

Sports, exercise and health science
Higher level
Paper 1

Tuesday 30 October 2018 (afternoon)

1 hour

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 **[40 marks]**.

1. Which are components of the axial skeleton?
 - A. Ribs, Clavicle, Ilium
 - B. Skull, Vertebrae, Sternum
 - C. Ribs, Clavicle, Sternum
 - D. Skull, Vertebrae, Ilium

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

3. Which is a principal structure of the ventilatory system?
 - A. Capillary
 - B. Bronchiole
 - C. Hemoglobin
 - D. Pulmonary artery

4. Which is a function of the conducting airways?
 - A. Exchange gases
 - B. Resist air flow
 - C. Cool and moisten the air
 - D. Defend from substances inhaled

5. 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

6. Which is the function of platelets?

- A. Clot blood
- B. Deliver oxygen
- C. Produce antibodies
- D. Carry carbon dioxide

7. Which demonstrates how blood is redistributed to the working muscles during exercise?

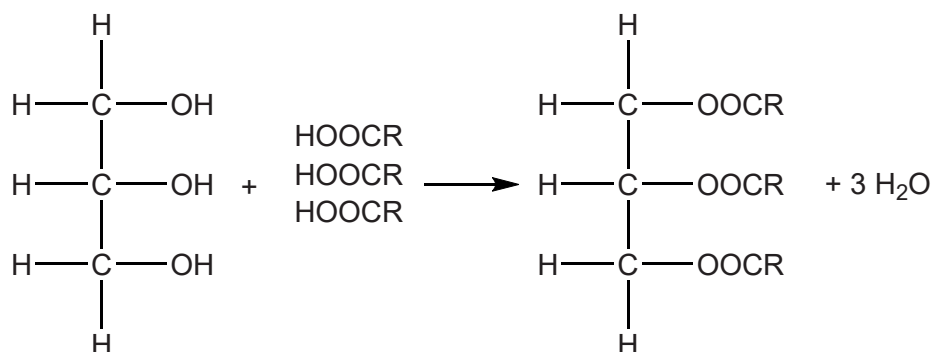
	Pre-capillary sphincters of the working muscles	Arterioles of the working muscles
A.	Constrict	Dilate
B.	Dilate	Constrict
C.	Dilate	Dilate
D.	Constrict	Constrict

8. Which is the function of proteins?

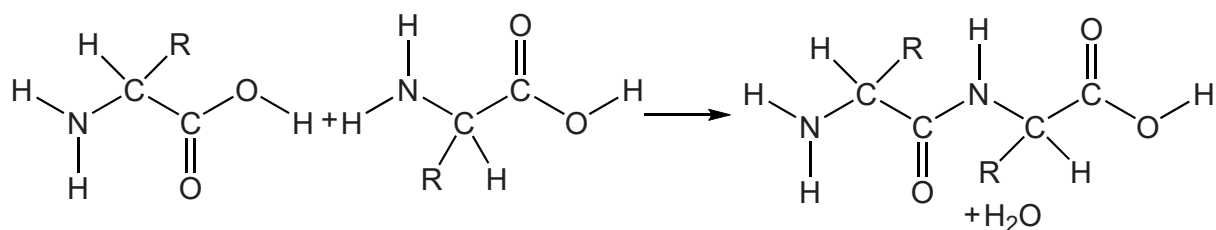
- A. Primary source of energy
- B. Provide insulation
- C. Protect vital organs
- D. Build tissues

9. Which diagram below represents a reaction that forms a disaccharide?

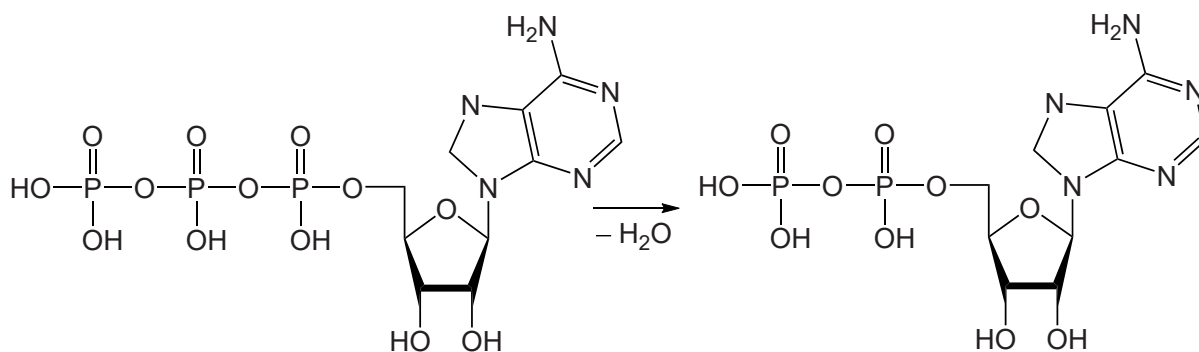
A.



