

**Oxford Cambridge and RSA Examinations**  
**General Certificate of Secondary Education**

**PHYSICAL EDUCATION**

**1970**

**Specimen Paper 2003**

Additional materials: None  
Candidates answer on the question paper.

**TIME** 1 hour 45 minutes

Candidate Name
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Centre Number
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Candidate Number
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**INSTRUCTIONS TO CANDIDATES**

- Write your name in the space above.
- Write your Centre number and Candidate number in the boxes above.
- Answer all the questions.
- Write your answers, in blue or black ink, in the spaces provided on the question paper.
- Read each question carefully and make sure you know what you have to do before starting your answer.

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is 80.
- You will be assessed on the quality of written communication in **Section B, questions B1 and B2.**
- **Four** marks will be available for the quality of written communication.

## Section A

Answer **all** questions in this section.

- 1 Identify **one** indoor physical activity in which the following aspects of fitness would be particularly important:

(a) good flexibility;

\_\_\_\_\_ [1]

(b) strength.

\_\_\_\_\_ [1]

- 2 Explain how regular exercise can improve fitness and health.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [1]

- 3 Explain **one** way in which smoking can reduce performance in a physical activity.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [1]

- 4 Explain how the quadriceps muscle produces movement in a physical activity.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

- 5 Explain, using an example, how a synergist muscle works to enable certain movements to take place during a named physical activity.

Physical activity: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

6 If you were trying to persuade someone to take part in your favourite physical activity what **two** reasons would you give them for taking part?

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[2]

7 (a) If you were the Gymnastics coach in your area name the body type (somatotype) you would expect most of the best gymnasts to have.

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[1]

(b) Explain why this body type is important in Gymnastics.

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[1]

8 Identify **two** components of a balanced diet and explain the importance of each component to the performer.

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[2]

9 Explain the purpose of a 'cool down' after a training session and give **two** examples of the activities involved.

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[2]

**10** In a named physical activity explain the importance of a high cardiac output.

Physical activity: \_\_\_\_\_

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[4]

**[TOTAL 20]**

## Section B

Answer **all** questions in this section.

### B1: Factors affecting participation and performance.

Lisa is a good swimmer who swims for both her school and local swimming club. Her best event is the 100 metres freestyle.

- (a) Which function of the skeleton will be most important to Lisa in her swimming action?

\_\_\_\_\_ [1]

- (b) Identify and explain **two** social factors that may have a positive influence on success in a named physical activity.

Physical activity: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

- (c) Tom is a member of the local athletics club. Explain **two** ways in which Tom's coach could motivate him to improve his performance.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

(d) Identify which muscle fibre type is important to a short distance sprinter and explain why.

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[3]

(e) Explain **four** reasons, other than fitness, why Tom may have become involved in athletics.

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[4]



**B 2: The relationship between health, fitness and practical activity.**

At the start of the year John, Paul and Gordon, all members of their local Under-16 Gymnastics squad, carried out a series of fitness tests. The tests they took part in and the results are shown in the table below.

NAME	30 METRES SPRINT	60 SECS PRESS UPS	SIT AND REACH	STANDING BROAD JUMP	12 MINUTE RUN TEST
JOHN	5.0secs	55	28 cm	1.97 metres	3200 metres
PAUL	4.7secs	32	33 cm	1.85 metres	2800 metres
GORDON	5.9secs	47	20 cm	1.80 metres	1900 metres
<b>NATIONAL AVERAGES BOYS 14-16</b>	<b>5.2secs</b>	<b>40</b>	<b>23 cm</b>	<b>1.85 metres</b>	<b>2600 metres</b>

(a) Who performed best in the 30 metre sprint?

\_\_\_\_\_ [1]

(b) Each of the tests taken by John, Paul and Gordon measures a specific fitness component. These components are shown in the table below. Write in the missing fitness components. (The first one has been done for you.) [2]

TEST	FITNESS COMPONENT
30M SPRINT	Speed
60 SECS PRESS UPS	
SIT AND REACH	
STANDING BROAD JUMP	
12 MINUTE RUN TEST	

(c) Other than the tests listed above name **one** other test which would be useful in assessing gymnasts.

