Diploma Programme
Programme du diplôme
Programa del Diploma

Sports, exercise and health science
Higher level
Paper 1

5 November 2025

Zone A afternoon | **Zone B** afternoon | **Zone C** 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]**.

8825 – 6801

17 pages

1. Which are characteristics of compact bone?

A. Smooth, hard layers surrounding the outer portion of a long bone

B. Porous, less dense tissue surrounding bone marrow

C. Smooth, tough structure at the point of articulation of a long bone

D. Semi-solid tissue where blood cells are produced

2. Which are characteristics of smooth muscle tissue?

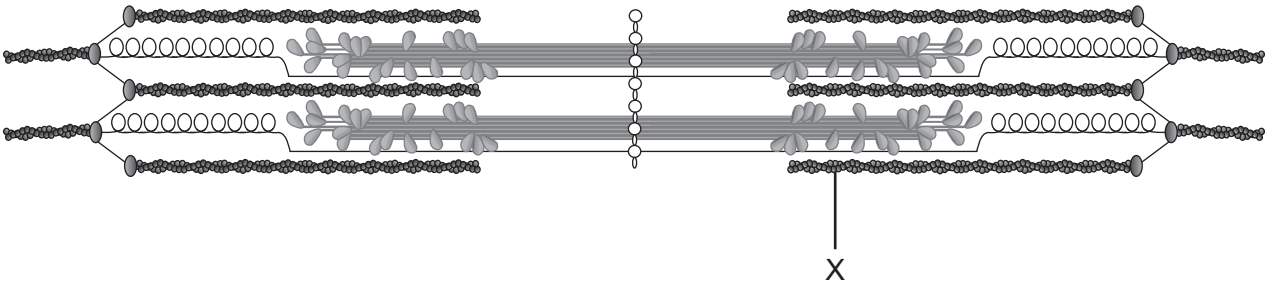
A. Striated cells

B. Multinucleated

C. Branching cells

D. Uninucleated

3. What is labelled X on the sarcomere?



A. Actin

B. Myosin

C. Myofibril

D. Epimysium

4. What describes hemoglobin?

A. Delivers carbon dioxide to contracting muscles

B. Highest oxygen saturation as it exits the lungs

C. Is found at highest abundance in platelets

D. Is largely responsible for fighting infections

5. What helps regulate strength and depth of ventilation when an athlete begins to exercise?

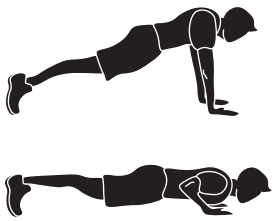
A. A decrease in blood pH

B. An increase in blood pH

C. A decrease in blood CO_2 levels

D. An increase in blood O_2 levels

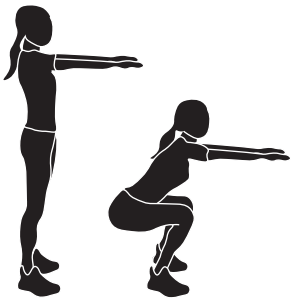
6. Which exercise will result in an elevation of both systolic and diastolic blood pressure?



