Diploma Programme
Programme du diplôme
Programa del Diploma

Sports, exercise and health science
Higher level
Paper 1

7 November 2024

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]**.

8824 – 6801

14 pages

1. Which bone is found in the axial skeleton?

A. Femur

B. Coccyx

C. Ulna

D. Ilium

2. Which anatomical term best describes the position of the ulna in relation to the humerus?

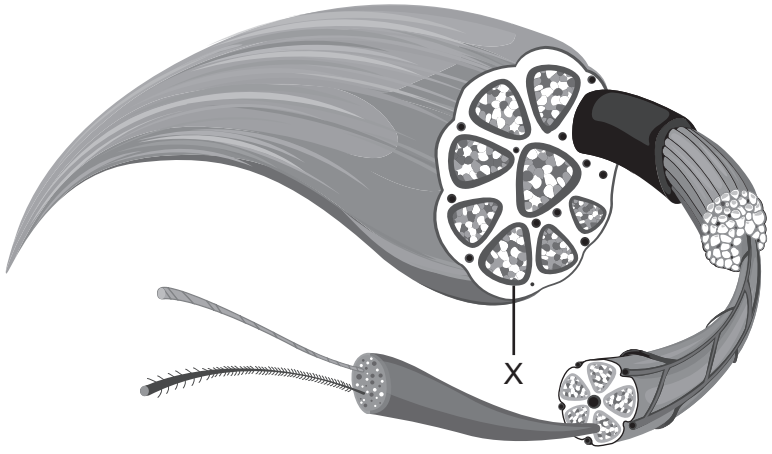
A. Proximal

B. Superior

C. Distal

D. Medial

3. What is the structure labelled X?



A. Epimysium

B. Muscle fibre

C. Perimysium

D. Fascicle

4. Which of these stimulates an increase in ventilation as exercise begins?

A. Decreasing blood pH levels

B. Decreasing blood adrenaline levels

C. Decreasing blood carbon dioxide levels

D. Decreasing blood oxygen levels

5. Which is a cellular component of blood?

A. Platelets

B. Proteins

C. Electrolytes

D. Hormones

6. Which valve opens to allow blood to enter the right ventricle?

A. Aortic

B. Tricuspid

C. Pulmonary

D. Bicuspid

7. Which has the most significant effect on cardiac output as a person grows older?

A. Maximum heart rate declines

B. Maximum stroke volume shows no change

C. Maximum stroke volume increases

D. Maximum heart rate increases

8. Which defines the term diastolic blood pressure?

A. The force exerted by the venous walls during ventricular contraction

B. The force exerted by the venous walls during ventricular relaxation

C. The force exerted by the arterial walls during ventricular contraction

D. The force exerted by the arterial walls during ventricular relaxation

9. Which nutrient repairs tissues in the body?

A. Lipids

B. Carbohydrates

C. Proteins

D. Fibre

10. Which element is found in a protein molecule but not a lipid molecule?

A. Carbon

B. Hydrogen

C. Oxygen

D. Nitrogen

11. Which process correctly defines the body's synthesis of non-essential amino acids?

A. Metabolism

B. Anabolism

C. Aerobic catabolism

D. Anaerobic catabolism

12. With sufficient fuel availability, what is the effect of muscle cell oxygen levels on fuel use to produce adenosine triphosphate (ATP)?

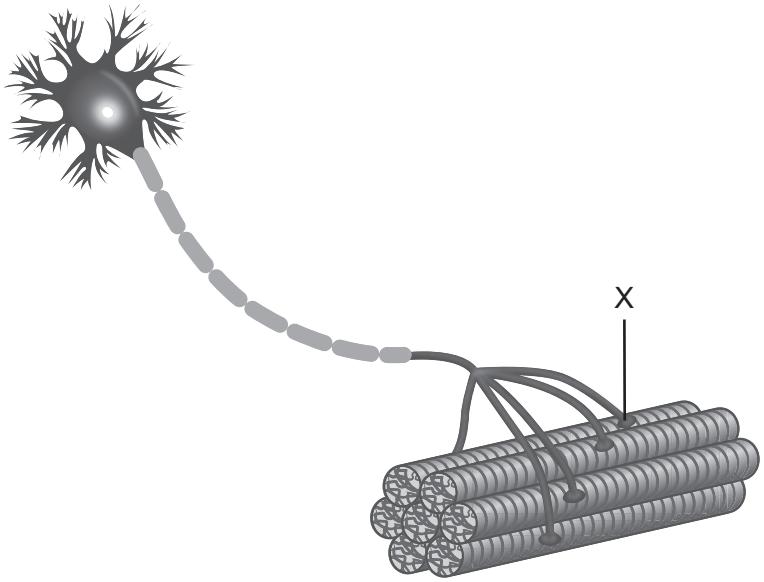
A. Elevated oxygen will promote the use of carbohydrates and fatty acids.

