

Sports, exercise and health science
Standard level
Paper 1

Tuesday 30 October 2018 (afternoon)

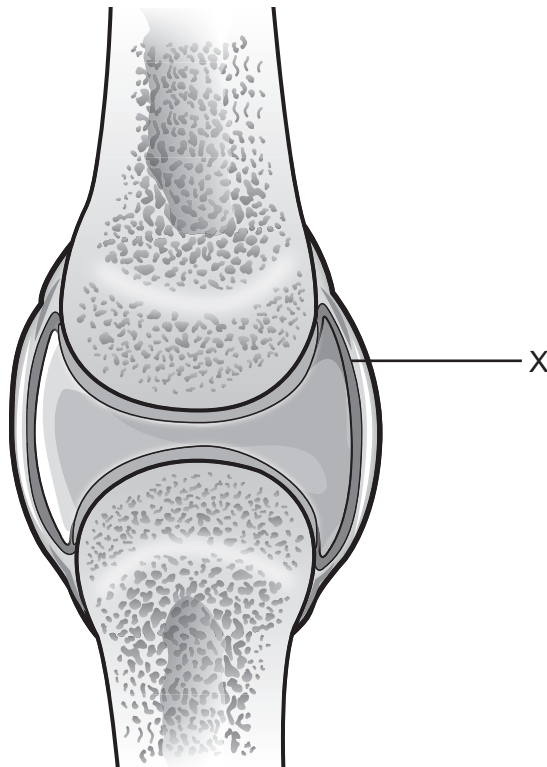
45 minutes

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. What is the position of the scapula relative to the rib cage?
 - A. Medial
 - B. Inferior
 - C. Posterior
 - D. Proximal

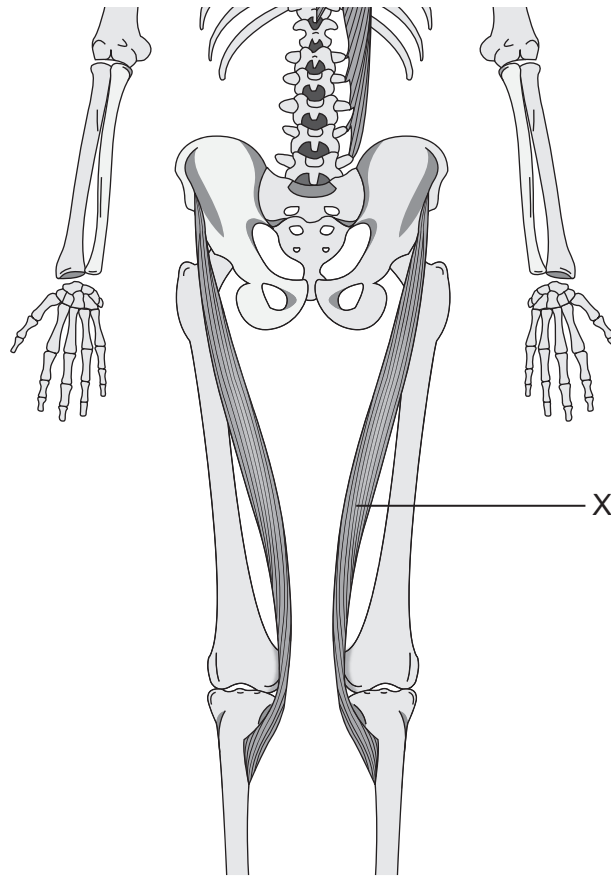
2. What structure is labelled X in the diagram below?



[Source: adapted from OpenStax, Anatomy & Physiology, 9.4 Synovial Joints, Figure 1, by Rice University, Feb 26, 2016, <https://cnx.org/contents/FPtK1z mh@12.7:bFtYymxt@7/Synovial-Joints>. Licensed under a Creative Commons Attribution 4.0 International License, <https://creativecommons.org/licenses/by/4.0.>]

- A. Articular capsule
- B. Synovial fluid
- C. Articular cartilage
- D. Synovial membrane

3. What muscle is labelled X in the diagram below?



[Source: adapted from https://commons.wikimedia.org/wiki/File:Sartorius_3D.gif, BodyParts3D, © The Database Center for Life Science licensed under CC Attribution-Share Alike 2.1 Japan.]

