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**SPORTS, EXERCISE AND HEALTH SCIENCE  
STANDARD LEVEL  
PAPER 1**

Wednesday 6 November 2013 (morning)

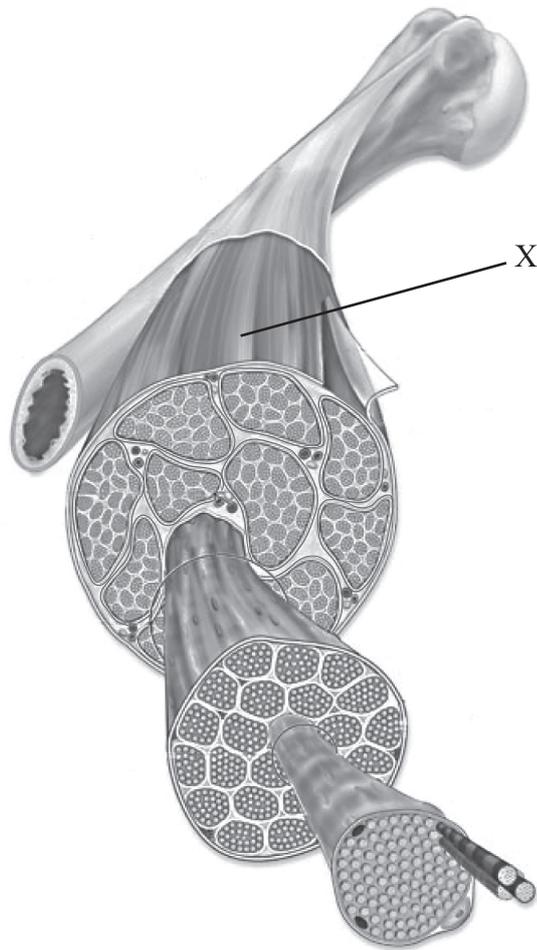
45 minutes

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**INSTRUCTIONS TO CANDIDATES**

- Do not open this examination paper until instructed to do so.
- Answer all the questions.
- For each question, choose the answer you consider to be the best and indicate your choice on the answer sheet provided.
- The maximum mark for this examination paper is *[30 marks]*.

1. Which part of the skeletal muscle is labelled X in the diagram below?



[Source: adapted from [http://academic.kellogg.edu/herbrandsonc/bio201\\_mckinley/muscular/htm](http://academic.kellogg.edu/herbrandsonc/bio201_mckinley/muscular/htm)]

- A. Myofibril
- B. Epimysium
- C. Perimysium
- D. Endomysium

2. What soft tissue lines the articular (joint) capsule and secretes fluid?
- A. Meniscus
  - B. Synovial fluid
  - C. Articular cartilage
  - D. Synovial membrane
3. Which term describes the anatomical position of the tibia?
- A. On the medial part of the tarsals
  - B. On the distal end of the femur
  - C. On the proximal end of the pelvic girdle
  - D. On the proximal end of the humerus
4. Blood is made up of plasma and which type of cells?
- I. Electrolytes
  - II. Erythrocytes
  - III. Leucocytes
  - IV. Platelets
- A. I only
  - B. I and II only
  - C. I, II and III only
  - D. II, III and IV only

5. Which are the major blood vessels in the heart?

A.	pulmonary vein	bicuspid valve	aorta
B.	vena cava	aortic valve	pulmonary vein
C.	vena cava	pulmonary vein	aorta
D.	aorta	pulmonary artery	pulmonary valve

6. What is the relationship between heart rate, cardiac output and stroke volume at rest?

- A. Cardiac output = stroke volume + heart rate
- B. Cardiac output = stroke volume ÷ heart rate
- C. Cardiac output = stroke volume × heart rate
- D. Cardiac output = stroke volume – heart rate

7. How is *systolic blood pressure* best defined?

- A. The blood pressure in the human body during atrial relaxation
- B. The blood pressure in the vena cava during ventricular contraction
- C. The force exerted by blood on arterial walls during ventricular relaxation
- D. The force exerted by blood on arterial walls during ventricular contraction

