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Sports, exercise and health science
Standard level
Paper 1

2 May 2023

Zone A afternoon | **Zone B** morning | **Zone C** morning

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 type of bone is a metacarpal?

- A. Flat
- B. Short
- C. Irregular
- D. Long

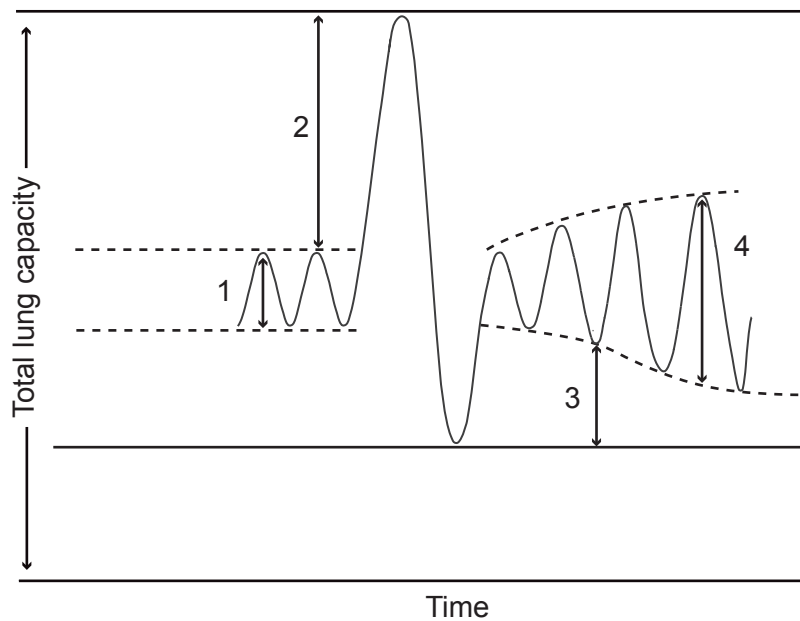
2. Which are features of the elbow joint?

A.	hinge	synovial
B.	pivot	cartilaginous
C.	hinge	fibrous
D.	pivot	synovial

3. Where are the external oblique muscles located in the body?

A.	posterior	upper leg
B.	lateral	trunk
C.	anterior	upper arm
D.	posterior	trunk

4. The diagram shows a trace of pulmonary ventilation. Which number shows tidal volume for a person who is jogging?



- A. 1
- B. 2
- C. 3
- D. 4
5. Why does an increase in red blood cells improve athletic performance?
- A. It lowers pH conditions in blood.
- B. It improves the viscosity of the blood.
- C. It improves the oxygen carrying capacity of blood.
- D. It improves the thermoregulation of the body.

6. Which are functions of erythrocytes and leucocytes?

	Erythrocytes	Leucocytes
A.	Carry O ₂ in blood	Carry CO ₂ in blood
B.	Help with clotting of blood in damaged areas of the body	Carry O ₂ and CO ₂ in blood
C.	Help fight infections in the body	Help with clotting of blood in damaged areas of the body
D.	Carry O ₂ and CO ₂ in blood	Help fight infections in the body

7. Which structures of the cardiovascular system are described correctly?

	Carry oxygenated blood	Carry deoxygenated blood
A.	Pulmonary artery	Right atrium
B.	Right ventricle	Left atrium
C.	Left ventricle	Inferior vena cava
D.	Pulmonary vein	Aorta

8. What is the cardiovascular response during the first 5 minutes after completing a cycle race?

	Cardiac output	Heart rate	Stroke volume
A.	Remains constant	Decreases	Increases
B.	Decreases	Decreases	Decreases
C.	Increases	Increases	Increases
D.	Remains constant	Remains constant	Remains constant

9. Which adaptation is expected as training for a half marathon progresses?

- A. Ability to train at the same relative intensity with a lower heart rate
- B. A lower arterio-venous oxygen (a-vO₂) difference
- C. A lower stroke volume
- D. A lower blood pH towards the end of the training period