A. Press ups

B. Plank

C. Jogging on the spot



D. Squats

7. An athlete is preparing for a 4 km rowing race. What is a cardiovascular adaptation of endurance training?

A. Increased stroke volume

B. Decreased venous return

C. Decreased arterio-venous O_2

D. Increased resting heart rate

8. What is a function of carbohydrate?

A. Provides a readily available source of energy

B. Provides the building blocks for cellular membrane

C. Provides cushioning and insulates the body

D. Provides structure to build and repair tissues

9. What describes the composition of a molecule of triacylglycerol?

A. Two monosaccharides linked by a condensation reaction

B. A ring structure linking carbon, hydrogen and oxygen atoms

C. A glycerol molecule linked to three fatty acids

D. Three amino acid chains coiled together

10. Which element distinguishes a protein molecule from a fat molecule?

A. Carbon

B. Nitrogen

C. Hydrogen

D. Oxygen

11. What are the predominant products of a 30 s sprint race?

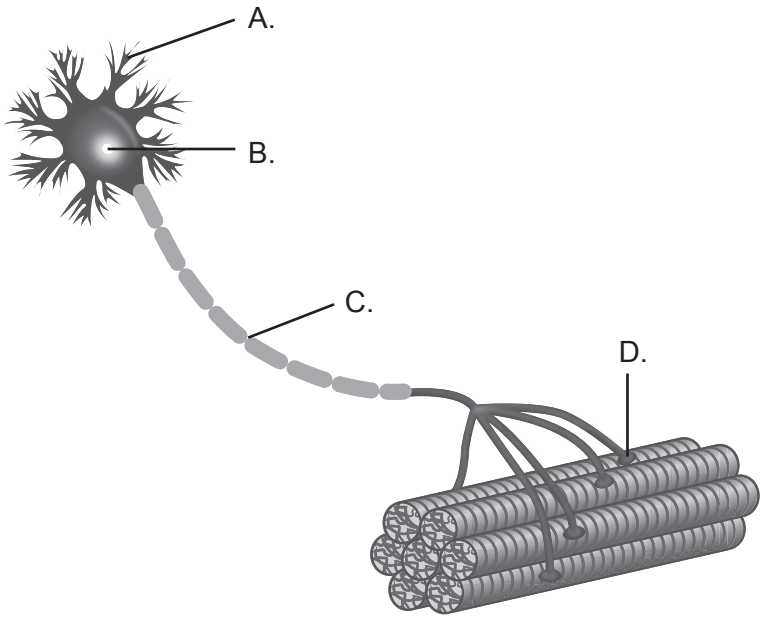
A. 2 ATP per glucose molecule and no lactic acid

B. 2 ATP per glucose molecule and lactic acid

C. 36 ATP per glucose molecule and no lactic acid

D. 36 ATP per glucose molecule and lactic acid

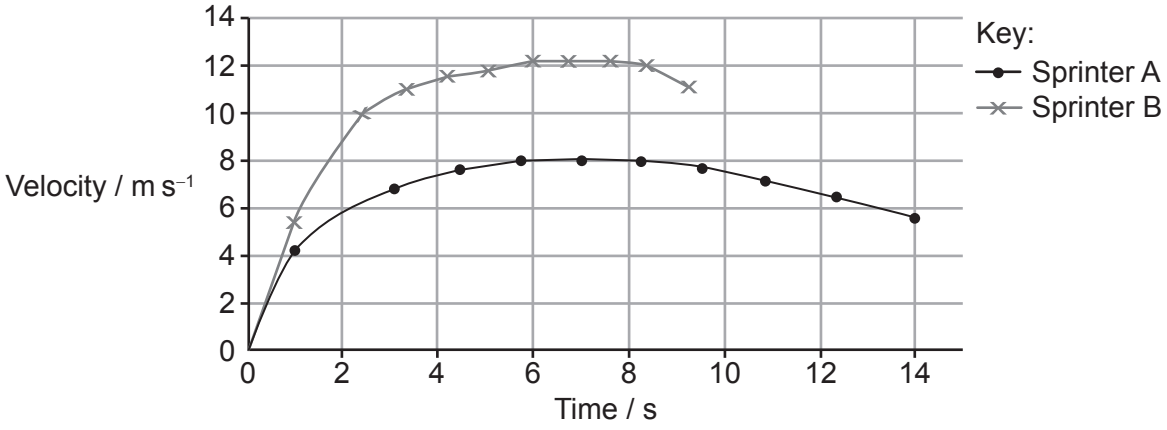
12. What represents the site of neurotransmitter release?



13. What are characteristics of isokinetic contraction?

	Sarcomere length	Resistance	Velocity of contraction
A.	Shortening	Variable	Variable
B.	Constant	Constant	Constant
C.	Shortening or lengthening	Variable	Constant
D.	Lengthening	Variable	Variable

14. The velocity–time graph shows the performance of two sprinters.



Which statement describes the sprinters at 1 second?

