



AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCE
DEPARTMENT OF REHABILITATION MEDICINE
BACHELOR OF SCIENCE IN PHYSIOTHERAPY
END OF MAY-AUGUST 2026 TRIMESTER EXAMINATIONS

UNIT CODE: PHT 118

NAME: FITNESS AND WELLNESS (MAIN EXAM)

DATE: 10TH AUGUST 2026

TIME: TWO HOURS

START: 6PM STOP : 8 PM

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

SECTION A: MULTIPLE CHOICE QUESTIONS. CHOOSE THE BEST OPTION. (20 Marks)

1. _____ is defined as any bodily movement produced by skeletal muscle that results in energy expenditure (i.e., it can be associated with occupation, leisure time, household chores, and sports).
 - A. Exercise
 - B. Physical fitness
 - C. Physical activity
 - D. Skill-related fitness
2. Recently, increased sedentary behaviour has been related to a higher risk of chronic diseases; however, when researchers controlled for the _____, almost all of the biomarker links to sedentary behavior disappeared.
 - A. light-intensity activity
 - B. moderate- to vigorous-intensity activity
 - C. light-, moderate-, and vigorous-intensity activity
 - D. vigorous-intensity activity
3. Which of the following is the logical sequence to explain how oxygen is transported to create energy?
 - A. Oxygen is bound to hemoglobin in the red blood cells. Oxygen diffuses from the alveoli into the blood. The heart delivers oxygen to the muscles. Oxygen diffuses into the muscle cells and reaches the mitochondria. Oxygen is consumed in the production of ATP. Oxygen enters the lungs during inhalation.
 - B. Oxygen enters the lungs during inhalation. Oxygen diffuses from the alveoli into the blood. Oxygen is bound to hemoglobin in the red blood cells. The heart delivers oxygen muscles. Oxygen diffuses into the muscle cells and reaches the mitochondria. Oxygen is consumed in the production of ATP.
 - C. Oxygen enters the lungs during inhalation. Oxygen is bound to hemoglobin in the red blood cells. Oxygen diffuses from the alveoli into the blood. The heart delivers oxygen to the muscles. Oxygen is consumed in the production of ATP. Oxygen diffuses into the muscle cells and reaches the mitochondria.

- D. Oxygen is consumed in the production of ATP. Oxygen enters the lungs during inhalation. Oxygen diffuses from the alveoli into the blood. The heart delivers oxygen to the muscles. Oxygen is bound to hemoglobin in the red blood cells. Oxygen diffuses into the muscle cells and reaches the mitochondria.
4. Toward the end of heavy exercise lasting 3 hours or more, which of the following provides almost all the carbohydrates used by the muscles?
- A. muscle glycogen
 - B. blood glucose
 - C. liver glycogen
 - D. adipose
5. The elevated oxygen uptake during recovery from exercise is called the.....
- A. oxygen deficit
 - B. oxygen debt
 - C. EPOC
 - D. oxygen repayment
 - E. b, c, and d
6. At any given submaximal work rate, most physiological responses (HR, BP, and blood lactate) are greater for leg work than for arm work.
- A. True
 - B. False
7. In most people, aging gradually but systematically reduces Vo_2 max by about what percentage each year?
- A. 10%
 - B. 20%
 - C. 5%
 - D. 1%
8. When muscles are worked at very high intensities and for long periods, especially early in a training program, a condition called _____ can develop.
- A. Rhabdomyolysis
 - B. pulmonary disease
 - C. oxygen deficit
 - D. lactic acidosis
9. The highest intakes believed to pose no health risk are called?
- A. Recommended dietary allowances (rdas)
 - B. Adequate intakes (ais)
 - C. Tolerable upper intake levels (UL)
 - D. Acceptable macronutrient distribution ranges (amdrs)
10. During high-intensity exercise, _____ is the primary fuel source for ATP production.
- A. Carbohydrate

- B. fat
 - C. protein
 - D. water
11. A person who eats 10 g of carbohydrate gains approximately _____ kcal of energy to use or store.
- A. 10
 - B. 4
 - C. 40
 - D. 90
12. The contribution of protein to energy needs during exercise is usually _____ in well-nourished individuals.
- A. <5 %
 - B. 10%
 - C. 15%
 - D. 35%
13. Which of the following submaximal tests provides the HR and BP responses to the various intensities of work, ranging from light intensity to a predetermined point (usually of predicted maximum HR)?
- A. 65%
 - B. 75%
 - C. 85%
 - D. 90%
14. Which of the following is not an absolute contraindication to exercise testing according to ACSM's?
- A. Unstable angina
 - B. Symptomatic severe aortic stenosis
 - C. Acute myocarditis or pericarditis
 - D. Ventricular aneurysm
15. The advantages of an endurance run test do NOT include
- A. Its moderately high correlation to maximum oxygen uptake
 - B. The ease of monitoring physiological responses
 - C. The use of a natural activity
 - D. The large numbers of participants who can be tested in a short time
16. In terms of negative health consequences, which of the following closely linked with disease?
- A. Gynoid-type obesity
 - B. Android-type obesity
 - C. Underweight
 - D. Overweight

