OCR
Oxford Cambridge and RSA

Wednesday 07 October 2020 – Morning

A Level Physical Education

H555/01 Physiological factors affecting performance

Time allowed: 2 hours

You can use:
- a calculator

Please write clearly in black ink. **Do not write in the barcodes.**

Centre number | | | | | | Candidate number | | | | |

First name(s) _____

Last name _____

INSTRUCTIONS
- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Write your answer to each question in the space provided. If you need extra space use the lined pages at the end of this booklet. The question numbers must be clearly shown.
- Answer **all** the questions.
- Where appropriate, your answer should be supported with working. Marks might be given for using a correct method, even if your answer is wrong.

INFORMATION
- The total mark for this paper is **90**.
- The marks for each question are shown in brackets **[ ]**.
- Quality of extended response will be assessed in questions marked with an asterisk (*).
- This document has **16** pages.

ADVICE
- Read each question carefully before you start your answer.

SECTION A

Answer **all** the questions.

1 Explosive strength and aerobic capacity are fitness components that are used during team games. Describe a situation in a team game when each component will be used.

Explosive strength .....

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Aerobic capacity .....

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[2]

2 A coupled reaction causes the breakdown and resynthesis of ATP.

State the exothermic and endothermic reactions which show the breakdown and resynthesis of ATP.

Exothermic: ATP → .....

Endothermic: ..... → ATP

[2]

3 Describe linear motion and angular motion.

Linear motion .....

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Angular motion .....

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[2]

4 State the metric units of measurement for displacement and acceleration.

Displacement .....

Acceleration .....

[2]

5 Define the term ‘stroke volume’ and give a typical resting value for a trained individual.

Definition .....

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Typical resting value .....

[2]

SECTION B

Answer **all** the questions.

6 **Fig. 6** shows the performance of a pull-up.

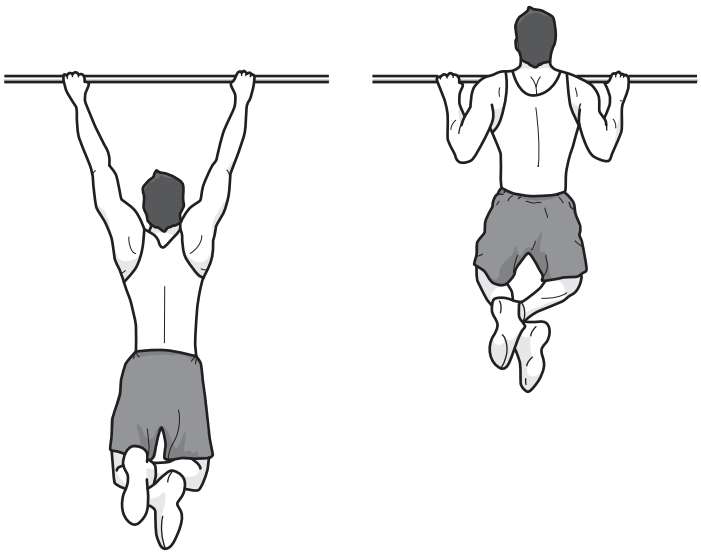

Fig. 6

(a) Complete the table to analyse the movements at the elbow during the downward and upward phases of the pull-up.

	Phase of movement	Joint movement	Agonist	Type of contraction
Elbow	**Downward**	.....	.....	.....
	Upward	.....	.....	.....

[6]

(b) (i) Describe the glycolytic (lactic acid) system.

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..... **[4]**

(ii) Evaluate the efficiency of the glycolytic (lactic acid) system in comparison to other energy systems.

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(c) Explain why heart and respiratory rates remain above resting levels during the slow component of EPOC (excess post-exercise oxygen consumption).

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..... **[4]**

(d) Describe the short-term effects of performing at high altitude on the cardiovascular and respiratory systems.

Cardiovascular .....

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Respiratory .....

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[4]

7 **(a)** Explain the benefits and possible drawbacks of the following nutritional ergogenic aids to improve performance.

Hydration .....

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Caffeine .....

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[6]

(b) Describe the use of direct gas analysis as a method of evaluating aerobic capacity.

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(c) Explain the impact of regular exercise on the lifestyle diseases of coronary heart disease (CHD) and asthma.

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(d) During a netball match, a player suffers an ankle injury. The coach assesses the injury using 'SALTAPS' and suspects a sprained ankle.

Describe the treatment the coach should apply to manage this injury.

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8 **(a)** **Fig. 8** shows free body diagrams of two balls in flight, and the flight path of ball A.