10. Which is a polysaccharide?

- A. Glucose
- B. Glycogen
- C. Glucagon
- D. Triacylglycerol

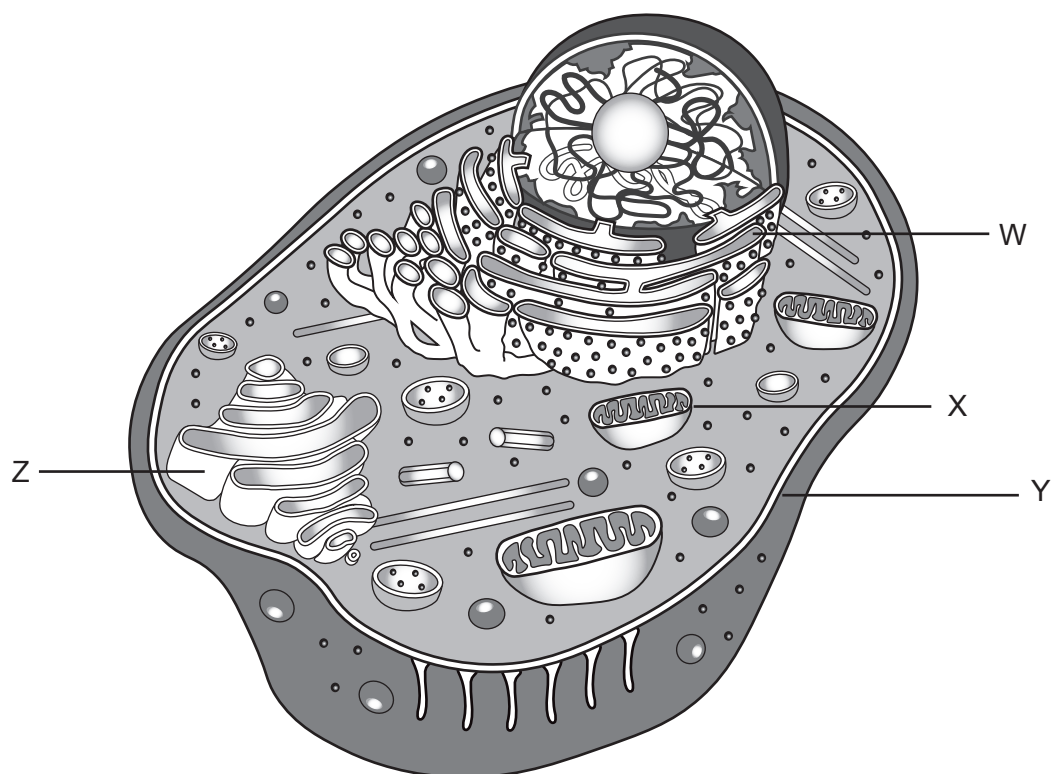
11. Which types of fat are classified correctly?

	Relatively high saturated fat content	Relatively high unsaturated fat content
A.	Sunflower oil	Coconut oil
B.	Dairy yogurt	Avocado
C.	Coconut oil	Palm oil
D.	Avocado	Olive oil