- A. Iliopsoas
 - B. Sartorius
 - C. Vastus lateralis
 - D. Vastus intermedius
4. Which is a principal structure of the ventilatory system?
- A. Capillary
 - B. Bronchiole
 - C. Hemoglobin
 - D. Pulmonary artery

Turn over

5. What is residual volume?
- A. Volume of air in the lungs after maximum inhalation
 - B. Inflow and outflow of air between the atmosphere and the lungs
 - C. Volume of air still contained in the lungs after maximal exhalation
 - D. Additional inspired air over and above tidal volume
6. What is the action of the diaphragm and the external intercostal muscles during exhalation?

	Diaphragm	External intercostal muscle
A.	Relaxation	Relaxation
B.	Contraction	Contraction
C.	Relaxation	Contraction
D.	Contraction	Relaxation

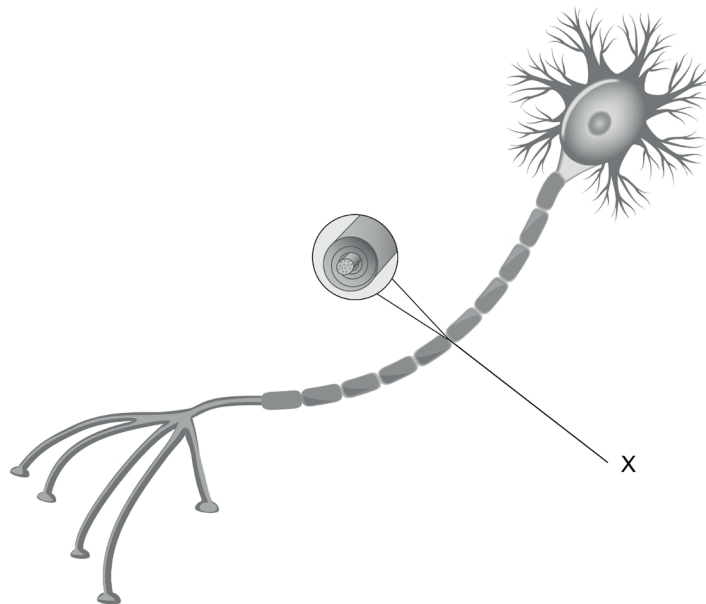
7. What is the equation for cardiac output?
- A. Heart rate \div stroke volume
 - B. Tidal volume \times frequency
 - C. Heart rate \div tidal volume
 - D. Stroke volume \times heart rate
8. Which demonstrates how blood is redistributed to the working muscles during exercise?

	Pre-capillary sphincters of the working muscles	Arterioles of the working muscles
A.	Constrict	Dilate
B.	Dilate	Constrict
C.	Dilate	Dilate
D.	Constrict	Constrict

9. Which defines maximal oxygen consumption?
- A. Maximum volume of oxygen inhaled and used per minute
 - B. Maximum volume of air exhaled after a maximum inhalation
 - C. Maximum volume of oxygenated blood ejected per minute
 - D. Maximum volume of oxygen breathed in or out per breath
10. Which is a function of protein?
- A. Primary source of energy
 - B. Provide insulation under the skin
 - C. Protect vital organs from impact
 - D. Provide structure to build tissues
11. Which describes non-essential amino acids?
- A. They are broken down by digestion into fatty acids.
 - B. They can be synthesised by the human body.
 - C. They must be obtained from the diet.
 - D. They do not have nitrogen in their composition.
12. Which is the breakdown of glycogen into glucose?
- A. Glycolysis
 - B. Glycogenesis
 - C. Glycogenolysis
 - D. Beta oxidation

Turn over

13. What is the function of glucagon during fasting?
- A. Stimulate the breakdown of glycogen into glucose
 - B. Stimulate the uptake of glucose to form glycogen
 - C. Stimulate the uptake of glycogen to form glucose
 - D. Stimulate the production of adipose tissue from glucose
14. What is the net amount of ATP molecules produced from one glucose molecule in the lactic acid system?
- A. 36
 - B. 4
 - C. 2
 - D. 1
15. What is the structure labelled X in the diagram below?



