKS

1. What will a patient with a significant right thoracic structural scoliosis demonstrate on examination?
    A. Decreased breath sounds on the right.
    B. Decreased thoracic rib elevation on the right.
    C. Increased lateral costal expansion on the right.
    D. Shortened internal and external intercostals on the right.
2. A patient with a long history of cigarette smoking has been admitted to the hospital and presents with tachycardia, signs of lung infection, abnormal breath sounds in both lower lobes, and dullness to percussion. What should the therapist's initial intervention focus on with this patient?
    A. Getting the patient to quit smoking.
    B. Breathing reeducation to increase efficiency of ventilation.
    C. Airway clearance and secretion removal.
    D. Graded inspiratory muscle training.
3. What is the significance of a long PR interval on an EKG?
    A. Signifies a problem with ventricular conduction
    B. Signifies an atrial escape beat
    C. Signifies myocardial ischemia
    D. Signifies an av block
4. What does the following ECG finding suggest?



    A. Hypokalemia
    B. Hyperkalemia
    C. Previous myocardial infarction
    D. Brugada syndrome
5. A patient with chronic asthma has been admitted to the hospital for an acute exacerbation. What is the MOST important information the therapist needs in order to determine the patient's prognosis with physical therapy?
    A. A current medication list.
    B. A previous history of the disease.
    C. The most recent chest x-ray results.
    D. The most recent pulmonary function test results
6. A patient with cystic fibrosis (CF) has been admitted to the hospital in acute respiratory failure as a result of an infection. What is the BEST choice for use of airway clearance techniques?
    A. Do not administer since it is contraindicated in acute respiratory failure.

B. Administer two times a day to the patient's tolerance.
C. Administer according to the patient's current home regimen.
D. Administer vigorously once every 2 hours.

7. What is an acceptable modified position to drain the posterior basal segment of the left lower lobe in a patient with pulmonary congestion?
   A. Side-lying on the right, with a pillow under the right hip and the bed flat.
   B. Prone, with a pillow under the hips and the bed flat.
   C. Side-lying on the right, with a pillow between the legs and the foot of the bed elevated 18 inches.
   D. Prone, with a pillow under the hips and the bed elevated 18 inches.

8. A patient is immersed up to the neck in a therapeutic pool. While exercising this patient, the therapist should take into consideration the physiological effects of immersion. Which significant result might occur?
   A. Increased forced vital capacity.
   B. Increased expiratory reserve volume.
   C. Increased work of breathing.
   D. Decreased pulmonary blood flow.

9. What are some common adverse effects that patients taking nitrates, diuretics, beta-blockers, or calcium antagonists might experience?
   A. Hypotension and dizziness.
   B. Arrhythmia and unstable blood pressure.
   C. Extreme fatigue and arrhythmias.
   D. Hypotension and decreased electrolytes.

10. A therapist is monitoring the blood pressure of a healthy athlete exercising on a treadmill. The speed and incline steadily increase during the exercise period. The therapist would expect the blood pressure response to demonstrate which of the following?
    A. Blunted rise in systolic pressure and a slight decrease in diastolic c pressure.
    B. Slight drop in systolic pressure and either a slight increase or decrease in diastolic pressure.
    C. Steady increase in systolic pressure accompanied by a steady increase in diastolic pressure.
    D. Steady increase in systolic pressure and either a slight increase or decrease in diastolic pressure.

11. The ____ is measured by dividing the patient's tidal volume (measured at the airway opening) by the difference in the plateau pressure and the PEEP.
    A. Airway resistance
    B. Static lung compliance
    C. Dead space to tidal volume ratio
    D. Dynamic lung compliance

12. _____ is an indicator of weaning failure.
    A. Increasing PaO2
    B. Increasing PaCO2
    C. Increasing SpO2
    D. Increasing PaO2/FIO2
13. The anatomical structure located in the center of the thoracic cavity is the:
    A. Mediastinum
    B. Visceral pleura
    C. Parietal pleura
    D. Diaphragm
14. A patient with an opening in the chest wall, such as from a gunshot, stab wound, or impalement, resulting in a "sucking chest wound," can be said to have:
    A. An open pneumothorax
    B. A closed pneumothorax
    C. A hemothorax
    D. A pleural effusion

15. Your pt. is in phase 1 of cardiac rehab. The intensity of his activities should stay in the _____ METS range.
    A. 1-4
    B. 1-5
    C. 1-3
    D. 1-2

16. PaCo2 is
    A. Directly proportional to ventilation
    B. Inversely proportional to ventilation
    C. Directly proportional to blood pH
    D. Inversely proportional to blood Ph

17. If PaCO2 is within (30-50) mmHg and pH>7.5 then there is
    A. Respiratory acidosis
    B. Metabolic alkalosis
    C. Respiratory alkalosis
    D. Acceptable ventilatory and metabolic status

18. Patients with high functional capacity but low reserve need
    A. Shorter training course
    B. Longer training course
    C. Progressive training course
    D. None of the above

19. Which of the following will not help to produce cough?
    A. Application of ice below axilla
    B. Extra thoracic tracheal pressure
    C. Manual ventilation
    D. Change of position

20. If PaCo2>50mmHg and PH is 7.3 to 7.4 then patient is suffering from which of the following condition
    A. Acute ventilatory failure
    B. Chronic ventilatory failure
    C. Partially compensated metabolic alkalosis
    D. Compensated metabolic alkalosis

21. One of the following modes of ventilation "locks out" the patient's efforts to breathe.

    A. Controlled Mandatory Ventilation
    B. Synchronous Intermittent Mandatory Ventilation
    C. Assist Control Mode
    D. Pressure Control Mode

22. One of the following modes of ventilation has the risk of the patient getting respiratory alkalosis.

    A. Controlled Mandatory Ventilation
    B. Synchronous Intermittent Mandatory Ventilation
    C. Assist Control Mode
    D. Pressure Control Mode

23. The mode of ventilation which allows the patient to breathe spontaneously at his or her own respiratory rate and depth between the ventilator breaths is...