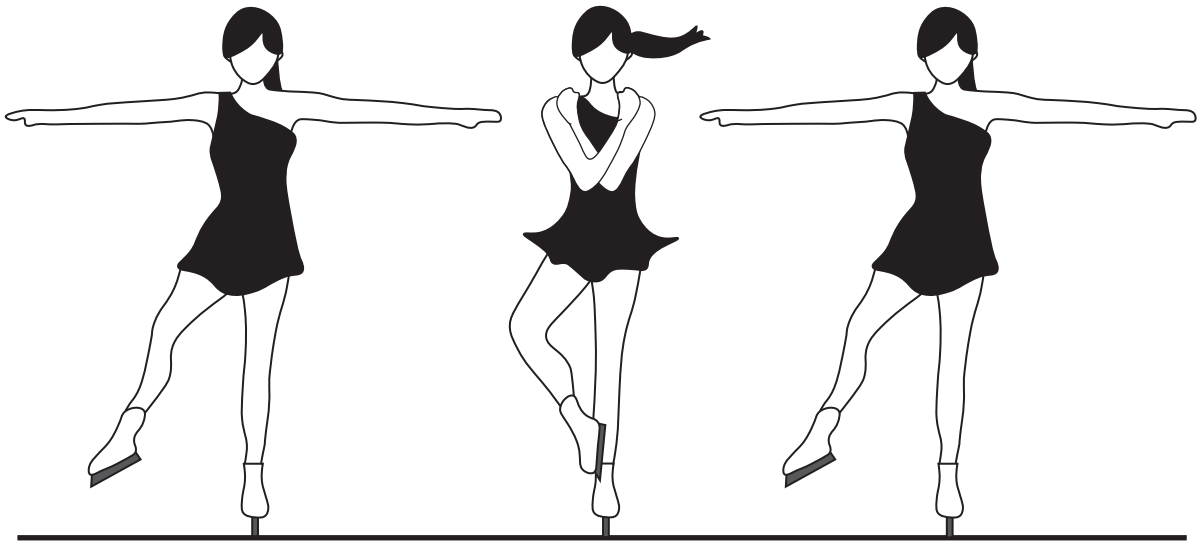
A. Sprinter A is moving faster than sprinter B.

B. Sprinter B is moving faster than sprinter A.

C. Both sprinters are moving at the same velocity.

D. Both sprinters are not moving.

15. A figure skater tucks her arms in as she is spinning. What is the effect?



A. Angular velocity increases, moment of inertia decreases.

B. Moment of inertia increases, rotations decrease.

C. Rotations increase, angular momentum decreases.

D. Angular momentum increases, angular velocity decreases.

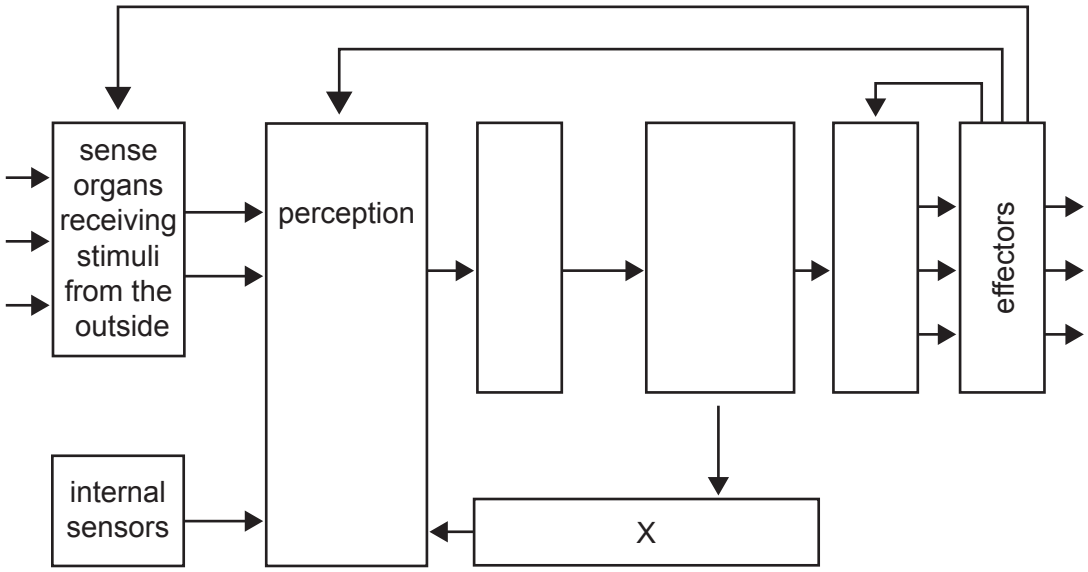
16. Dribbling is when a soccer (football) player travels with the ball at their feet.

