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International Baccalaureate®  
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**SPORTS, EXERCISE AND HEALTH SCIENCE  
STANDARD LEVEL  
PAPER 1**

Thursday 6 November 2014 (morning)

45 minutes

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**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. Which part of the long bone is labelled X in the diagram?



[Source: [www.docstoc.com/docs/4212130/Blank-Long-Bone-Diagram---PowerPoint](http://www.docstoc.com/docs/4212130/Blank-Long-Bone-Diagram---PowerPoint)]

- A. Epiphysis
  - B. Diaphysis
  - C. Periosteum
  - D. Yellow bone marrow
2. What is the main role of ligaments acting at a joint?
- A. Flexible and strong tissue that connects bone to bone
  - B. Flexible and strong tissue that connects bone to muscle
  - C. Thin and shiny membrane that is important for bone growth
  - D. Flexible tissue that prevents friction between articulating bones

3. Which of these only contains smooth muscle?
- A. Heart
  - B. Vein
  - C. Iliopsoas
  - D. Semimembranosus
4. Which statement defines *vital capacity*?
- A. Volume of air in the lungs after a maximum inhalation
  - B. Inflow and outflow of air between the atmosphere and the lungs
  - C. Volume of air still contained in the lungs after a maximal exhalation
  - D. Maximum volume of air that can be exhaled after a maximum inhalation
5. Which is responsible for an increase in ventilation during exercise?
- A. An increase in pH levels of the blood
  - B. A decrease in carbon dioxide levels
  - C. An increase in acidity levels of the blood
  - D. An increase in oxygen levels in the blood
6. Which component of blood has the primary role of fighting infection?
- A. Plasma
  - B. Platelets
  - C. Leucocytes
  - D. Erythrocytes

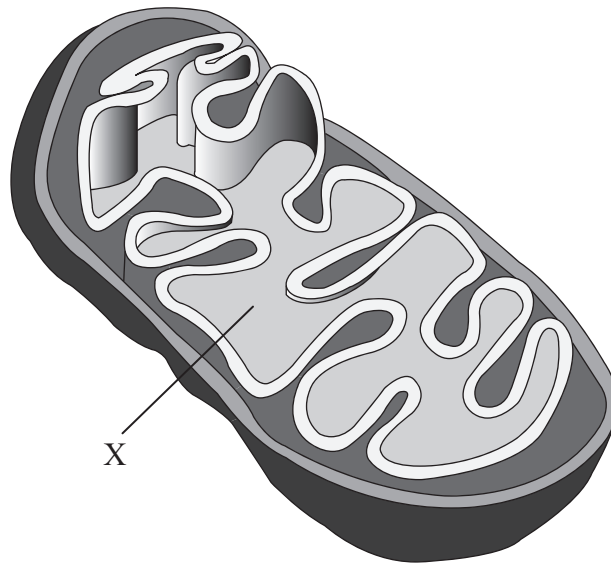
7. What is the correct order for deoxygenated blood entering and leaving the heart?
- A. Vena cava → Right ventricle → Right atrium → Pulmonary artery
  - B. Vena cava → Right atrium → Right ventricle → Pulmonary artery
  - C. Vena cava → Right ventricle → Right atrium → Pulmonary vein
  - D. Vena cava → Right atrium → Right ventricle → Pulmonary vein
8. What is the equation for cardiac output?
- A. Cardiac output = heart rate – stroke volume
  - B. Cardiac output = heart rate × tidal volume
  - C. Cardiac output = tidal volume × frequency
  - D. Cardiac output = stroke volume × heart rate
9. What is the response of systolic blood pressure and diastolic blood pressure to maximal static exercise?

|    | <b>Systolic</b> | <b>Diastolic</b> |
|----|-----------------|------------------|
| A. | Increase        | Increase         |
| B. | Increase        | No change        |
| C. | No change       | No change        |
| D. | Increase        | Decrease         |

10. Which statement describes unsaturated fat?
- A. Found in coconut oil
  - B. Originates from animal sources
  - C. Contains a double bond between carbon atoms
  - D. Contains a single bond between carbon atoms