\_\_\_\_\_ [1]



(d) Gordon wishes to improve his vaulting in particular this year; identify and explain **two** components of fitness which are important in vaulting.

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[4]

(e) In order for Gordon to improve the weaknesses and maintain the strengths identified in his fitness profile, explain in detail **two** training methods and **two** training principles he needs to follow during the year.

Training principles:

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Training methods:

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[4]

(f) Explain what factors may have affected the test results achieved by John, Paul and Gordon.

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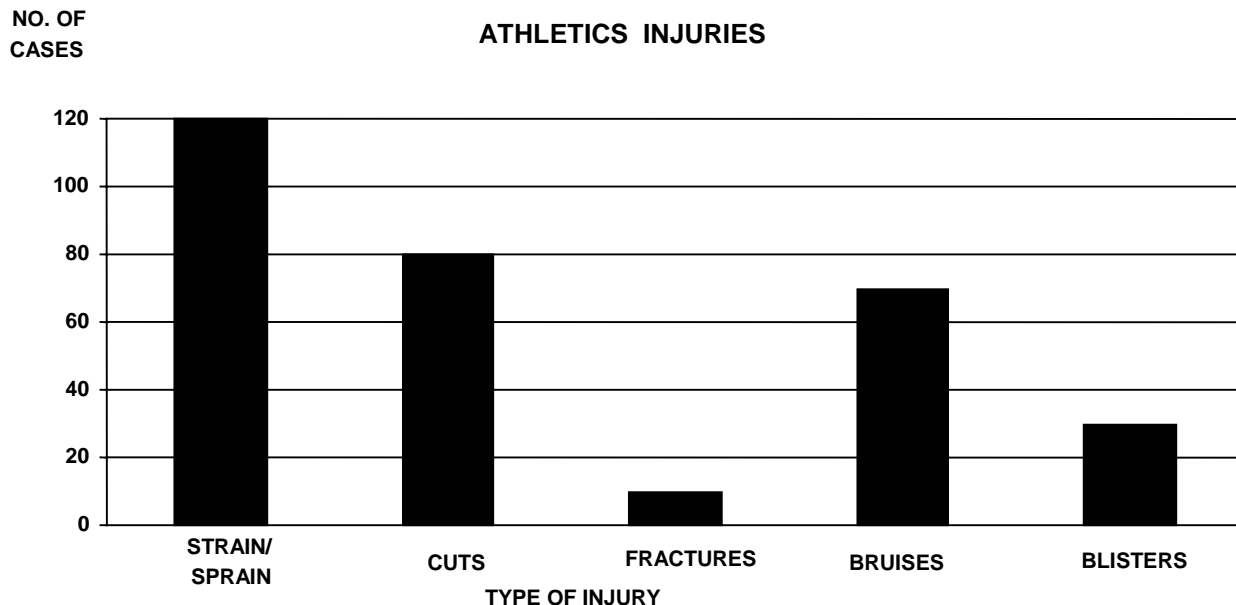
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[6]

**[TOTAL18]**

**B3: Risk Assessment in physical activity.**

David's GCSE PE group carried out an injury survey of all the athletics meetings that took place in their area during one year. They recorded their findings in the table below.



(a) Which type of injury occurred the most times during the year?

\_\_\_\_\_

[1]

(b) Explain why athletes might get blisters and the precautions they can take to prevent them.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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[3]

(c) Explain the importance of a good warm up before taking part in a physical activity.

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[3]

(d) Identify **four** potential hazards that athletes need to be aware of when performing or training outdoors during the winter.

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[4]

(e) Explain the treatment procedure you would carry out on an athlete suffering from a strain or a sprain.