B. Depressed oxygen will promote the use of carbohydrates and fatty acids.

C. Elevated oxygen will promote the use of proteins.

D. Depressed oxygen will do little to promote any specific fuel.

13. What is labelled X?



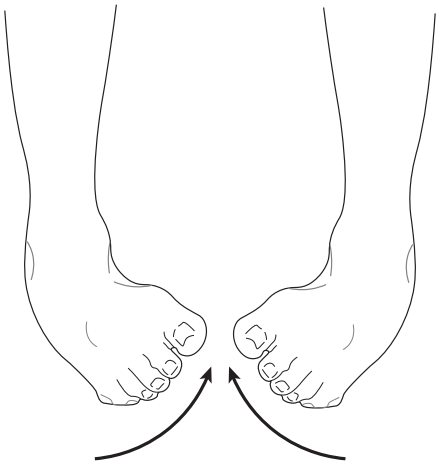
A. Dendrite

B. Nucleus

C. Motor end plate

D. Axon

14. What type of movement is illustrated in the image below?



A. Eversion

B. Flexion

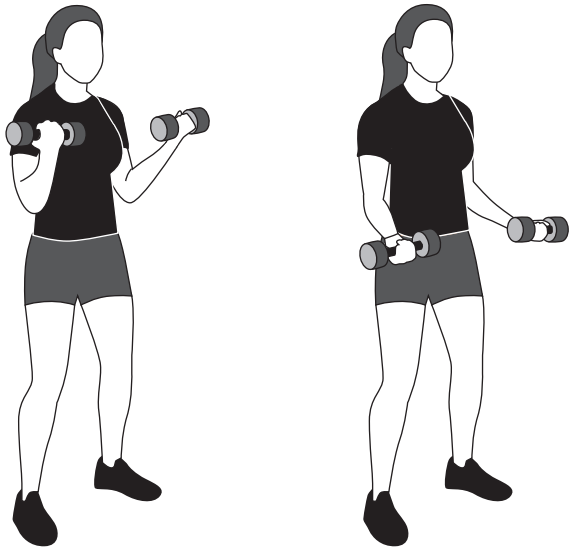
C. Elevation

D. Inversion

15. What type of muscle contraction is occurring at the biceps brachii?

Start Position

End Position



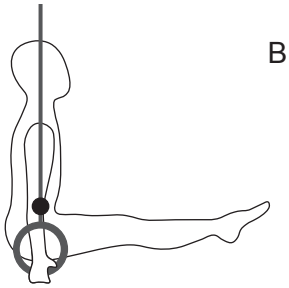
A. Isokinetic

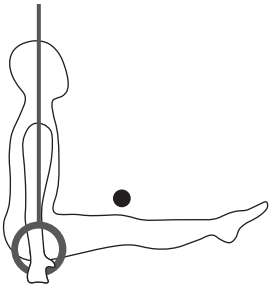
B. Concentric

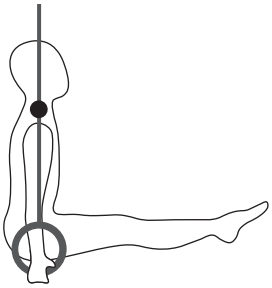
C. Eccentric

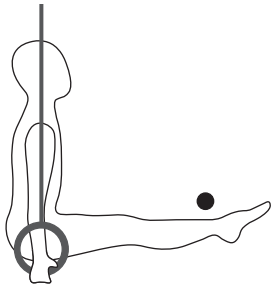
D. Isometric

16. Which dot represents the centre of mass during the gymnastics position shown?

A. 

B. 

C. 

D. 

17. What is the definition of Newton's first law of motion?

A. For every action force, there is an equal and opposite reaction force.

B. An amount of force applied over a given time.

C. Every object will continue with uniform velocity unless acted upon by an unbalanced force.

D. Force equals mass multiplied by acceleration.

18. What skill is defined as one that interacts with the environment and combines sensory stimuli with movement?

A. Cognitive

B. Perceptual

C. Motor

D. Perceptual motor

19. Which is the best classification of skill for a tennis player returning serve?

	Gross to fine	Individual or interactive	External to internal pacing
A.	gross	interactive	external
B.	fine	individual	internal
C.	fine	interactive	internal
D.	gross	individual	external

20. Which is an example of an interoceptor?

A. The eyes can determine the location of the cricket ball during the pitch.

B. The respiratory centre monitors blood pH.

C. The muscle tendon organs can determine whether a muscle is stretched.

D. The skin determines change in pressure associated with touch.

21. Which best describes the effects on response time in accordance with Hick's Law?

A. An athlete anticipates an outcome and is able to respond sooner, decreasing response time.

B. Neural transmission slows as an individual ages, increasing response time.

C. As an athlete strengthens, the stimulus response time is decreased.

D. As an athlete has a large number of potential outcomes to action, response time increases.

22. Which describes a linear learning curve?

A. There is a direct relationship between the performance of a skill and the time spent on learning a skill.

B. The rate of learning a skill initially is high, but levels out as time goes by in training.

C. The rate of learning a skill initially is low, but accelerates as time goes by in training.

D. The rate of learning a new skill initially is slow, then rapidly increases, until finally coming to a stop over time.

23. What number of standard deviations will encompass 95 % of normally distributed data?

A. One

B. Two

C. Three

D. Four

24. Which demonstrates the importance of participants completing a Physical Activity Readiness Questionnaire (PAR-Q) before a study?