12. Which is a major storage site for body fat?

- A. Skeletal muscle
- B. Liver
- C. Kidney
- D. Brain

13. Which cellular organelles are labelled correctly?

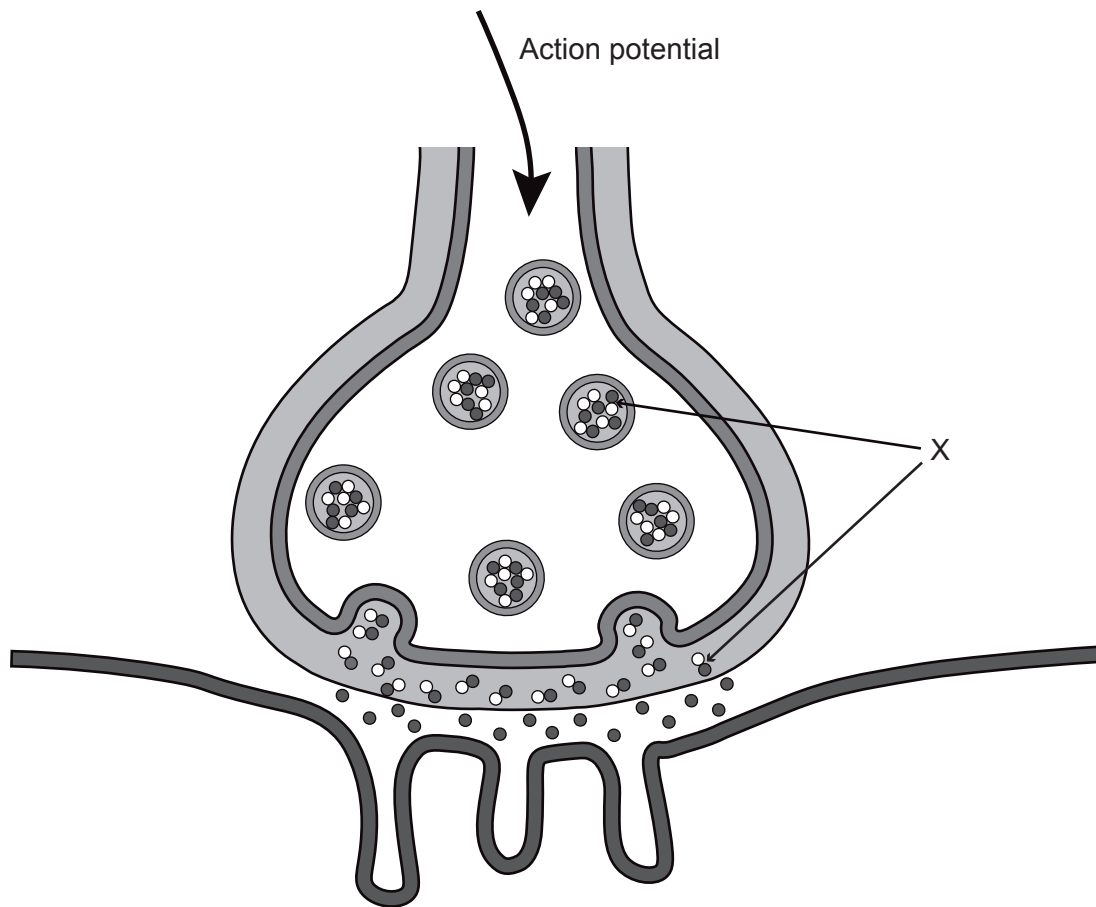


	Golgi	Rough endoplasmic reticulum
A.	W	X
B.	X	Y
C.	Y	W
D.	Z	W

14. Which component of the aerobic energy system also occurs in the anaerobic system?

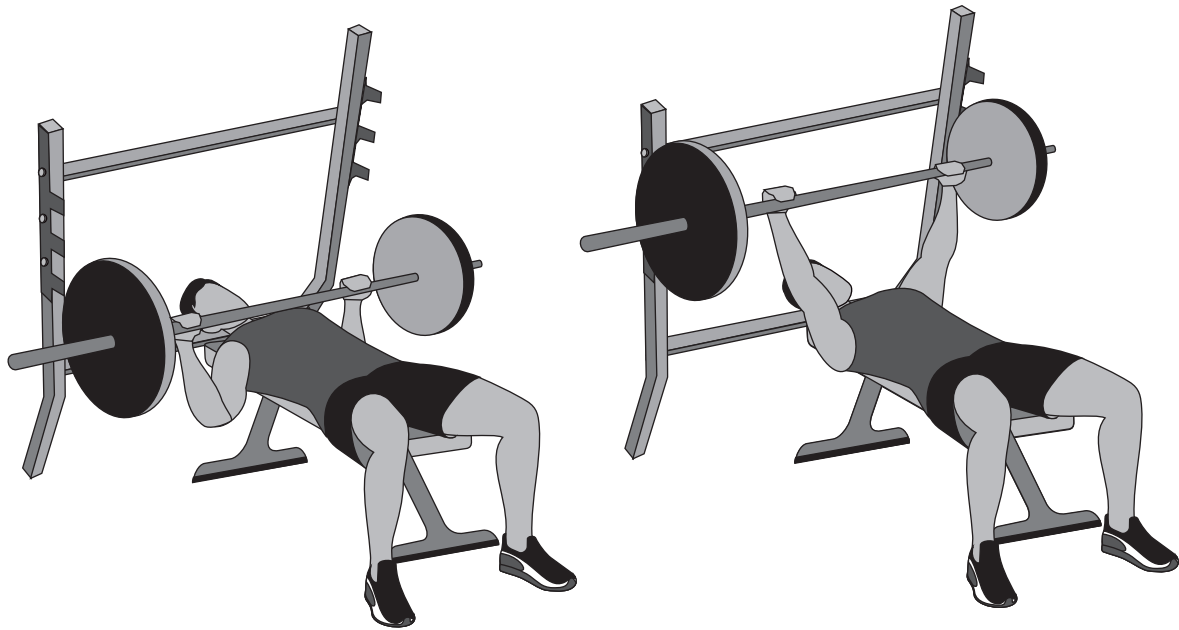
- A. Krebs cycle
- B. Electron transport chain
- C. Glycolysis
- D. There are no common components