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[4]

**[TOTAL 15]**



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**MARK SCHEME**

**Specimen Paper 2003**

## Section A

1	a	Gymnastics/dance/rock climbing/badminton/fencing/squash.	1 mark
	b	Gymnastics/swimming/basketball/judo.	1 mark
2		Feel good/strong heart/stronger muscles/greater flexibility/ improved CV. Endurance/muscular endurance/reduce heart disease/heart attack/improve skill level.	1 mark
3		It reduces the efficiency of the lungs, it kills cilia. It increases the risk of heart disease, lung, throat and liver cancer Narrows arteries to muscles.	1 mark
4		Quadriceps contract concentrically/shorten/pulling (via the tendon attachment) the bent lower leg straightens. (Allow the reverse i.e. eccentric contraction to let the lower leg bend). Contraction and relaxation of the quadriceps allows the lower leg to bend and straighten at the knee causing movement.	2 marks
5		Helps other muscles/the prime mover to do its job by holding/ fixing other parts of the body in position while the movement takes place. e.g. abdominals No mark for the named activity.	2 marks
6		Health/fitness/leisure interest/friendship/to socialise/peer pressure/vocation.	2 marks
7	a	Ectomorph/lean/thin and light.	1 mark
	b	Less weight to carry/lift off the ground.	1 mark
8		Carbohydrates- provide main source of energy. Proteins - for muscular growth and repair. Water - maintain fluid balance, keeps us from dehydrating. Fats - warmth/protection of vital organs/reserve fuel supply. Vitamins - regulate chemical reactions/growth and repair. Minerals - each has its own role e.g. calcium needed for muscles to work and for bones to be strong.	2 marks for two of.
9		Helps remove CO <sub>2</sub> and lactic acid (waste products). Blood continues to circulate preventing pooling leading to light- headedness. Prevents muscle soreness. Shortens recovery time. Examples of activities: Gentle jogging/walking. Gentle stretching.	2 marks, one for explanation, 1 mark for two examples.
10		Long distance running/soccer/cycling/hockey or other prolonged activity or game. Explanation to include: CO = max. amount of blood pumped by the heart in 1 min. Blood carries O <sub>2</sub> to the working muscles which require it. Can supply the same amount of blood at a lower heart rate. High CO therefore means activity can go on longer at the same intensity. Delays the onset of lactic acid build up in the muscles. Repay the O <sub>2</sub> debt more quickly. Recover after exercise more quickly.	No mark for naming an activity. 4 marks for four of.



## Section B

### B1: Factors affecting participation and performance in physical activity.

1	a	Movement	1 mark
	b	Supportive parents/parents who are also Badminton players encourage participation. Supportive friends or peer group/friends also involved. School/teacher(s) has given a positive image of Badminton. No gender barriers put in front of her participation. The media portrays Badminton in a positive light. Badminton role models created to follow. Media/TV coverage given over to Badminton. Good facilities are available close by.	2 marks 1 mark for each.
	c	Coaches motivating strategies are largely extrinsic Praise Give rewards/prizes Award badges/certificates. Set goals/targets (p.b.). Make it enjoyable.	2 marks for 2 of.
	d	Fast twitch fibres. FT fibres have a fast contraction time. Making movement more rapid. Used/recruited in short duration/anaerobic activities.	3 marks, 1 mark for FT fibres, 2 additional marks for 2 of.
	e	Health. Body image improvement. Leisure interest/enjoyment. Friendship/socialise. Copy role model. Become a professional.	4 marks for four of.
	f	Open skills: Open to effects of the environment (weather/surface/opposition). Adaptable to suit specific situation. Largely perceptually controlled. Skills practised as closed skills because: The conditions are predictable and stable. The movements are repeated (replicated). Participant gets the 'feeling' for the movement. Teachers/coaches can concentrate and advise on the skill and technique.	4 marks. 1 or 2 marks for 1 or 2 reasons for open skills, 1 or 2 marks for 1 or 2 of the reasons why skills practised as closed skills.
	g	Lower resting heart rate. Heart muscle increases in size. Stroke volume increases. Cardiac output increases. Capillary network in the muscles increases. Blood pressure lowers. Minute ventilation increases/can take in more O <sub>2</sub> per min. Gaseous exchange becomes more efficient. CO <sub>2</sub> max. increases. Recovery rate after exercise shortens. Work longer before building up an O <sub>2</sub> debt. Hemoglobin content of blood increases.	7 marks for seven of. Answers must relate to the long term effects, not short term effects.