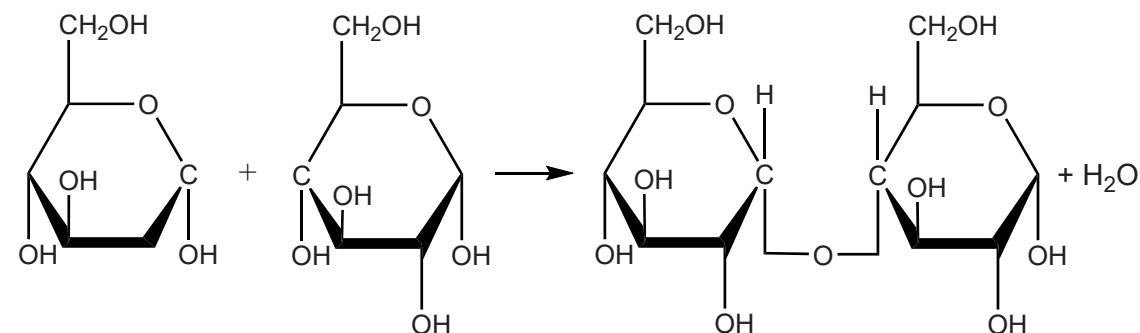
B.



C.



D.



10. Which is the breakdown of glycogen into glucose?
- A. Glycolysis
 - B. Glycogenesis
 - C. Glycogenolysis
 - D. Beta oxidation
11. Which describes the lactic acid system?
- A. Anaerobic energy system that produces 1 ATP
 - B. Aerobic energy system that produces 36 ATP
 - C. Catabolic reaction that uses one molecule of phosphocreatine
 - D. Energy system that can fuel high-intensity work for 90 seconds
12. Which movement is performed at the ankle joint in the diagram below?



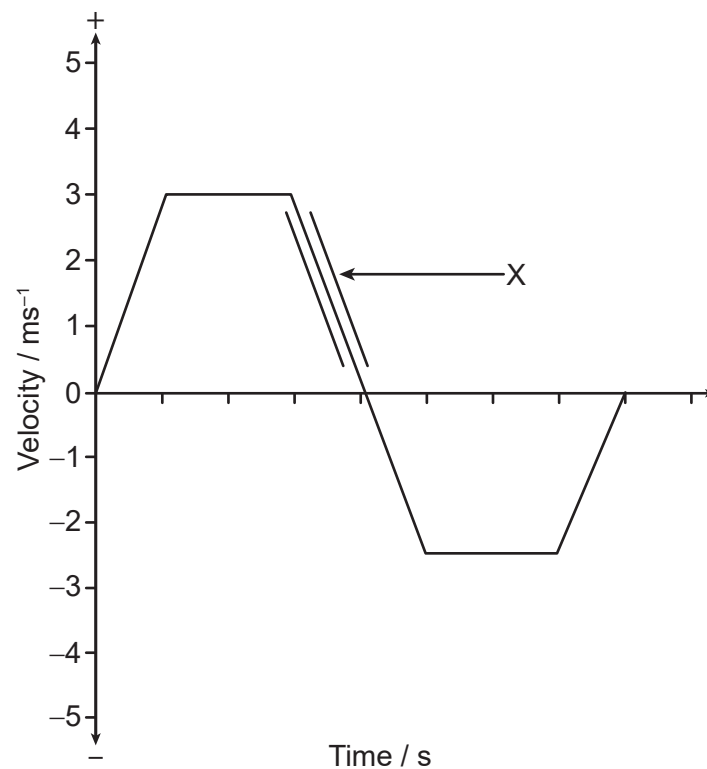
[Source: adapted from <https://pixabay.com>]