15. The diagram shows a neuromuscular junction. What does X represent?



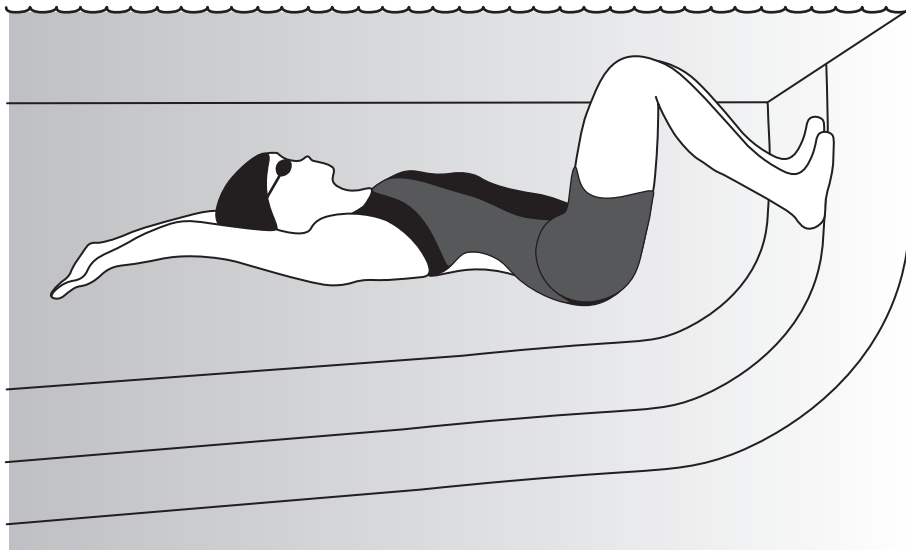
- A. Calcium ions
 - B. Sodium ions
 - C. Cholinesterase
 - D. Acetylcholine
16. Which muscle fibre type is predominant in the gastrocnemius muscle of an elite 200 m sprinter?
- A. Type I
 - B. Type IIa
 - C. Type IIb
 - D. Slow twitch

17. The diagram shows someone performing a bench press. Which muscle is the primary agonist, and what movement occurs at the shoulder during the upward phase of a bench press?



