

## 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

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Candidate number

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First name(s)

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Last name

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### 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 .....

.....

.....

Aerobic capacity .....

.....

.....

[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:  $ATP \rightarrow$  .....

Endothermic: .....  $\rightarrow ATP$

[2]

- 3 Describe linear motion and angular motion.

Linear motion .....

.....

Angular motion .....

.....

[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 .....

.....

.....

Typical resting value .....

[2]

4  
SECTION B

Answer **all** the questions.

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

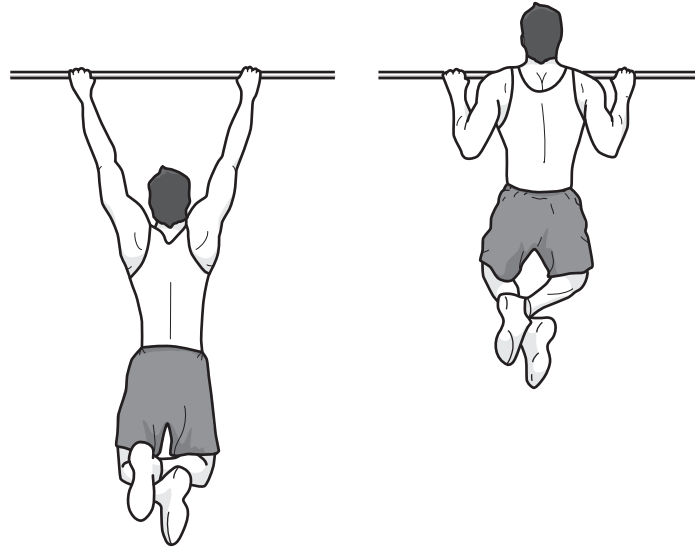


Fig. 6

(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
<b>Elbow</b>	<b>Downward</b>	.....	.....	.....
	<b>Upward</b>	.....	.....	.....

[6]











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

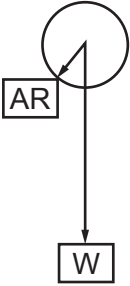
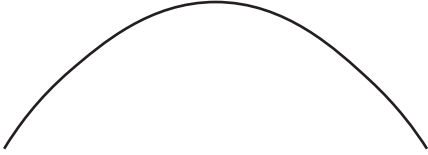
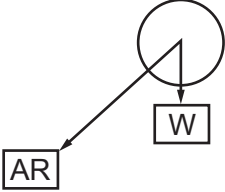
Ball	Free body diagram	Flight path
A		<p>Parabolic</p> 
B		<p>(i) sketch flight path here</p>

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 .....  
.....  
.....  
.....

Unbalanced force .....  
.....  
.....  
..... [4]

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

Definition .....  
.....  
.....

Equation .....

Units ..... [3]



12  
SECTION C

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

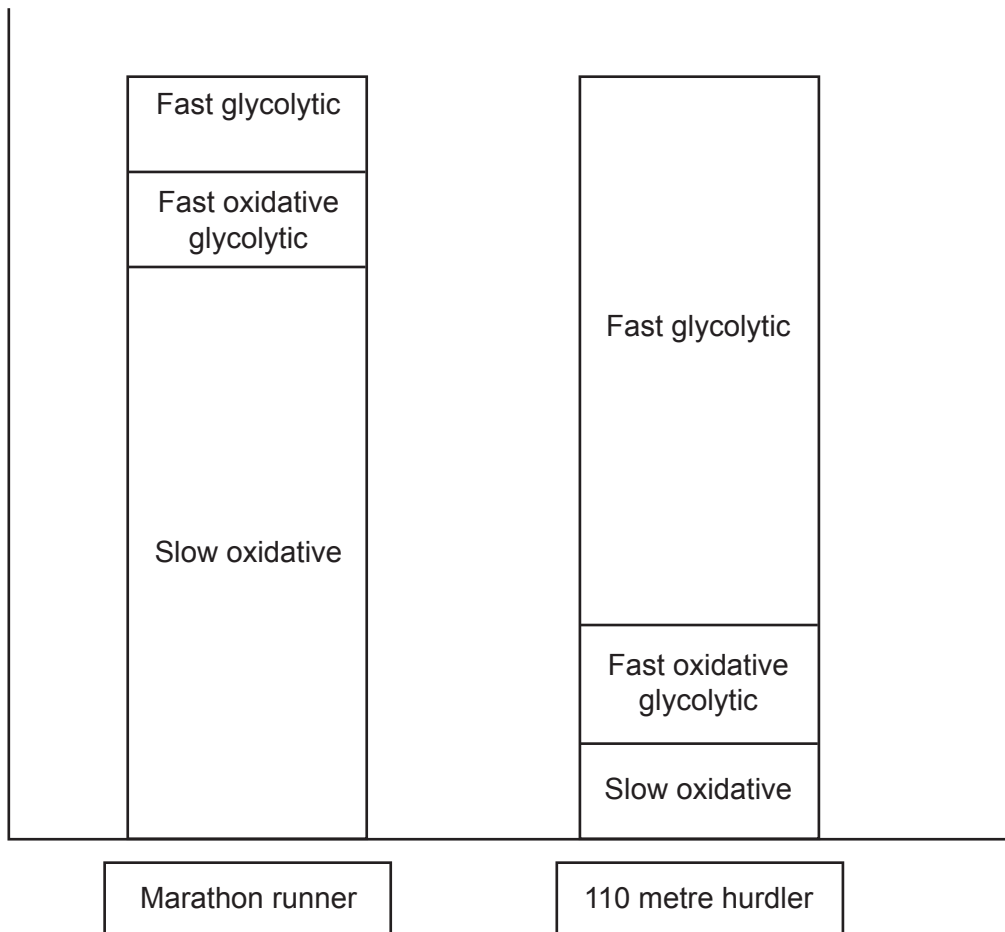


Fig. 9

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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**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).

A large area of lined paper for writing. It features a vertical margin line on the left side and horizontal dotted lines for writing. The lines are evenly spaced and extend across the width of the page.

A large rectangular area with a solid vertical line on the left and horizontal dotted lines, intended for writing answers.



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