- A. Eversion
- B. Inversion
- C. Dorsi flexion
- D. Plantar flexion

13. What muscle is the antagonist during flexion at the hip?

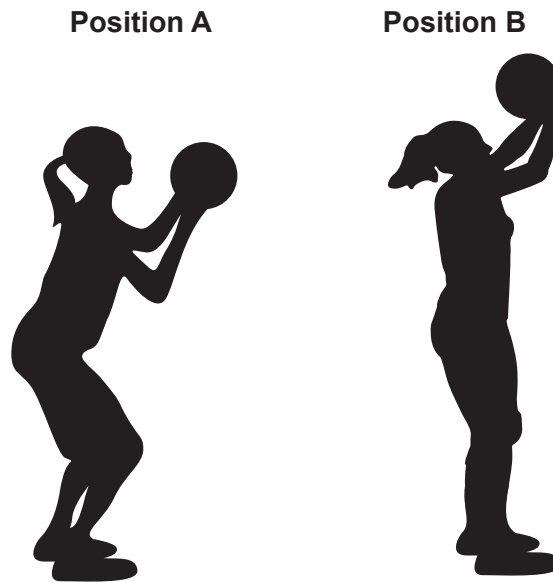
- A. Iliopsoas
- B. Sartorius
- C. Gluteus maximus
- D. Biceps femoris

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



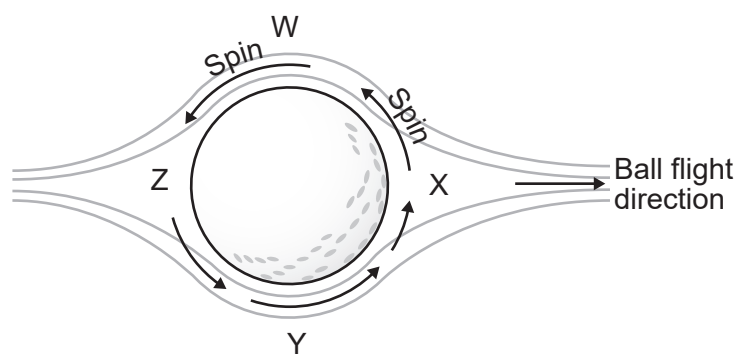
	Acceleration	Direction of travel
A.	Positive	Forwards
B.	Positive	Backwards
C.	Negative	Forwards
D.	Negative	Backwards

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



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

- A. Does not move
 B. Moves upwards
 C. Moves downwards
 D. Moves forwards
16. Which area around the golf ball has the highest air pressure?

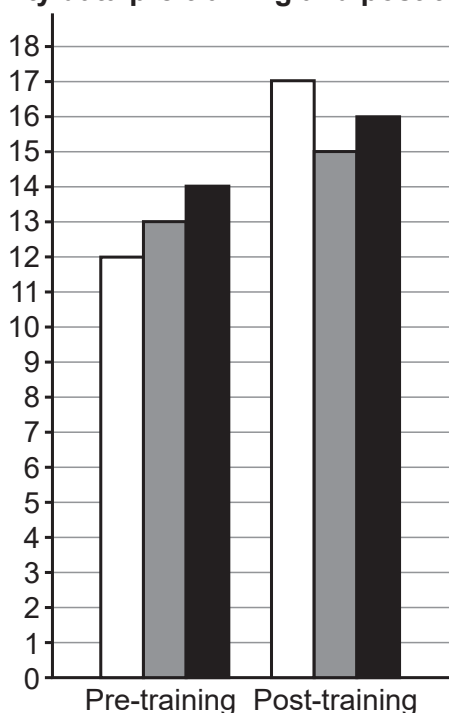


- A. W
 B. X
 C. Y
 D. Z

- 17.** What type of skill is used to decide and perform a pass in football?
- A. Cognitive skill
 - B. Perceptual skill
 - C. Motor skill
 - D. Perceptual motor skill
- 18.** Which would be classified as a continuous skill?
- A. Running outdoors
 - B. Throwing a ball
 - C. Performing a gymnastics routine
 - D. Lifting a weight
- 19.** 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
- 20.** 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
- 21.** 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.

