Diploma Programme
Programme du diplôme
Programa del Diploma

Sports, exercise and health science
Higher level
Paper 1

Thursday 10 May 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]**.

2218 – 6601

1. The diagram shows a hand. What type of joint is labelled X?

[Source: © International Baccalaureate Organization 2018]

A. Hinge

B. Saddle

C. Condyloid

D. Pivot

2. Which statement about a skeleton is correct?

A. The axial skeleton's prime function is movement.

B. The ribs are a part of the axial skeleton.

C. The appendicular skeleton's prime function is support.

D. The skull is a part of the appendicular skeleton.

3. Which structure is responsible for moistening air entering the ventilatory system?

A. Bronchi

B. Larynx

C. Pharynx

D. Nose

4. What does diastolic blood pressure measure?

A. The force exerted by blood on arterial walls during atrial contraction

B. The force exerted by blood on arterial walls during atrial relaxation

C. The force exerted by blood on arterial walls during ventricular contraction

D. The force exerted by blood on arterial walls during ventricular relaxation

5. Which phrase describes residual volume?

A. Additional inspired air over and above vital capacity

B. Volume of air in the lungs after a maximal exhalation

C. Additional inspired air over and above tidal volume

D. Volume of air in the lungs after a maximal inhalation

6. Which heart valve separates the right ventricle from the right atrium?

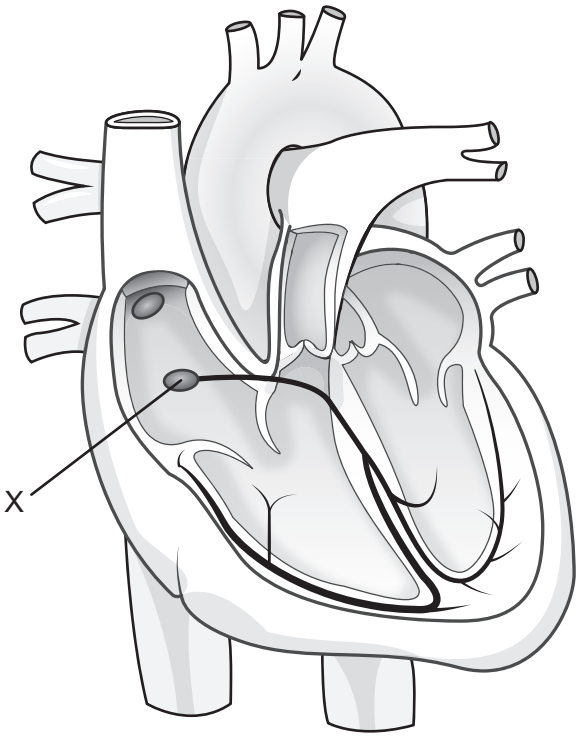
A. Aortic

B. Tricuspid

C. Bicuspid

D. Pulmonary

7. The diagram shows the heart. What is the specialized tissue labelled X?



[Source: © Legger | Dreamstime.com]