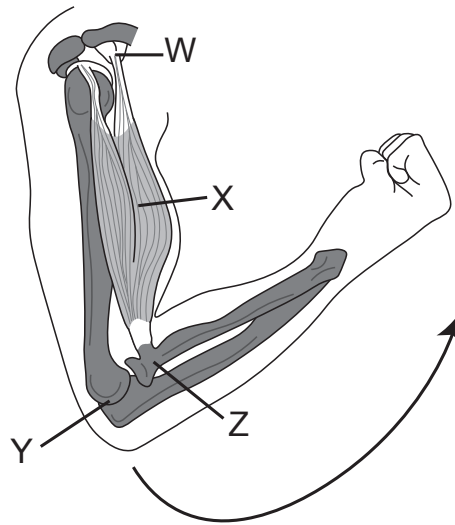
	Primary agonist muscle	Movement at shoulder
A.	biceps	extension
B.	pectoralis major	adduction
C.	triceps	flexion
D.	deltoid	abduction

18. What action occurs at the ankle of a swimmer as they push off the wall?



- A. Extension
- B. Dorsi flexion
- C. Plantar flexion
- D. Adduction

19. Which correctly identifies the fulcrum and the effort of the lever system shown in the diagram?



	Fulcrum	Effort
A.	W	X
B.	Y	Z
C.	Z	X
D.	Y	W

20. How is the flight of a golf ball affected when it is hit with backspin?
- A. It will tend to move to the right as it moves through the air
 - B. It will tend to lift up and hold its flight path as it moves through the air
 - C. It will tend to move to the left as it moves through the air
 - D. It will tend to drop more rapidly than normal as it moves through the air

21. Which correctly identifies an open and a closed skill?

	Open	Closed
A.	Receiving a serve in badminton	Taking a penalty kick in soccer
B.	Passing a ball while on the run	Surfing along a wave
C.	Putting a golf ball towards the hole	Riding a horse in a field
D.	Cycling on an exercise machine	Hitting a forehand shot in tennis

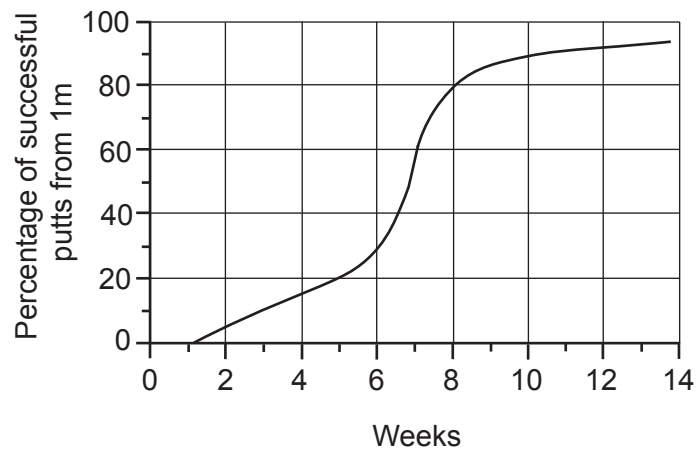
22. Which is an ability?

- A. Shooting a free throw in basketball
- B. Jump height in a vertical jump test
- C. Throwing a ball in a game of baseball
- D. Scoring a goal in a soccer game

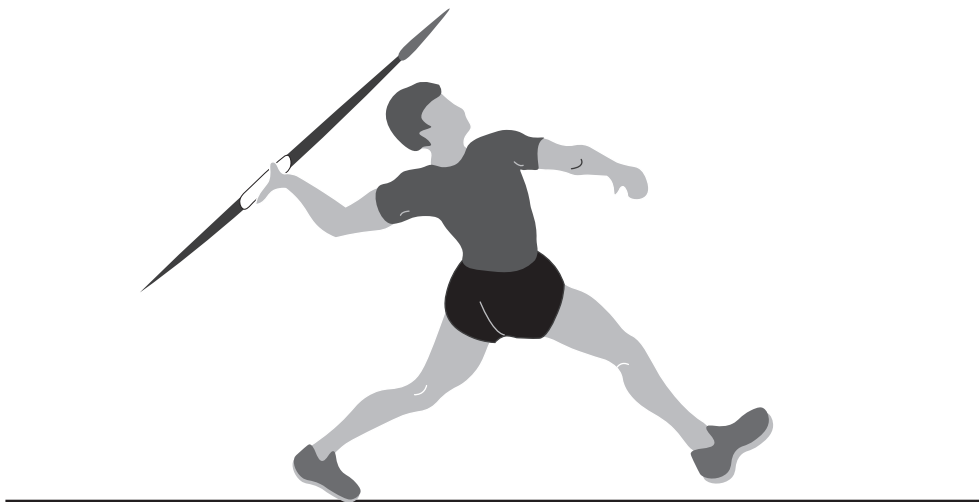
23. Which is an example of an exteroceptor being used by the body?

