Diploma Programme
Programme du diplôme
Programa del Diploma

Sports, exercise and health science
Standard level
Paper 1

29 April 2025

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

2225 – 6822

11 pages

1. What number of bones are fused to form the coccyx?

A. 4

B. 5

C. 7

D. 12

2. Which is the location of a hinge joint?

A. The medial end of the clavicle

B. The proximal end of the femur

C. The anterior end of the ribs

D. The distal end of the femur

3. Which characteristics are shared by both cardiac and smooth muscle fibres?

I. A single nucleus in a cell

II. Presence of striation

III. Involuntary control

A. I and II only

B. I and III only

C. II and III only

D. I, II, and III

4. Which is the smallest lung volume at rest?

A. Vital capacity

B. Tidal volume

C. Inspiratory reserve volume

D. Forced vital capacity

5. Which increases the rate of ventilation?

A. Decreasing the airflow through the nose, larynx, trachea and bronchi to the alveoli

B. Increasing the pressure in the thoracic cavity during expiration

C. Increasing blood oxygen concentration during exercise

D. Decreasing pH levels in the blood

6. Which structures carry oxygenated blood?

A.	Vena cava	Left atrium	Pulmonary vein
B.	Pulmonary artery	Right atrium	Aorta
C.	Pulmonary vein	Left ventricle	Aorta
D.	Vena cava	Right ventricle	Pulmonary artery

7. Which statement applies to maximal oxygen consumption?

A. Cycling produces higher VO_2 max than arm ergometry.

B. VO_2 max is a measure of anaerobic capacity.

C. VO_2 max is only determined by environmental factors.

D. Mean VO_2 max of 30-year-old athletes is higher for females than males.

8. During prolonged exercise, blood viscosity increases due to sweating, causing lower venous return and increased heart rate. What is this called?