    A. Controlled Mandatory Ventilation
    B. Synchronous Intermittent Mandatory Ventilation

C. Assist Control Mode
D. Pressure Control Mode

24. Once mechanical ventilation is established, which of the following suggests that an intraluminal mass or bronchospasm is present?

A. Elevated resistive pressure
B. High minute ventilation
C. Inappropriate tidal volume for the lung
D. Increased elastic pressure

25. Which of the following is the simplest and most effective means of providing full mechanical ventilation?

A. Pressure control ventilation
B. Pressure support ventilation
C. Synchronized intermittent mandatory ventilation
D. Volume-control ventilation

26. If acute hypotension develops in a mechanically ventilated patient, which of the following should be considered?

A. Oxygen toxicity
B. Tension pneumothorax
C. Venous thromboembolic disease
D. Ventilator-associated pneumonia

27. You are looking after a 75-year-old man who was admitted 3 days previously with an anterior ST- Elevation Myocardial Infarction and underwent primary Percutaneous coronary intervention to his left anterior descending artery. He has made a good recovery and his echocardiogram shows that he has only mild left ventricle impairment. He is asking about safe levels of physical activity once he goes home. What should you advise him?

A. To return immediately to his previous (pre-admission) level of activity
B. That exercise is dangerous after a heart attack and he should continue with at least 2 weeks of bed rest after he returns home
C. That he should be physically active for 20–30 minutes a day to the point of slight breathlessness
D. That he should undertake a 30-minute warm up period prior to any exercise

E. That he should start with at least 20–60 minutes of moderate aerobic exercise, three to five times a week

28. One of your patients is about to be discharged following an They ask A Non-ST-Elevation Myocardial Infarction. They ask you for some dietary advice to help to try and reduce their risk of having a further heart attack. What advice should you give?

A. To eat a Mediterranean-style diet with less meat and more bread, fruit, vegetables, and fish, and to replace butter and cheese with products based on vegetable and plant oils
B. To read food labels when shopping to ensure that they reduce the amount of mono-unsaturated fats in their diet and eat more foods containing saturated fats
C. To eat at least 1 g of omega-3 fatty acids, which are contained in oily fish, every week
D. To take supplements containing beta-carotene, antioxidant supplements, (vitamin E and/ or C), or folic acid to reduce cardiovascular risk

29. You are reviewing a 60-year-old patient in clinic after a recent NSTEMI. They have not yet completed their cardiac rehabilitation programme and are asking for advice about ongoing physical activity. They have been looking online and have come across articles that say they should exercise at about 6 'METs'. They ask you to explain what a MET is and if it means that they have to jog to keep healthy.

A. 1 MET, or metabolic equivalent of task, is equivalent to the resting metabolic rate when sitting quietly, and has a conventional reference value of 3.5 mL O2/kg/min which is equal to 1 kcal/kg/h
B. 1 MET, or metabolic equivalent of task, is equivalent to the resting metabolic rate when sleeping, and has a conventional reference value of 3.5 ml O2/kg/min which is equal to 1 kcal/kg/h
C. 1 MET, or metabolic equivalent of task, is equivalent to the resting metabolic rate when sitting quietly, and has a conventional reference value of 6.5 mL O2/kg/min which is equal to 1 kcal/kg/h

D. 1 MET, or metabolic equivalent of task, is equivalent to the resting metabolic rate when sleeping, and has a conventional reference value of 6.5 mL O2/kg/min which is equal to 1 kcal/kg/h

30. Whilst you are working in your local cardiology ward, one of the nursing staff approaches you and asks, in general, which patients are very high risk and will need specialist assessment prior to referral for the exercise component of your local cardiac rehabilitation (CR) programme. Which one of the following statements is correct?

A. Patients with cyanotic congenital heart disease or those who have received an implantable cardiac defibrillator should never be referred for cardiac rehabilitation
B. Patients with decompensated heart failure should be encouraged to exercise if it is part of a cardiac rehabilitation programme
C. Patients with severe valvular stenoses can take part in exercise programmes whilst awaiting valve replacement surgery
D. Patients with angina or breathlessness occurring at a low level of exercise (e.g. inability to complete the first 4 minutes of the shuttle walking test) should participate in exercise sessions based in a safe environment with access to a defibrillator and staff trained in advanced life support

SECTION B: SHORT ANSWER QUESTIONS (SAQ) 20 MARKS
ANSWER ALL QUESTIONS.

1. State the relative contraindications for exercise tolerance testing (5 marks)
2. Describe autogenic drainage as an airway clearance technique (5 marks)
3. Distinguish between short-term goals, long-term goals and preventive goals of cardiopulmonary physical therapy management (5 marks)
4. Describe the physiological effects of hypoxia and hypercapnia. (5marks)

SECTION C: LONG ANSWER QUESTIONS (LAQS) 20 MARKS
ANSWER ALL QUESTIONS EACH ONE IS 10 MARKS

1. Formulate a plan for evaluation of a patient with an acute Right Lower Lobe Pneumonia. (10 marks)

2. What is submaximal exercise testing? Describe two examples of submaximal exercise testing (10Marks)