[Source: Designua/Shutterstock]

- A. Axon
- B. Muscle
- C. Dendrite
- D. Cell body

16. Which movement is performed at the ankle joint in the diagram below?

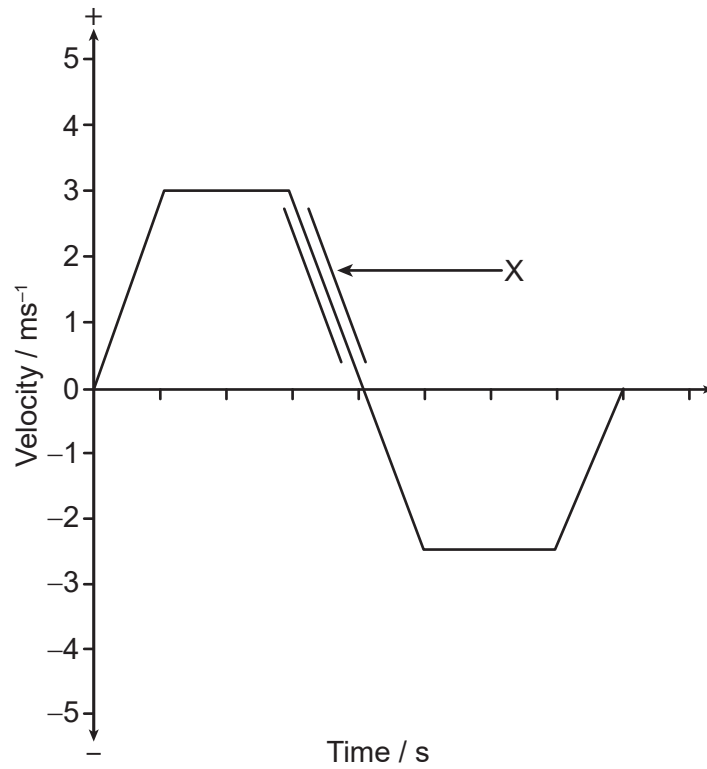


[Source: adapted from <https://pixabay.com>]

- A. Eversion
 - B. Inversion
 - C. Dorsi flexion
 - D. Plantar flexion
17. Which muscle contraction occurs when the muscle lengthens under tension?
- A. Isokinetic
 - B. Isometric
 - C. Eccentric
 - D. Concentric

Turn over

18. What describes acceleration and the direction of travel during X on the graph below?



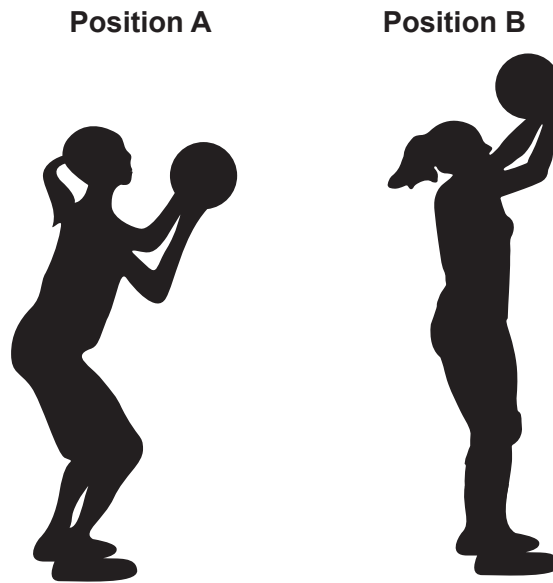
[Source: © International Baccalaureate Organization 2018]

	Acceleration	Direction of travel
A.	Positive	Forwards
B.	Positive	Backwards
C.	Negative	Forwards
D.	Negative	Backwards

19. What is the relationship between angular momentum, angular velocity and moment of inertia?

- A. Moment of inertia = angular velocity \times angular momentum
- B. Angular momentum = angular velocity \div moment of inertia
- C. Angular velocity = moment of inertia \div angular momentum
- D. Angular momentum = angular velocity \times moment of inertia

20. What happens to the centre of mass when the basketball player prepares to shoot, moving from position A to position B?