A. Sinoatrial node

B. Atrioventricular node

C. Right ventricle

D. Atrioventricular bundle

8. What is the ratio of C to H to O in a glucose molecule?

A. 1:3:1

B. 1:2:1

C. 1:3:2

D. 1:2:2

9. What is aerobic catabolism?

A. A chemical reaction requiring energy to build larger molecules from smaller molecules in the presence of oxygen

B. A chemical reaction requiring energy to build larger molecules from smaller molecules in the absence of oxygen

C. Chemical reactions that break down complex organic compounds into simpler compounds in the presence of oxygen

D. Chemical reactions that break down complex organic compounds into simpler compounds in the absence of oxygen

10. Which of the following store(s) glycogen?

I. Adipose tissue

II. Liver

III. Skeletal muscle

A. II only

B. I and III only

C. II and III only

D. I, II and III

11. Which is a micronutrient?

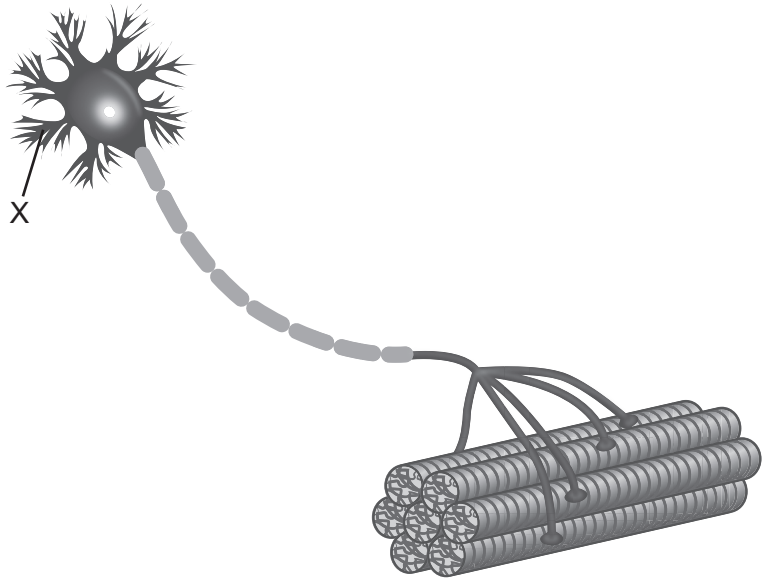
A. Water

B. Lipid (fat)

C. Protein

D. Mineral

12. The diagram shows a motor unit. What is the structure labelled X?



[Source: By Designua / Shutterstock]

A. Synapse

B. Axon

C. Dendrite

D. Nucleus

13. What is displacement?

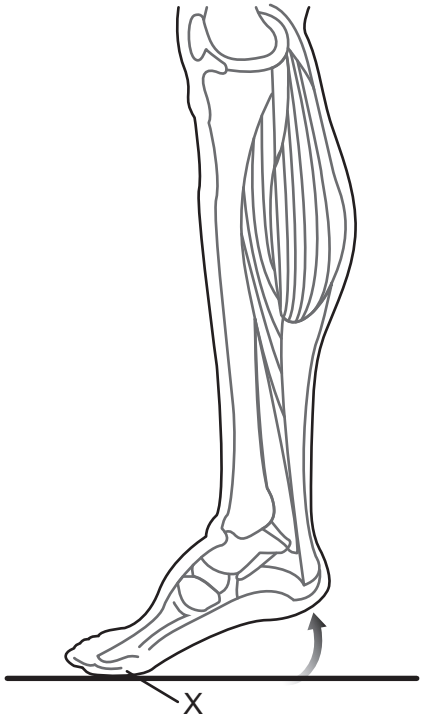
A. The rate of change in the position of an object

B. The total length along the path an object has travelled

C. The overall change in the position of an object

D. The speed of an object in a given direction

14. The diagram shows the operation of a lever when rising up on the toes. What is labelled X?



[Source: Adapted from MARTINI, FREDERIC H.; NATH, JUDI L.; BARTHOLOMEW, EDWIN F., FUNDAMENTALS OF ANATOMY & PHYSIOLOGY, 11th, ©2018. Reprinted by permission of Pearson Education, Inc., New York, New York.]

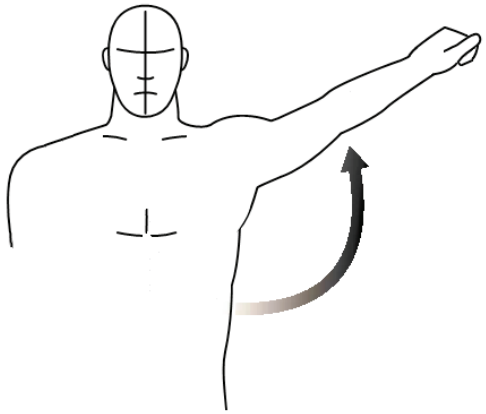
A. Fulcrum

B. Effort

C. Load

D. Resistance

15. What movement is shown in this diagram?



[Source: © International Baccalaureate Organization 2018]