A. Stroke volume response

B. Cardiovascular drift

C. Arterio-venous difference

D. Maximal cardiac output

9. Which are transported by the blood?

I. Adrenaline

II. Glucagon

III. Glycogen

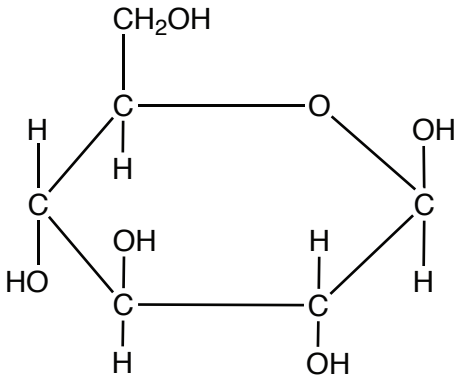
A. I and II only

B. I and III only

C. II and III only

D. I, II and III

10. Which type of molecule is represented in the diagram?



A. Polysaccharide

B. Monosaccharide

C. Saturated fatty acid

D. Unsaturated fatty acid

11. Which nutrient has an estimated 4000 kJ of energy per 100 g?

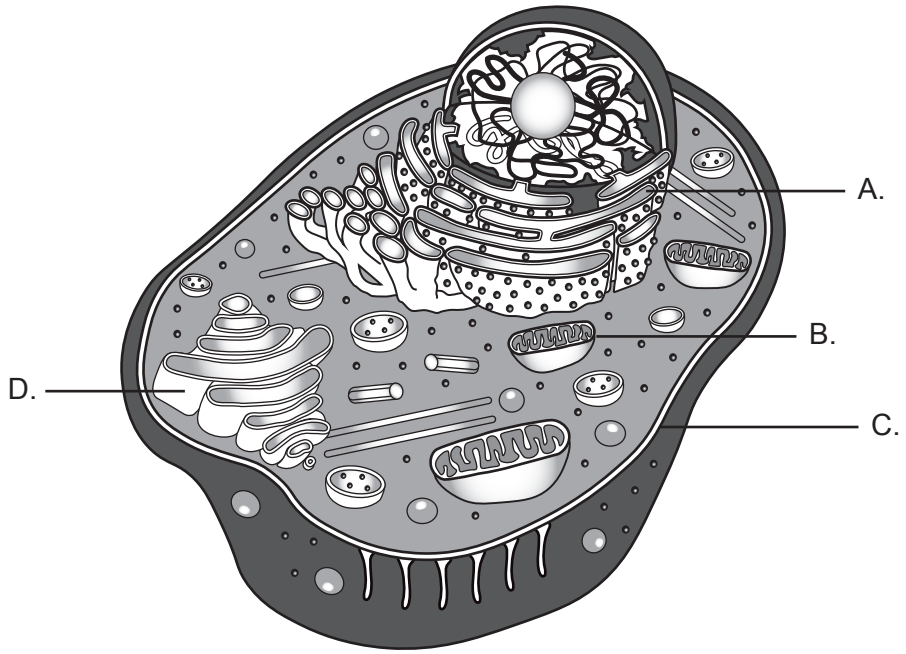
A. Fat

B. Carbohydrate

C. Protein

D. Fibre

12. The diagram shows a human cell. Which is the Golgi apparatus?



13. Which describes the structure of mitochondria?

A. Abundant in fast twitch (type IIb) muscle fibres

B. Aid anaerobic respiration and produce lactate

C. Have an inner membrane with cristae for effective ATP synthesis

D. Aid synthesis of creatine phosphate (CP) for ATP re-synthesis

14. Which statement applies to glycogen?

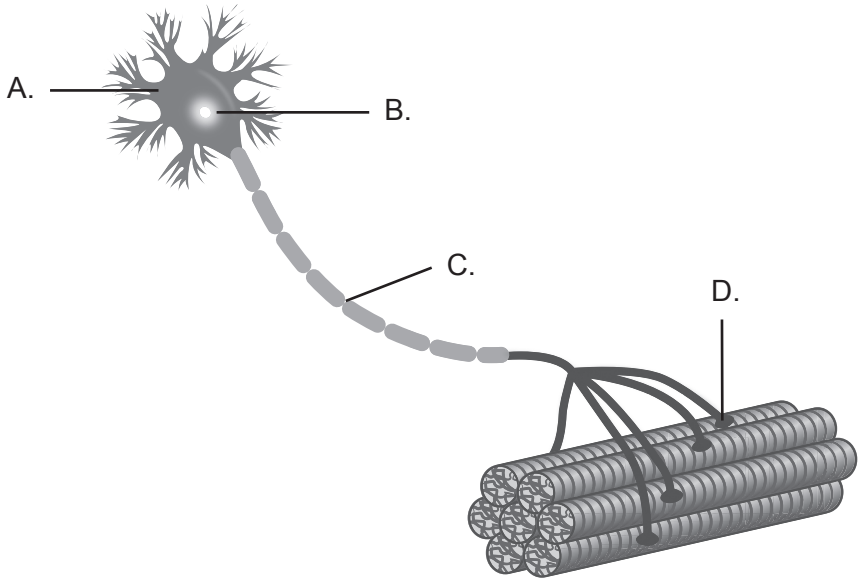
A. Broken down in catabolic reactions in response to insulin