A. The PAR-Q can identify demographic data to be used in the study.

B. The PAR-Q can identify medical conditions that may need to be checked before participation.

C. The PAR-Q is a way to exclude and prevent possible errors in data collection.

D. The PAR-Q is a way to inform participants of the study design and collect their opinions.

25. Which component of fitness is indicated by the ability to maintain force output of a muscle during an activity?

A. Body composition

B. Cardio-respiratory fitness

C. Flexibility

D. Muscular endurance

26. Which essential element of a general training programme would most appropriately include dynamic stretching?

A. Endurance training

B. Resistance training

C. Warm-up

D. Cool-down

27. What is the purpose of the low pH on the epidermis?

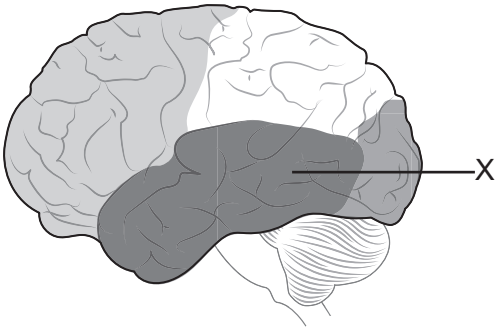
A. Regulation of body temperature

B. Sensation

C. Protection and immunity

D. Excretion

28. What lobe is labelled X on the diagram shown?



A. Temporal

B. Frontal

C. Occipital

D. Parietal

29. Which endocrine gland is labelled X?

A. Hypothalamus

B. Pineal gland

C. Pituitary gland

D. Thyroid gland

30. Which best describes how hormones specifically stimulate target cells?

A. Hormones are released locally and bind to general receptors that change due to the type of hormone.

B. Local hormones can enter the bloodstream and continue to be used without being broken down all over the body.

C. Hormones can travel around the body in the lymphatic system and bind to specific receptors on target cells.

D. Hormones travel around the body in the blood and only bind to specific receptors on target cells.

31. What best defines fatigue?

A. A permanent exercise-induced decline in performance

B. A decline in performance exclusively due to a rise in lactic acid

C. A reversible, exercise-induced decline in performance

D. A decline in performance due to increasing muscle pH

32. Which example would be considered an endurance activity?

A. A serve in volleyball.

B. A 500 m time trial in track cycling lasting 35 seconds.

C. A tennis rally lasting 55 seconds.

D. A 10 km running race.

33. The sport of Broomball is similar to ice hockey but played with flat soled shoes instead of ice skates. Which shoe modification would most likely increase the coefficient of friction needed to run on ice?

A. A rubber-soled shoe with a large surface area

B. A wooden-soled shoe with a large surface area

C. A rubber-soled shoe with a small surface area

D. A wooden soled shoe with a small surface area

34. Which of the following best defines surface drag as a body moves through a fluid?

A. The fluid resists, slowing it down.

B. The body's outer layer catches a layer of fluid nearby, slowing it down.

C. Waves are created in the fluid that oppose the body's motion.

D. There is more compression of fluid molecules at the front of the body, leading to uneven pressure and drag.

35. Which is a feature of non-linear pedagogy in sports?

A. Content-focused learning

B. Transmission of fixed knowledge from coach to athlete

C. Process-orientated learning

D. Low levels of connectivity between athletes and coaches

36. In a phase analysis model of qualitative biomechanical analysis for a long jump athlete, which of the following would be included?

A. Distance lost at take-off from the board

B. Total flight distance of jump

C. Maximum run speed at the board

D. Body adjustments during the action of the jump

37. Which term best describes a physical expression of an individual's genes?

A. Genotype

B. Chromosome

C. Phenotype

D. Gamete

38. Which observation explains how genes can influence human characteristics?

A. Multiple genes determine the measurable heritable characteristics for each individual.

B. Genes code for the production of lipids which aid growth.

C. Characteristics influencing athletic performance are unable to change during a person's lifetime.

D. Single genetic elements have been associated with superior athletic performance.

39. Which are functions of the immune system?

I. Protect from potential pathogens
II. Promote tissue repair
III. Prevent infection

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

40. Which characteristic of the immune response produces the symptoms associated with delayed onset muscle soreness (DOMS)?

A. Increased calcium levels

B. Decreased leucocyte production

C. Increased levels of inflammation

D. Decreased levels of adrenalin

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References:

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