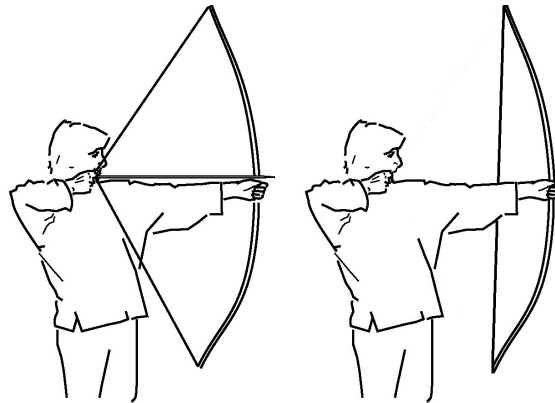


[Source: adapted from sdart/iStock]

- A. Does not move
 - B. Moves upwards
 - C. Moves downwards
 - D. Moves forwards
21. What type of skill is used to decide and perform a pass in soccer?
- A. Cognitive skill
 - B. Perceptual skill
 - C. Motor skill
 - D. Perceptual motor skill

Turn over

22. Which classifies the release of an arrow in archery?



[Source: adapted from “A woman shooting a bow and arrow,” by Benjamin Crowell, https://en.wikipedia.org/wiki/File:A_woman_shooting_a_bow_and_arrow.jpg. Licensed under a Creative Commons Attribution-ShareAlike 3.0 Unported license. <https://creativecommons.org/licenses/by-sa/3.0/>.]

- A. Fine–closed–continuous
 - B. Fine–individual–discrete
 - C. Gross–closed–discrete
 - D. Gross–individual–continuous
23. What is a characteristic of short-term sensory store?
- A. It contains motor programmes
 - B. It can convert information into a knowledge structure
 - C. It has a high capacity for storing information
 - D. It is a relatively permanent area for storing information
24. Which defines response time?
- A. Time from the introduction of a stimulus to completion of an action
 - B. Time from the onset of a stimulus to the beginning of an action
 - C. Time taken to carry out motor aspects of a performance
 - D. Time between the introduction of first and second stimuli

25. Which describes the associative stage of learning?
- A. Performers' movements are regularly practised and refined.
 - B. Performers consistently complete actions with fluency.
 - C. Performers' movements are erratic and lack fluency.
 - D. Performers regularly focus on irrelevant stimuli for movements that require perception.
26. What type of transfer occurs from a 3 versus 3 training game to a 5 versus 5 competitive basketball game?
- A. Skill to skill
 - B. Abilities to skill
 - C. Practice to performance
 - D. Stage to stage
27. What can be represented by error bars on a graph?
- A. Ratio of the standard deviation to the mean value of a set of data
 - B. Variability of a set of data from the median
 - C. Variability of the mode value of a set of data
 - D. Variability of a set of data from the mean
28. Which is a component of performance-related (skill-related) fitness?
- A. Muscular endurance
 - B. Body composition
 - C. Power
 - D. Strength

Turn over

- 29.** Which test measures muscular strength?
- A. Maximum sit-ups
 - B. Hand grip dynamometer
 - C. Maximum press-ups
 - D. Vertical jump
- 30.** Which outlines progression as a principle of training programme design?
- A. Training muscles that are relevant to the actions of the sport
 - B. Training is high intensity for short bursts
 - C. Training by gradual increase in physical challenge to induce adaptations
 - D. Training with a range of methods to maintain motivation
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