17. _____ is one of the most common means for estimating body composition in research settings and is often used as the criterion method for assessing %BF.
- A. Body mass index
 - B. Hydrostatic (underwater) weighing
 - C. Air displacement plethysmography
 - D. Dual-energy x-ray absorptiometry
18. While beneficial for some participants, assessment of _____ is not typically performed as part of general exercise programs that focus on health outcomes.
- A. Muscular strength
 - B. Muscular power
 - C. Local muscular endurance
 - D. Cardiorespiratory endurance
19. Members of a fitness program should be educated about all heat-related factors. Which of the following recommendations is most important?
- A. Learning about the symptoms of heat illness (e.g., cramps, lightheadedness) and how to deal with them
 - B. Drinking water before, during, and after exercise and weighing in each day to monitor hydration
 - C. Wearing only shorts and a tank top in order to expose as much skin as possible, but being careful to use sunblock to reduce the chance of getting skin cancer
 - D. Taking heart rate measurements several times during the activity and reducing exercise intensity to stay in the Target Heart Rate zone
20. What level of the Borg RPE scale should be used to approximate 40%/50% to 84% of HRR or 60%/65% to 90% of HR_{max}?
- A. 5 to 10
 - B. 10 to 12
 - C. 12 to 16
 - D. 15 to 17
21. Regarding short- and long-term physiological responses to exercise, benefits that occur early and plateau are considered as....
- A. Acute responses
 - B. Rapid responses
 - C. Linear responses
 - D. Delayed responses
22. Which of the following principles is particularly important after the first 2 to 3 months of resistance training, when the threshold for training-induced adaptations in conditioned people is higher?
- A. Progression
 - B. regularity
 - C. overload

- D. specificity
23. _____ is typically manipulated by changing the exercise intensity, total repetitions, repetition speed, rest periods, type of exercise, and training volume. This process is the basis for maximizing long-term training adaptations.
- A. Progression
 - B. Regularity
 - C. Overload
 - D. Specificity
24. When trying to establish a training base, an individual should focus on increasing exercise _____
- A. Frequency
 - B. intensity
 - C. duration
 - D. volume
25. Which of the following does not have strongly supported evidence regarding the benefits of regular physical activity in children?
- A. Improved bone health
 - B. Increased HDL-C
 - C. Increased insulin sensitivity
 - D. Decreased symptoms of depression
26. Which of the following is a valid way of determining training intensity for a patient who is on a beta- blocker?
- A. using the Karvonen formula for computing a target HR range if the client was not on beta-blockers at the time of testing
 - B. RPE ratings around somewhat hard, which correspond to 11 to 14 on the Borg RPE scale
 - C. using a target HR that is computed by adding 50 beats · min⁻¹ to the client's standing, resting HR
 - D. all of these
27. In which stage is the individual not seriously thinking about changing an unhealthy behaviour in the next 6 months or is denying the need to change?
- A. precontemplation
 - B. contemplation
 - C. preparation
 - D. action
 - E. maintenance
28. Behaviors that are more _____ motivated have a greater chance of persistence and a greater sense of personal choice, or autonomy
- A. intrinsically
 - B. extrinsically

- C. internally
 - D. externally
 - E. both a and c
29. _____ is a theory of motivation that explains human behavior with respect to one's motivation for meeting basic needs.
- A. Self-determination theory
 - B. Social cognitive theory
 - C. Transtheoretical model
 - D. Stage of change theory
30. Demographics, activity history, past experiences, perception of health status, perception of access to facilities, time, enjoyment of exercise, aptitudes, beliefs, self-motivation, and self-efficacy are examples of....
- A. personal influences to exercise
 - B. social influences to exercise
 - C. environmental influences to exercise
 - D. socioeconomic influence to exercise

SECTION B: SHORT ANSWER QUESTIONS

(20 MARKS)

ANSWER ALL QUESTIONS. EACH QUESTION IS 5 MARKS

1. A 62-year-old male with stable coronary artery disease (post-stent 18 months) and osteoarthritis of both knees wants to start a fitness program. He reads online that “high-intensity interval training (HIIT)” is most effective for heart health. A personal trainer without medical training offers him a HIIT plan including box jumps and sprint intervals. Evaluate the safety and appropriateness of this plan for this patient. Compare it to an alternative evidence-based approach for his comorbidities, justifying your clinical reasoning (5 MARKS)
2. Employees in a company report increasing fatigue, stress, and reduced physical activity due to prolonged desk work. Design a workplace wellness program that addresses physical activity, nutrition, stress management, and health promotion. Justify how each component contributes to employee wellness (5 MARKS)
3. Explain the concept of periodization in exercise programming. Why is it important for both elite athletes and the general population? Include an example of how a 4-week periodized plan might be structured (5 MARKS)
4. Create a weekly training plan for a beginner whose goal is to improve muscular endurance while applying the FITT and overload principles (5 MARKS)

SECTION C: LONG ANSWER QUESTIONS.

(20 MARKS)

ANSWER ALL QUESTIONS. EACH QUESTION IS 10 MARKS

1. You are leading a community-based wellness initiative for low-income adults with multiple barriers to fitness (lack of gym access, childcare needs, low health literacy). Create a culturally sensitive, low-cost, sustainable fitness and wellness program (10 marks)
2. Imagine you are a health professional tasked with communicating the importance of a preventive health behavior (e.g., getting vaccinated, managing stress, adopting a new dietary habit for a specific health condition, or adhering to a medication regimen) to a diverse group of people. Explain how you would tailor your communication approach to address potential issues of "perceived invulnerability" and "faulty conceptualizations" within this group (10 MARKS).