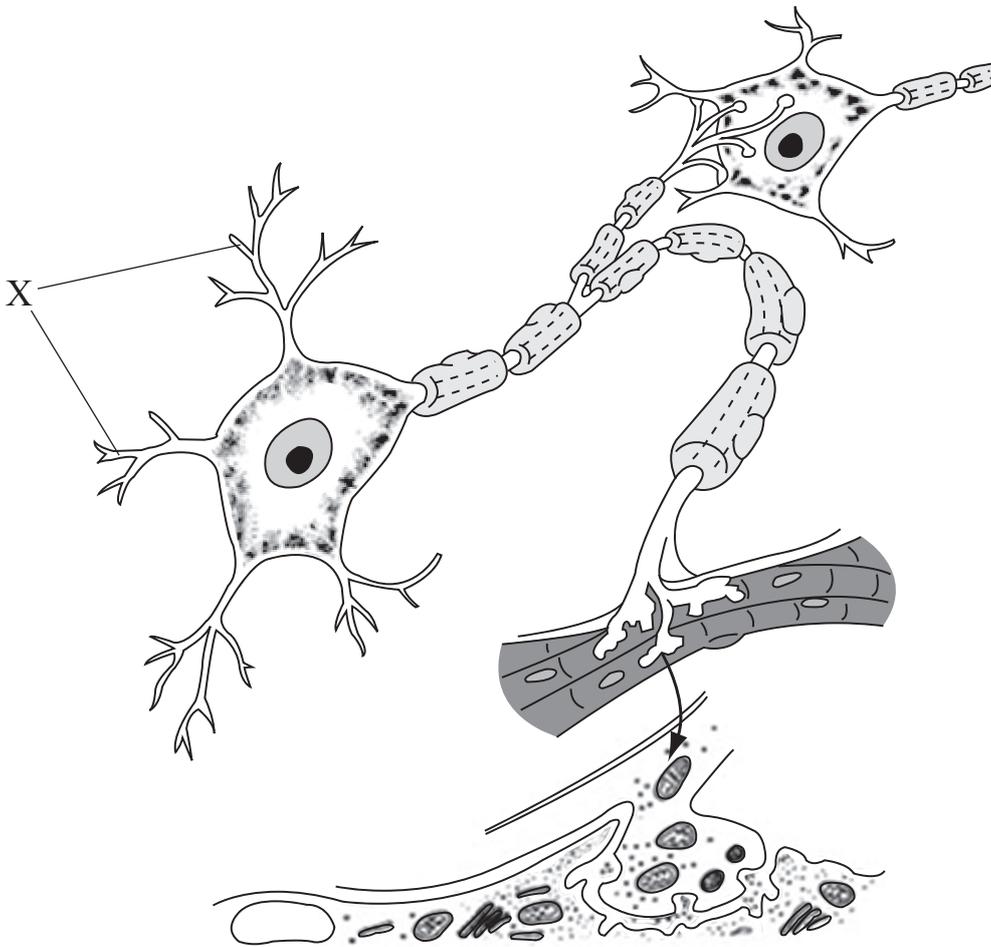
8. Which cardiovascular adaptation results from endurance training in athletes?

- A. Increased stroke volume
- B. Decreased capillarization
- C. Increased resting heart rate
- D. Decreased left ventricular volume

9. Which stimulus increases ventilation rate and depth?
- A. Increase in carbon dioxide
  - B. Decrease in carbon dioxide
  - C. Increase in blood pressure
  - D. Decreased activity of proprioceptors
10. Which of the following are macronutrients?
- I. Fibre
  - II. Lipids
  - III. Proteins
  - IV. Carbohydrates
- A. I and III only
  - B. II and III only
  - C. I, II and III only
  - D. II, III and IV only
11. What are the chemical composition and ratio of a glucose molecule?
- A. S, H and O (1:2:1 ratio)
  - B. S, H and O (2:1:2 ratio)
  - C. C, H and O (1:2:1 ratio)
  - D. C, H and O (2:1:2 ratio)

12. Which molecule is made up of carbon, hydrogen, oxygen and nitrogen?
- A. Fat
  - B. Water
  - C. Protein
  - D. Carbohydrate
13. Which term describes lipolysis?
- A. The splitting of fatty acids from a triglyceride
  - B. The splitting of carbohydrates
  - C. The synthesis of fatty acids and triglycerides within an organism
  - D. All the biochemical reactions that occur within an organism
14. Where are cristae, inner matrix and an outer smooth membrane located?
- A. Liver cell
  - B. Mitochondrion
  - C. Skeletal muscle
  - D. Generalized animal cell

15. The diagram below shows a motor unit. What is the structure labelled X?



[Source: adapted from S Young, (2003), *AS/A-Level Resource Pack, Anatomy & Physiology*, page 51, © 2003 Philip Allan Updates]