11. What is the chemical composition of a protein molecule?
- A. HON
  - B. CHN
  - C. CHO
  - D. CHON
12. What is the energy content per 100 g of protein?
- A. 1600 kJ
  - B. 1720 kJ
  - C. 1760 kJ
  - D. 4000 kJ
13. Which term describes the breakdown of glycogen into glucose?
- A. Glycolysis
  - B. Glycogenesis
  - C. Glycogenolysis
  - D. Gluconeogenesis

14. Which structure is labelled X on the ultrastructure of a mitochondrion?



[Source: J Sproule, (2012), *Sports, Exercise & Health Science: Course Companion*. Oxford University Press]

- A. Cristae
  - B. Matrix
  - C. Inner membrane
  - D. Outer smooth membrane
15. Which is a characteristic of a slow twitch (type I) muscle fibre?
- A. High numbers of mitochondria
  - B. Low capillary density
  - C. High glycogen stores
  - D. Low resistance to fatigue

16. Which term is defined as force applied over time?
- A. Impulse
  - B. Velocity
  - C. Acceleration
  - D. Displacement
17. What is the definition of *centre of mass*?
- A. A measurement that has both size and direction
  - B. A measurement that only has size
  - C. A point of interaction between two objects
  - D. A point at which the weight of an object is balanced in all directions
18. Which factors are important to an athlete throwing a javelin?
- I. Projection speed
  - II. Projection angle
  - III. Projection height
- A. I only
  - B. I and II only
  - C. I, II and III
  - D. II and III only
19. What is the relationship between angular momentum, angular velocity and moment of inertia?
- A.  $\text{moment of inertia} = \text{angular momentum} \times \text{angular velocity}$
  - B.  $\text{angular momentum} = \text{angular velocity} - \text{moment of inertia}$
  - C.  $\text{angular velocity} = \text{angular momentum} - \text{moment of inertia}$
  - D.  $\text{angular momentum} = \text{angular velocity} \times \text{moment of inertia}$

20. Which of the following describes how a spinning golf ball generates lift?
- I. Back spin increases the speed on the upper surface of the ball.
  - II. The pressure on the upper surface of the ball is less than the pressure on the lower surface of the ball.
  - III. The pressure on the upper surface of the ball is higher than the pressure on the lower surface of the ball.
- A. I only
  - B. III only
  - C. I and II only
  - D. II and III only
21. Which of the following is a motor skill?
- A. Deciding on the type of shot in basketball
  - B. Using a weight lifting technique
  - C. Planning a team's defence in soccer
  - D. Reading and understanding weather reports when sailing
22. What is a definition of *technique*?
- A. The consistent production of a movement
  - B. The way in which a sports skill is performed
  - C. Goal-oriented movements that have been learned
  - D. A general trait of the individual related to the performance of a skill
23. Which is an example of skill to skill transfer?
- A. Throwing a tennis ball followed by throwing a javelin
  - B. Improving muscular strength to jump further in a long jump
  - C. Kicking a ball using the right foot followed by the left foot
  - D. Applying the principle of a third class lever when bowling in cricket



24. Which type of practice has little or no rest between simple skills?
- A. Fixed (drill)
  - B. Variable
  - C. Massed
  - D. Distributed
25. Which teaching style is teacher-centred, and is used when the activity involves an element of danger?
- A. Command
  - B. Reciprocal
  - C. Progressive
  - D. Problem solving
26. What is the mean flexibility score of an athlete from 6 cm, 7 cm and 11 cm?
- A. 7 cm
  - B. 8 cm
  - C. 9 cm
  - D. 10 cm
27. What percentage of data is normally distributed within  $\pm 2$  standard deviation of the mean?
- A. 50%
  - B. 68%
  - C. 95%
  - D. 99%

- 28.** Which of the following describes reliability?
- A. The instrument measures what it claims to measure.
  - B. The test used should be relevant to real life scenarios.
  - C. The instrument used must provide an accurate measurement.
  - D. The same reading is obtained each time a dependent variable is measured.
- 29.** Which component of fitness is a combination of strength and speed?
- A. Power
  - B. Agility
  - C. Muscular endurance
  - D. Reaction time
- 30.** Which test measures muscular strength?
- A. Vertical jump
  - B. Flexed arm hang
  - C. Maximum sit-ups
  - D. Hand grip dynamometer
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