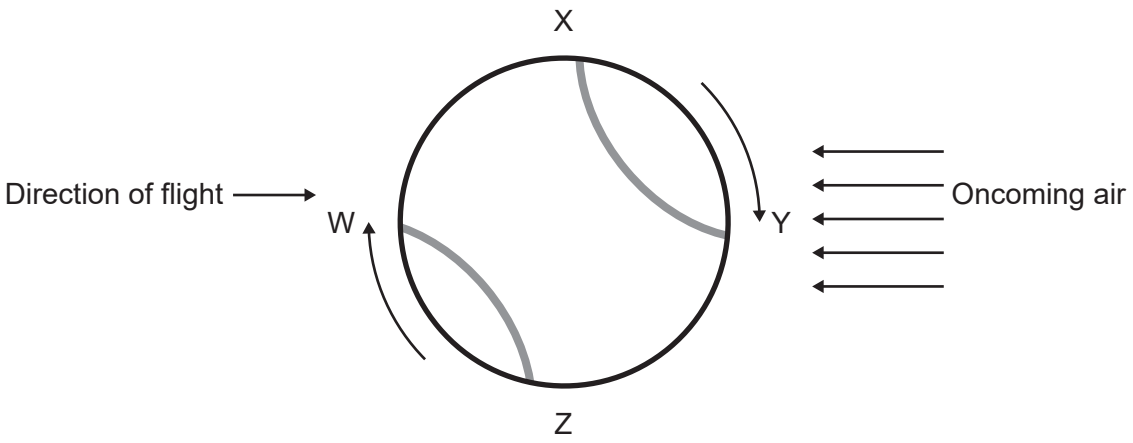
A. Adduction

B. Extension

C. Abduction

D. Flexion

16. The diagram shows a tennis ball in flight. The Bernoulli principle explains the difference in pressure around a spinning ball.



[Source: Adapted from J. Groppel, 1992, High tech tennis, 2nd ed. (Champaign, IL: Human Kinetics), 111.]

Which region surrounding the tennis ball has the highest pressure?