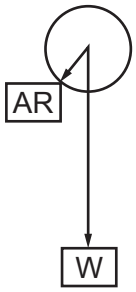
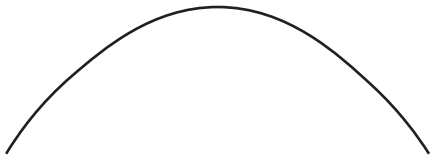
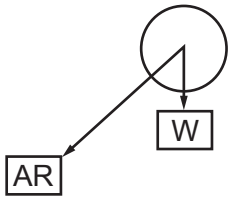
Ball	Free body diagram	Flight path
A		Parabolic 
B		**(i)** sketch flight path here

Fig. 8

(i) Sketch the flight path of ball B in the box in Fig. 8. **[1]**

(ii) Explain the differences between the free body diagrams of ball A and ball B.

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[4]

(iii) Describe the factors, other than mass, that impact on the air resistance of a ball in flight.

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..... **[4]**

(b) Explain the following terms, using a practical example for each:

Balanced force .....

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Unbalanced force .....

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[4]

(c) Define the term 'angular velocity'. Give an equation for its calculation and state the units it is measured in.

Definition .....

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Equation .....

Units .....

[3]

(d) When a right-handed golfer hooks a shot, the ball deviates to the left.

Explain how the golfer creates a hook shot and its effect on the flight path of the ball.

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SECTION C

9* **Fig. 9** shows the differences in the muscle fibre types of two elite athletes.

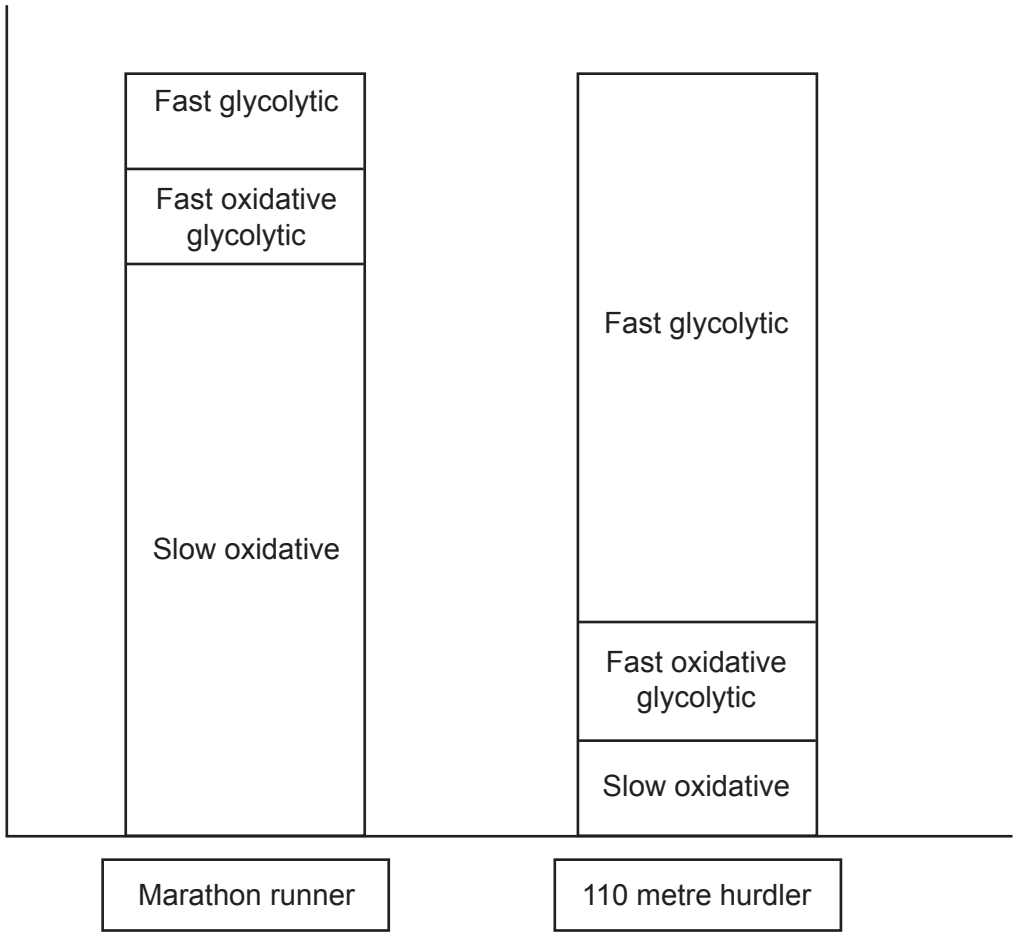

Fig. 9

Explain why both elite athletes benefit from the make-up of their specific muscle fibre types.

Describe when the different fibre types may be recruited during these events.

Describe and evaluate the factors that affect strength, applying your knowledge to the marathon runner and the hurdler. **[20]**

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END OF QUESTION PAPER

ADDITIONAL ANSWER SPACE

If additional space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s).