<b>Quality of written communication</b> Candidates spell, punctuate and use the rules of grammar with reasonable accuracy; they use a limited range of specialist terms appropriately.	1 mark
Candidates spell, punctuate and use the rules of grammar with considerable accuracy; they use a good range of specialist terms adeptly and with precision.	2 marks

**B2: Relationship between health, fitness and practical performance.**

2	a	Paul	1 mark
	b	Press ups = muscular endurance sit and reach = flexibility standing broad jump = power/strength/explosive strength 12 minute run test = cardiovascular endurance/stamina/endurance	2 marks, one for 1 or 2 correct, two for 3 or 4 correct.
	c	Static strength test. Stork test or similar test of balance. Agility test.	1 mark
	d	Speed for movement down the runway. Flexibility/agility for executing the tumbling/twisting/reaching for the box on first flight. Power for hitting the take off board on take off to generate lift for repulsion phase. Strength to hold the position over the box and the landing.	4 marks, 2 mark for each correctly identified component, 2 marks for providing correct explanation.
	e	<b>Training Principles:</b> He must plan his training so that his fitness <b>peaks</b> at the right time of the season. His training should gradually <b>progress</b> i.e. gets harder over time. He should try to work harder each session so as to <b>overload</b> his body systems compared to what it is normally used to doing. Allow them to adapt. FITT e.g. run further/do more reps./lift heavier weights/train more often/longer. All his training will need to be specific to the particular fitness component he is working on. <b>Training methods:</b> <b>Continuous or fartlek</b> training will improve his cardio vascular endurance. (Mention of appropriate heart rate training zone can be credited.) <b>Active or passive stretching</b> will improve flexibility. <b>Sprint training</b> will improve his speed. <b>Weight training</b> (isotonic) <b>plyometrics</b> will improve his standing broad jump and aid speed. <b>Circuit training</b> will help maintain his muscular endurance.	4 marks, 2 for principles of training and 2 for methods of training. Allow one mark for each of the FITT principles explained with a suitable example.
	f	Good/poor diet or related answers e.g. not enough carbohydrates in diet. Physique/somatotype e.g. overweight (endomorph) effect endurance. Tall, may effect flexibility. Mesomorph greater strength/power. Injury reduced performance levels. Illness reduced performance levels. Smoking/drugs. Too much alcohol. Stress e.g. worrying about exams. Level of physical development, some develop earlier than others.	6 marks for six of, max. of 2 marks for diet related answers.

<b>Quality of written communication</b> Candidates spell, punctuate and use the rules of grammar with reasonable accuracy; they use a limited range of specialist terms appropriately.	1 mark
Candidates spell, punctuate and use the rules of grammar with considerable accuracy; they use a good range of specialist terms adeptly and with precision.	2 marks

### B3: Risk assessment in physical activity.

3	a	Strain/sprain	1 mark
	b	<p>Blisters caused by; Badly fitting shoes, too big or too small. Friction of skin against shoe caused by movement within the shoe. Hard playing surfaces. The nature of the movements of the athlete, e.g. sharp turning movements. Precautions: Wear good fitting trainers/running spikes or avoid tight fitting trainers/running spikes(one of). Spikes are not too long for the surface. Wear in new trainers before running in them. Padded socks/socks that don't rub.</p>	3 marks. Max. of 1 for causes and 2 for precautions or 2 for causes and 1 for precautions.
	c	<p>Warms the muscle. Makes muscles/joints more flexible. Lowers the risk of injury. Prepares the mind (as well as the body).</p>	3 marks, 1 for each part of.
	d	<p>Types of hazards: Frozen or icy track or throwing/jumping areas. Badly rutted/uneven running surface. Foreign objects on track/landing areas (glass/cans/dog mess/etc.). Throwing cages not secured properly. Throwing implements wet and slippy. Landing areas not dug over properly. Performers not wearing correct kit (e.g. spikes/running shoes). Extremely cold weather - hypothermia.</p>	4 marks for four of. A maximum of 3 marks for either types of hazards or solutions to the hazards.
	e	<p>Stop playing immediately (rest). Apply ice to the injured part to help reduce the swelling and restrict internal blood flow into the muscle (ice). Apply light support bandaging to the injured part (compression). Raise the injured part to help excess fluids drain away from the injury (elevation).</p>	4 marks, 1 for each part of the procedure explained. Only 1 mark for RICE alone.