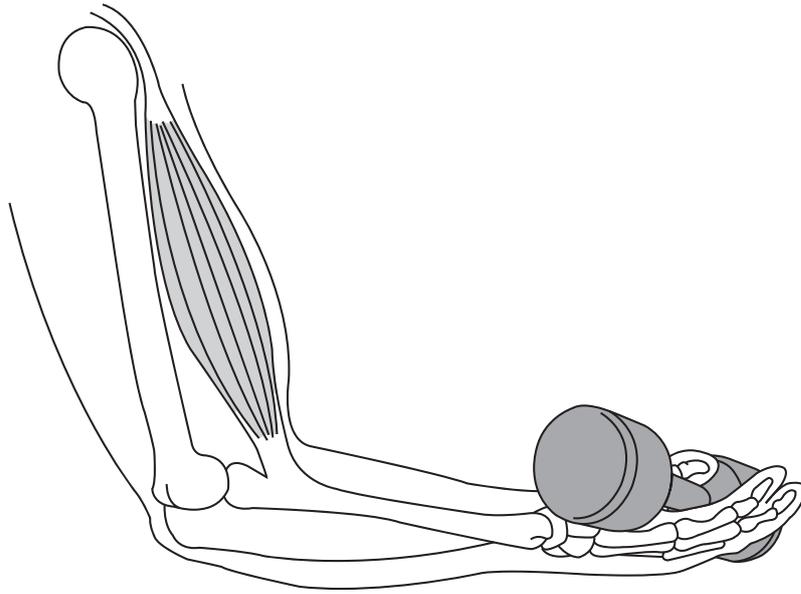
- A. Cell body
- B. Dendrites
- C. Nucleus
- D. Synapse

16. What type of movement takes place at the hip joint when a gymnast goes down into the splits?



- A. Extension
- B. Abduction
- C. Adduction
- D. Circumduction

17. Which type of lever is used when performing a bicep curl?



[Source: adapted from J Hamill and K Knitzen, (2009), *Biomechanical Basis of Human Movement*, page 433, Wolters Kluwer/Lippincott Williams & Wilkins]

- A. First
  - B. Second
  - C. Third
  - D. Fourth
18. How is *Newton's first law of motion* best defined?
- A. For every action there is an equal and opposite reaction.
  - B. An object will remain at rest or constant velocity unless acted upon by an external force.
  - C. The rate of change of acceleration of an object is proportional to the force applied and acts in the direction of the force.
  - D. The acceleration of an object is directly proportional to the force causing it, and is proportional to the mass of the object.

19. What are the main factors that affect a shot in basketball?



[Source: <http://basketballtrainingcourse.com/category/basketball-shooting-drills>]

- I. Angle of release
  - II. Timing of release
  - III. Height of release
  - IV. Speed of release
- A. I, II and III only
  - B. I and III only
  - C. II and III only
  - D. I, III and IV only
20. Which type of skill is used by a coach when adding up the points scored in a volleyball game?
- A. Motor
  - B. Cognitive
  - C. Perceptual
  - D. Perceptual motor

21. Which activity is an example of an interactive skill?
- A. Rugby
  - B. Diving
  - C. High jump
  - D. 100 m sprint
22. What is the definition of *technique*?
- A. A stable and enduring characteristic that is genetically determined
  - B. The learned ability to bring about a pre-determined result
  - C. The way in which the sports skill is performed
  - D. The consistent production of goal-orientated movements
23. Which equation best describes the relationship between reaction time, movement time and response time?
- A. Response time = reaction time + decision time
  - B. Movement time = decision time + response time
  - C. Reaction time = movement time + response time
  - D. Response time = reaction time + movement time
24. Which of the following best describes terminal feedback?
- A. Feedback related to the performance
  - B. Feedback available at the end of the performance
  - C. Feedback related to the quality of the performance
  - D. Feedback that takes place at the same time as the performance

25. Which learning curve best describes a negative acceleration?
- A. The learner shows no improvement.
  - B. The learner improves at a constant rate.
  - C. The learner starts slowly and shows a large improvement towards the end of their performance.
  - D. The learner shows a faster rate of learning at the start and slows down towards the end of their performance.
26. When should a Physical Activity Readiness Questionnaire (PAR-Q) be used?
- A. Before a training programme begins
  - B. During a training programme
  - C. After a training programme ends
  - D. In between two training programmes
27. How many standard deviations fall within 68% of values for normally distributed data?
- A.  $\pm 1$
  - B.  $\pm 2$
  - C.  $\pm 3$
  - D.  $\pm 4$
28. Which of the following is a performance-related (skill-related) fitness component?
- A. Strength
  - B. Flexibility
  - C. Reaction time
  - D. Muscular endurance

29. Which are valid tests for aerobic capacity?

- I. Cooper's 12 Minute Run
- II. Multistage fitness test
- III. Wingate cycle test
- IV. Harvard Step Test

- A. I and II only
- B. II and IV only
- C. I, II and III only
- D. I, II and IV only

30. Which are the essential elements of a general training programme?

A.	warm-up	agility training	cool down
B.	agility training	cool down	flexibility training
C.	stretching activities	endurance training	recreational activities
D.	warm-up	resistance training	agility training