A. W

B. X

C. Y

D. Z

17. What is skill?

A. A general trait or capacity of an individual

B. A procedure for completing a task

C. The way an action is learned

D. The consistent production of goal-oriented movements

18. What is coding in memory improvement?

A. Remembering short and specific details rather than long and vague information

B. Presenting information in a clear and logical format

C. Associating information with images

D. Storing information through repetition

19. Which describes knowledge of results feedback?

A. The coach describing the quality of a performance

B. The coach providing technique information after a performance

C. A basketball player seeing that the ball went into the basket

D. A basketball player analysing their technique on replay

20. Which is an example of Fleishman's physical proficiency ability?

A. Swinging a golf club

B. Reacting quickly to a start signal in a sprint race

C. Lifting a heavy weight

D. Shooting an arrow in archery

21. What is an example of background noise?

A. An auditory stimulus which enhances relevant cues

B. A visual stimulus which interferes with relevant cues

C. An auditory stimulus relevant to the execution of a skill

D. A visual stimulus which enhances relevant cues

22. Why is heart rate used to monitor exercise intensity?

A. Due to its relationship with breathing

B. Due to its relationship with oxygen uptake

C. It is an accurate measure of perceived exertion

D. It is an accurate measure of gaseous exchange

23. What is the coefficient of variation?

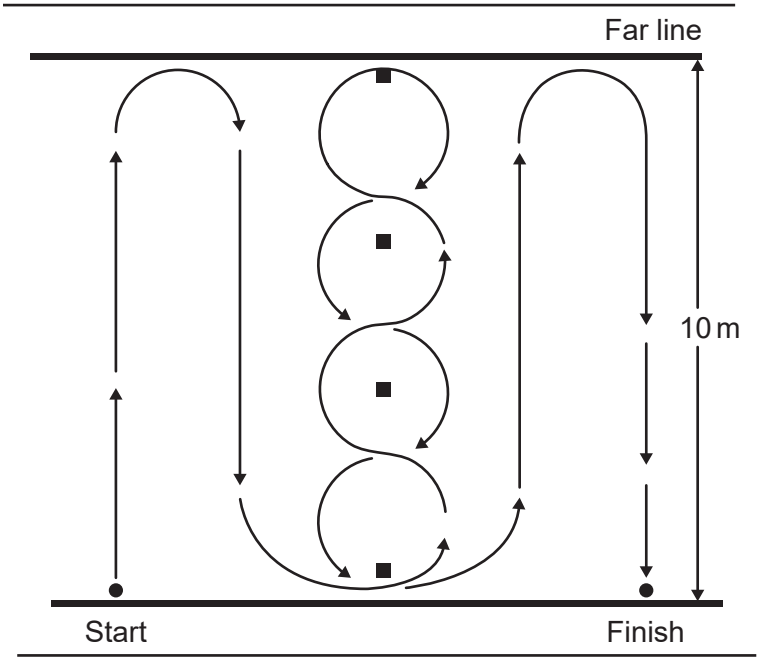
A. The spread of values around the mean

B. The measure of the statistical accuracy of an estimate of the distribution

C. The ratio of the standard deviation to the mean expressed as a percentage

D. The statistical measure that indicates the extent to which two or more variables fluctuate together

24. The diagram shows the set up for a fitness test. What fitness component is being tested?



[Source: adapted from http://www.police.nsw.gov.au]

A. Speed

B. Reaction time

C. Agility

D. Aerobic capacity

25. What is reliability?

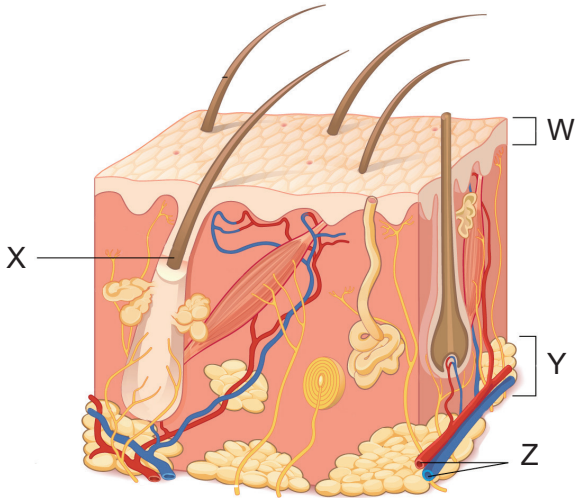
A. Becoming better at a particular exercise or skill

B. The quality or state of being correct or precise

C. A test that measures what it sets out to measure

D. Test results that are consistent and can be reproduced over time

26. The diagram shows the structure of skin. Which letter correctly identifies the epidermis?



[Source: Adapted from Kelly A. Young *et al.*, *Anatomy & Physiology*, https://cnx.org/contents/FPtK1zmh@6.27:RxywCGkA@5/Layers-of-the-Skin and shows the copyright info: © 1999-2018, Rice University. Reproduced under Creative Commons Attribution 4.0 License, https://creativecommons.org/licenses/by/4.0/legalcode.]

A. W

B. X

C. Y

D. Z

27. What is a function of the brain stem?

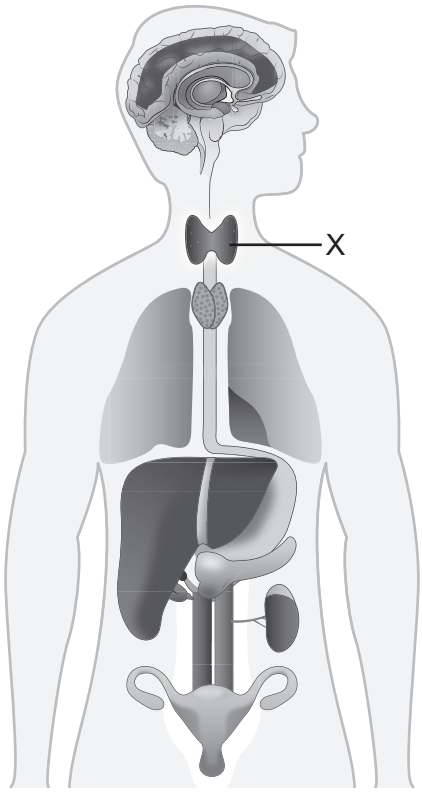
A. Perception of pain

B. Control of the autonomic nervous system

C. Perception of temperature

D. Respiratory control

28. The diagram shows the major endocrine organs in the human body. What organ is labelled X?



[Source: By ttsz/iStock Photos]