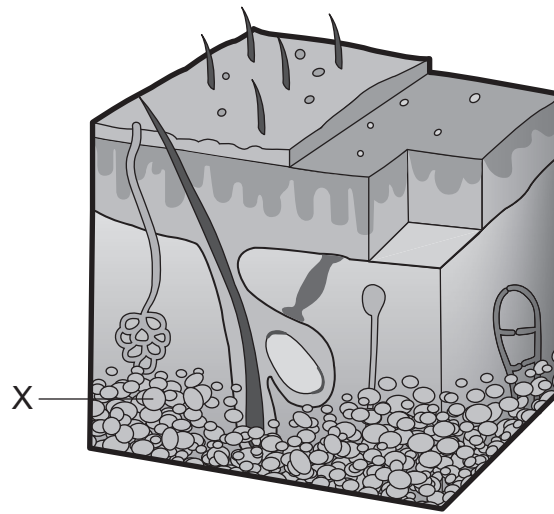
22. What can be represented by error bars on a graph?
- A. Ratio of the standard deviation to the mean value of a set of data
 - B. Variability of a set of data from the median
 - C. Variability of the mode value of a set of data
 - D. Variability of a set of data from the mean
23. Which of these describes appropriate study design?
- A. Placebos are assigned to an experimental group.
 - B. In a double blind trial the researcher knows which is the control group.
 - C. Randomisation allows participants to choose the experimental group.
 - D. In the control group participants take a placebo.
24. Which is the mean value for the post-training test score?

Flexibility data pre-training and post-training



- A. 13
- B. 15
- C. 16
- D. 17

25. 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
26. What is the structure labelled X on the diagram below?



[Source: adapted from OpenStax, Anatomy & Physiology, 5.1 Layers of the Skin, Figure 1, by Rice University, Feb 26, 2016, https://opentextbc.ca/anatomyandphysiology/chapter/5-1-layers-of-the-skin/#fig-ch05_01_01. Licensed under a Creative Commons Attribution 4.0 International License, <https://creativecommons.org/licenses/by/4.0/>.]

- A. Glands
 - B. Dermis
 - C. Hair follicle
 - D. Fat
27. Which is the function of the internal carotid artery?
- A. Drain blood away from the face
 - B. Supply blood to the eyes
 - C. Transport creatine across the blood-brain barrier
 - D. Carry blood to the right subclavian artery

28. Which describes the hypothalamus?

- I. Secretes GHRH
 - II. Secretes somatostatin
 - III. Secretes GH
- A. I only
 - B. I and II only
 - C. II and III only
 - D. I, II and III

29. Which applies to circulating hormones?

- A. Act on neighbouring cells
- B. Travel in the blood stream
- C. Travel through ducts
- D. Quick inactivation

30. Which are characteristic of fatigue?

- I. A result of transient overtraining
 - II. A reversible, exercise-induced decline in performance
 - III. A permanent decline in physical and mental health
- A. I only
 - B. I and II
 - C. II and III
 - D. I, II and III

31. Which is a physiological cause of peripheral fatigue in high-intensity exercise?
- A. Reduction in muscle glycogen reserves
 - B. Depletion of acetylcholine
 - C. Depletion in creatine phosphate
 - D. Reduction in Ca^{2+} release
32. Which describes the coefficient of friction?
- A. The force applied to overcome the friction of a stationary object
 - B. The force between interfacing surfaces of two bodies
 - C. The ratio of opposing forces acting between two bodies in motion
 - D. The ratio of the force of friction between two bodies and a normal reaction force
33. Which force is identified by X in the free body diagram below?



[Source: ID 37607299 © Patrimonio Designs Limited | Dreamstime.com]

- A. Air resistance
- B. Gravity
- C. Ground reaction force
- D. Friction

- 34.** Which is an example of athlete constraints to learning motor skills?
- A. Court surface and area of play
 - B. Choice to make decisions about team tactics
 - C. Peer-pressure from colleagues
 - D. Modification of the equipment to provide a smaller target
- 35.** Which is a principle of the performance outcome model of qualitative biomechanical analysis?
- A. Preparation
 - B. Retraction
 - C. Coordination
 - D. Action
- 36.** Which is an example of digital technology used to analyse fitness?
- A. Bodybyte
 - B. Prozone
 - C. Dartfish
 - D. Hawkeye
- 37.** Which is a characteristic of genes?
- A. All genes are switched on at birth
 - B. Some genes are influenced by external factors
 - C. All genes are influenced by internal factors
 - D. A single gene can predict athletic performance
- 38.** What is a potential negative implication of genetic screening?
- A. May lead to gene doping for athletic improvement
 - B. Predict susceptibility to injury
 - C. Improve the safety of an athlete
 - D. Identify life-threatening conditions

- 39.** What is the role of inflammation in response to damage?
- A. Increases mucosal secretions at the site
 - B. Fights pathogens that enter the body
 - C. Provides a barrier for tissue from the outside environment
 - D. Creates swelling to help protect the site of damage
- 40.** What causes a drop in leucocyte numbers in athletes?
- A. Regular and sufficient sleep
 - B. Sedentary periods following injury
 - C. Low hydration status during training programmes
 - D. Limited recovery time between training programmes
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