- A. Sensory information received from the inner ear while performing a somersault.
- B. Chemoreceptor in an artery detecting the chemical changes in the blood.
- C. The pressure on the hand as a person holds onto a bicycle handlebar.
- D. Sensory information received from muscles that detect limb movement when catching a ball.

24. The chart shows the learning curve of a golfer. What type of learning occurs between weeks 5 and 7?

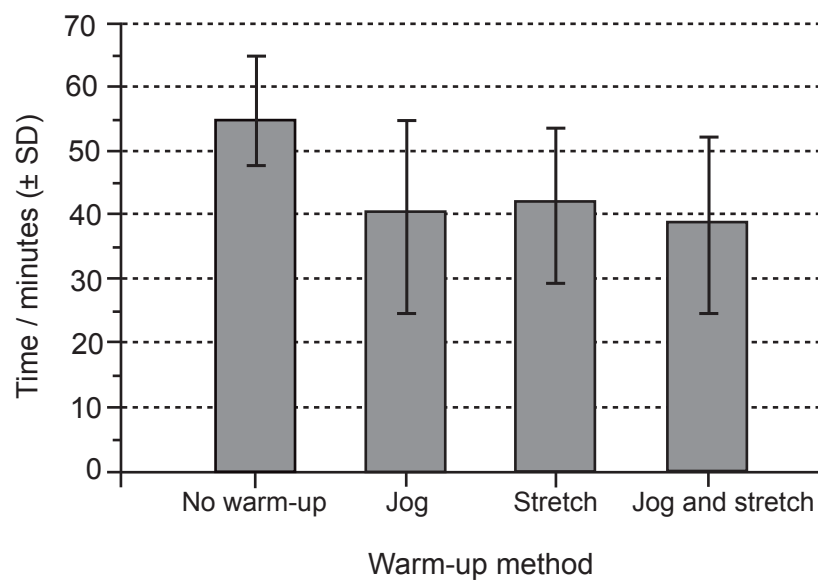


- A. Negative acceleration
 - B. Linear
 - C. Plateau
 - D. Positive acceleration
25. The diagram shows a javelin thrower. What type of skill transfer occurs when an athlete uses their knowledge about angle of release to help them to throw a javelin successfully?



- A. Principles to skill
- B. Skill to skill
- C. Abilities to skill
- D. Practice to performance

26. A coach plans training sessions with periods of work and short rest breaks in between. Which type of practice is this?
- A. Massed
 - B. Drill
 - C. Variable
 - D. Distributed
27. The graph shows athletes' mean 10 km trial times following four different warm-up methods. Which method resulted in the smallest variation in trial times?



- A. No warm-up
 - B. Jog only
 - C. Stretch only
 - D. Jog and stretch
28. Which defines the study design concept of blinding?
- A. An experimenter administers a substance that appears to be the same as the trial substance but has no known effect.
 - B. An experimenter randomly allocates the trial substance to trial groups.
 - C. An experimenter ensures that the subject does not know what trial substance they are receiving.
 - D. An experimenter has one group that will not receive the trial substance.

29. Which defines randomization?

- A. The order of treatments for an experiment is arranged to ensure that no carry over effect is seen in the results.
- B. The dependent variable of an experiment is measured randomly.
- C. A substance that in every way appears to be the treatment substance is used in an experiment, but it has no known effect.
- D. The subject and the experimenter are randomly aware of the treatment being administered.

30. Which of the following is a test for coordination?

- A. Drop test
 - B. Leger test
 - C. Push ups
 - D. Hand ball toss
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