A. Hypothalamus

B. Pituitary gland

C. Thyroid gland

D. Pancreas

29. What is the role of local hormones?

I. To regulate and coordinate a range of bodily functions

II. To affect only specific target cells by binding to specific receptors

III. To act on neighbouring cells without entering the bloodstream

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

30. What is fatigue?

A. More training than an athlete can physically tolerate

B. Transient overtraining

C. A reversible exercise-induced decline in performance

D. A period of sickness affecting the body or mind

31. Which is a characteristic of peripheral fatigue?

A. It develops during prolonged exercise.

B. It develops rapidly and is caused by reduced muscle cell force.

C. It is caused by impaired function of the central nervous system.

D. It is associated with neurochemical changes in the brain.

32. What is drag?

A. The force that acts parallel to the interface of two surfaces that are in contact, and opposes their relative motion

B. The force or forces acting to oppose the motion of an object through a fluid medium

C. The inverse relationship between airflow velocity and air pressure

D. The force or forces acting to promote the motion of an object through a fluid medium

33. The diagram below shows some forces acting on an athlete. What forces are labelled X, Y and Z?

[Source: © International Baccalaureate Organization 2018]

	X	Y	Z
A.	Friction	Body weight	Ground reaction
B.	Body weight	Ground reaction	Friction
C.	Friction	Ground reaction	Body weight
D.	Ground reaction	Friction	Body weight

34. Which is a feature of traditional pedagogy in sports?

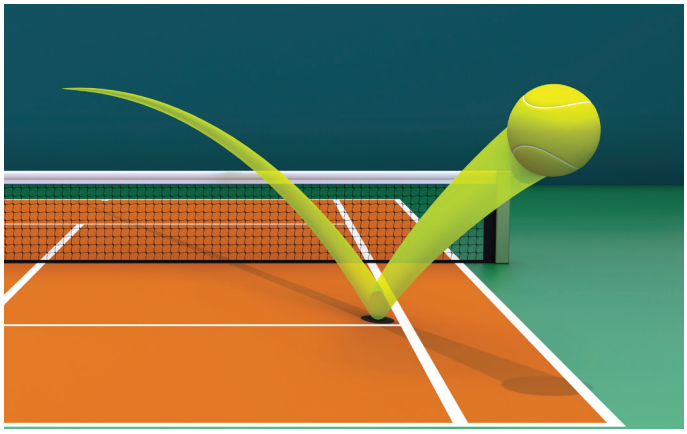
A. Process-oriented learning

B. Development of creative processes in athletes

C. High-level connectivity between athletes and coaches

D. Content-focused learning

35. What type of motion tracking technology does the following diagram represent?



[Source: By mipan/iStock Photos]

A. Bodybyte

B. Dartfish

C. Prozone

D. Hawkeye

36. Which describes a performance outcome model of qualitative biomechanical analysis for an individual sports technique?

A. Preparation

B. Coordination principles

C. Retraction

D. Action

37. How can genes influence human characteristics?

I. By coding for proteins which are responsible for the development of an individual

II. By determining measurable heritable characteristics for each individual

III. By ensuring stability of human characteristics through resistance to external factors

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

38. Which statement is correct for the inheritance of human characteristics?

A. Some genes may be inactive until switched on by the environment.

B. Human characteristics are solely determined by the environment.

C. Genes are inherited mainly from the mother.

D. There are not many combinations of genes as only two parents are involved.

39. Which feature shows adaptive immunity to damage or infection?

A. Skin cells forming a barrier to the entry of bacteria

B. Acidic conditions in the stomach to kill pathogens

C. Mucous in the nose to trap dust and pathogens

D. Inflammation at the site of a wound

40. Which combination of strategies minimizes risk from infection among athletes?

A.	Sufficient recovery time in the training programme	Maintain low fat diet
B.	Maintain good personal hygiene	Ensure sufficient sleep
C.	Maintain low fat diet	Maintain good personal hygiene
D.	Avoid drinking water	Sufficient recovery time in the training programme