Which classification of motor skills describes dribbling?

A.	Gross	Serial	Open
B.	Fine	Serial	Closed
C.	Gross	Discrete	Open
D.	Fine	Discrete	Closed

17. The diagram shows Welford's model of information processing (1968).

Welford's model 1968



What does X represent?

A. Short-term memory

B. Decision-making

C. Effector control

D. Long-term memory

18. What applies to reaction time?

I. It encompasses almost all elements of the information-processing model.

II. It is not easy to improve.

III. It is the time between the onset of a stimulus and the beginning of a motor response.

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

19. What is an example of variable practice in football (soccer) training?

A. Practising shots at goal for 25 minutes

B. Practising shots at goal for 5 minutes in between brief, competitive, speed drills

C. Practising shots at goal after moving through and around a series of obstacles

D. Practising shots at goal while competing in small-sided games

20. Which is a health-related component of fitness?

A. Power

B. Speed

C. Muscular strength

D. Reaction time

21. Which component of fitness is used by a rugby player when changing direction to evade a tackle?

A. Muscular endurance

B. Agility

C. Aerobic capacity

D. Flexibility

22. What is the purpose of the CERT scale during training?

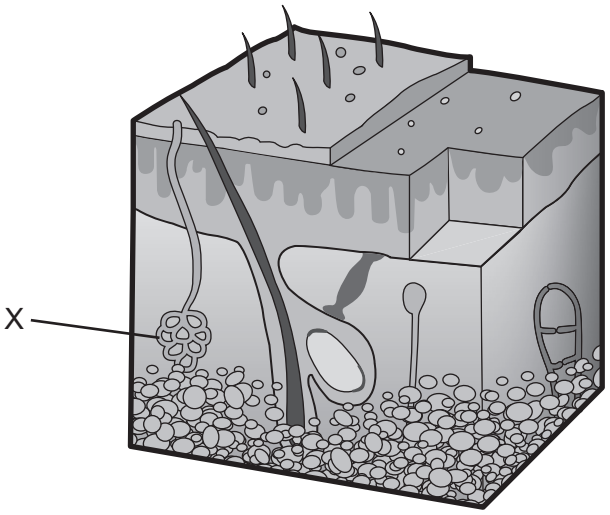
A. To perceive how hard the body is working

B. To calculate the target heart rate (HR) training zone

C. To determine the maximal oxygen uptake

D. To identify the safe maximum heart rate

23. The diagram shows the generalized structure of the skin.



What is labelled X?