B. Stored in the liver and muscles in response to glucagon

C. Synthesized in catabolic reactions from fatty acids and glycerol

D. Broken down in slow twitch (type I) muscle fibres in response to adrenaline

15. Which is the site of cholinesterase release?



16. Which muscle is an agonist during shoulder abduction?

A. The trapezius contracts isokinetically.

B. The deltoid contracts concentrically.

C. The pectoralis contracts isometrically.

D. The biceps brachii contracts eccentrically.

17. The gluteus maximus relaxes when the iliopsoas contracts while kicking a ball. Which explains the relaxation?

A. Stimulation by motor neurons

B. Stimulation by acetylcholine

C. Reflex action of the nervous system

D. Voluntary control of reciprocal inhibition

18. Which describes the lever system of the calf–ankle joint?

A. It is an example of a third class lever.

B. The effort force has a shorter arm than the load force.

C. The fulcrum is an equal distance from the load and effort force.

D. The load force is located between the fulcrum and the effort force.

19. Which is an example of Newton's second law of motion?

A. A ball is stationary on a penalty spot before it is kicked.

B. A ball will travel faster if greater force is applied by a racquet.

C. A ball applies a backward force on a racquet when it is hit.

D. Once kicked, a ball's acceleration is affected by gravity.

20. Which represents the relationship between impulse, time and force?

A. Impulse is inversely proportional to time and proportional to force.

B. Impulse is proportional to time and inversely proportional to force.

C. Impulse is proportional to time and force.

D. Impulse is inversely proportional to time and force.

21. Which classifies the skill profile of a gymnast completing a routine on the balance beam?

A. Gross, motor, discrete

B. Individual, perceptual, serial

C. Motor, serial, gross

D. Discrete, perceptual, individual

22. Which sensory components pass information to short-term memory?

I. Proprioceptors
II. Interoceptors
III. Exteroceptors

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

23. Which type of feedback does a gymnast receive when observing movements in a mirror?

A. Intrinsic

B. Concurrent

C. Terminal

D. Negative

24. Which can cause a plateau in learning for a tennis player?

A. An increase in motivation due to regular success when serving

B. A lack of interest in practicing a forehand due to boredom

C. Mastering the backhand allows for a variety of shot types in a game

D. Progress in learning the technique of the slice is slower than the volley

25. A dance instructor plans to teach a dance routine. The training schedule is shown in the table below.

Session number	1	2	3	4
Session content	Practice step A	Practice step B, rehearse AB	Practice Step C, rehearse ABC	Practice Step D, rehearse ABCD

Which type of presentation is being used by the dance instructor?

A. Whole

B. Part

C. Whole–part–whole

D. Progressive part

26. A dance instructor demonstrates every step of an exercise routine to a class. Which teaching style is being used?

A. Command

B. Reciprocal

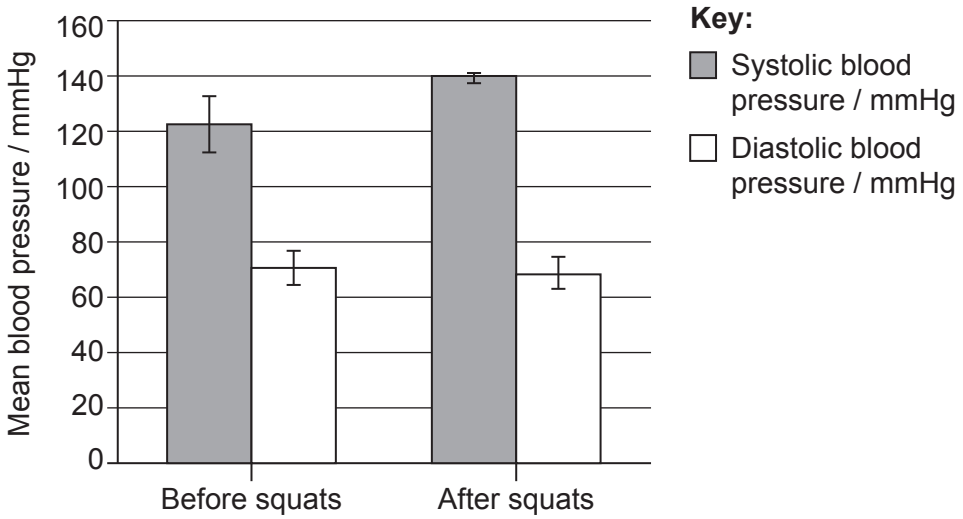
C. Problem-solving

D. Variable

27. Which describes the Harvard step test when measuring aerobic capacity?

A.	Sub-maximal	Laboratory	Specific
B.	Sub-maximal	Field	Valid
C.	Maximal	Laboratory	Accurate
D.	Maximal	Field	Reliable

28. The following graph shows the mean systolic and diastolic blood pressure measured in 3 individuals before and after they performed 10 squats.



Which principle of study design could be introduced to improve the investigation?

A. Double-blinding to increase the validity of conclusions

B. Adding a control group to increase the accuracy of data

C. Increasing the sample size to improve statistical analysis

D. Adding a placebo to improve randomization

29. Which fitness test measures the following component of fitness?

	Stork stand	**Hand grip dynamometer**	**Hand ball toss**
A.	Flexibility	Strength	Agility
B.	Flexibility	Endurance	Coordination
C.	Balance	Strength	Coordination
D.	Balance	Endurance	Agility

30. What training principle can be monitored using the Karvonen method?

A. Progression

B. Reversibility

C. Intensity

D. Reliability

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References:

15. BC Campus, n.d. *Nervous tissue*. [online] Available at: https://opentextbc.ca/anatomyandphysiology/chapter/12-2-nervous-tissue/ [Accessed 24 March 2020]. Source adapted.