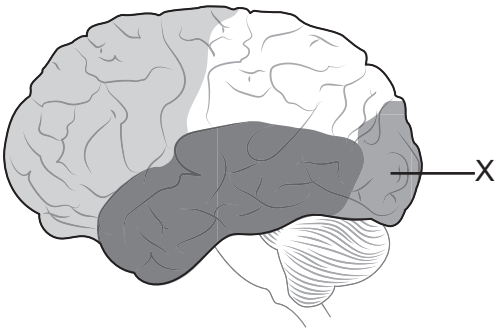
A. Dermis

B. Hair follicles

C. Sweat gland

D. Fat

24. What is the structure labelled X on the brain diagram?



A. Occipital lobe

B. Temporal lobe

C. Brain stem

D. Parietal lobe

25. Which lobe of the brain processes the sound of the crowd during a sports match?

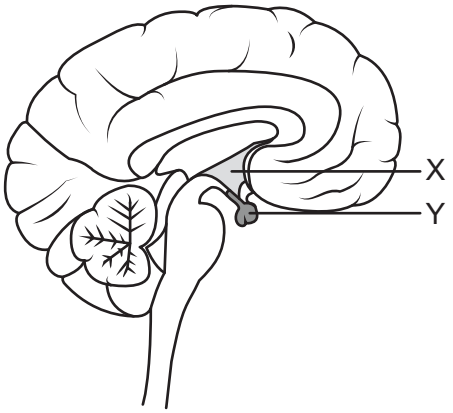
A. Occipital lobe

B. Frontal lobe

C. Parietal lobe

D. Temporal lobe

26. The diagram shows a cross section through the brain.



Which glands are labelled X and Y?

	X	Y
A.	Adrenal	Pancreas
B.	Pituitary	Thyroid
C.	Pineal	Hypothalamus
D.	Hypothalamus	Pituitary

27. Which factor determines if circulating hormones will elicit a response in target organs?

A. The hormone can attach to any receptor inside the cell.

B. The hormone must work without entering the blood.

C. The hormone will bind to its specific receptor.

D. The hormone must be secreted continually from the hypothalamus.

28. A basketball player makes a poor decision late in a game. What type of fatigue are they suffering from?

A. Peripheral

B. Chronic

C. Acute

D. Central

29. What characterizes endurance activity?

	Duration	**Peak force**	**Respiration**
A.	Short	High	Anaerobic process
B.	Long	Low	Aerobic process
C.	Long	High	Aerobic process
D.	Short	Low	Anaerobic process

30. An athlete is comparing the grip quality of different running shoes. Which shoes have the greatest friction force?

	Coefficient of friction (μ)	Normal reaction force (*R*)
A.	1.5	800 N
B.	1.0	1000 N
C.	1.2	650 N
D.	0.8	850 N

31. In the sport of curling, performers slide a large stone across ice towards a target.

What applies to static and dynamic friction as the stone moves?

A. The static friction is equal to the dynamic friction.

B. The static friction is greater than the dynamic friction.

C. The static friction is less than the dynamic friction.

D. The static friction increases, and the dynamic friction decreases.

32. Which forces act to slow down a ball **after** it has been thrown and is accelerating?

I. Air resistance

II. Ground reaction force

III. Weight of the ball

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

33. What is a characteristic of traditional (linear) pedagogy?

A. Process-orientated learning

B. Coach–athlete collaborative learning

C. Coach-led learning

D. Athlete-led learning

34. A basketball coach uses a notation system to review the strategies used by other teams in a tournament. What is being used?

A. Tactical evaluation

B. Technical evaluation

C. Analysis of movement

D. Recording qualitative feedback

35. What are examples of digital technology used for motion tracking and capture?

I. Prozone

II. Dartfish

III. Hawkeye

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

36. Which characteristics apply to genotype and phenotype?

	Genotype	Phenotype
A.	The influence of training on the genetic makeup	The genetic code of the muscle cells
B.	The genetic makeup of the athlete	The height of the basketball player
C.	The percentage of type i and type ii fibres in a sprinter's gastrocnemius	The distribution of the athlete's mother's genes, which influences fibre type
D.	The physical traits observed leading to sporting success for an athlete	The physical traits inherited leading to sporting success for an athlete

37. Which human characteristic is influenced by the environment?

A. Eye colour

B. Sex

C. Blood type

D. VO_2max

38. What is the function of the immune system?

A. Regulates growth of the body

B. Protects the body from pathogens

C. Ensures sufficient oxygenation of tissues

D. Helps thermoregulation

39. A swim team completes a 12-week block of high-volume, intense training, and several of the athletes become ill. What may be a cause?

A. The athletes will have decreased cortisol.

B. The athletes show decreased adrenaline levels.

C. The athletes show decreased leucocyte count.

D. The athletes will have decreased inflammation.

40. Which strategy will limit the risk of illness spreading among athletes at a residential village?

A. All athletes use a common water source.

B. All athletes share the same sleeping quarters.

C. All athletes are required to sleep for seven hours.

D. All athletes are required to wash their hands before eating.

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