



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2010

SPORT AND EXERCISE SCIENCE: PAPER II

Time: 2 hours

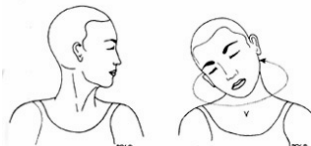
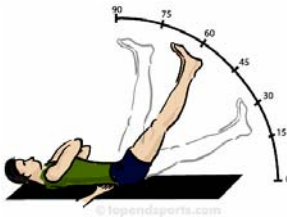
150 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of 6 pages and an Answer Booklet of 3 (i – iii) pages. Please check that your question paper is complete. Detach the Answer Booklet from the middle of the question paper.
 2. Question 1 must be answered in the Answer Booklet provided. All other questions must be answered in your Answer Book.
 3. Read the questions carefully.
 4. Number the answers exactly as the questions are numbered.
 5. Use the total marks that can be awarded for each question as an indication of the detail required.
 6. It is in your own interest to write legibly and to present your work neatly.
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QUESTION 2

- 2.1 Explain how the relationship between motor development and physical development is useful in determining talent in sport. (7)
- 2.2 Athletes are all taught to warm up and then stretch before exercising. However, some exercises, such as those illustrated below, if applied incorrectly **could** injure.

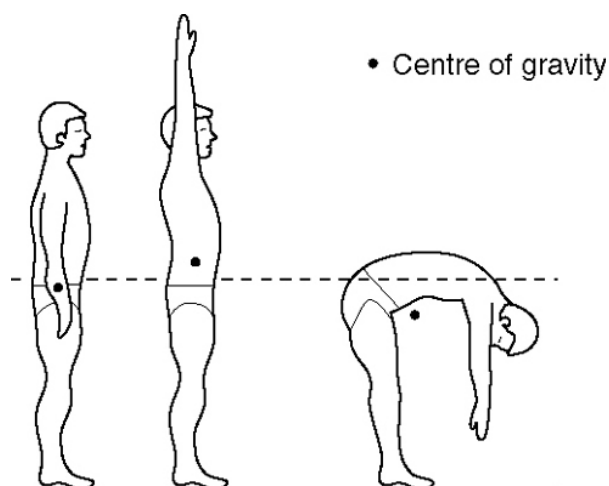
Exercise 1 360 degree Neck Rotation	Exercise 2 Straight Leg Sit-Up	Exercise 3 Double leg lift
		

[<www.zentrjapan.com/asanas>][<www.bicycling.com/images>][<www.topendsports.com>]
[Accessed 16 April 2010]

- 2.2.1 Select ONE of the above exercises and explain why this exercise could be injurious. (3)
- 2.2.2 Select ONE of the above exercises and adapt the exercise to decrease the possibility of injury. (3)
- 2.2.3 What benefit/value are there to the exerciser assuming that the exercise is correctly executed? (2)
- [15]

QUESTION 3

- 3.1 The position of the **Centre of Gravity/Mass** plays an important role in sport.

[<[http:// www.answers.com/topic/center-of-gravity](http://www.answers.com/topic/center-of-gravity) Accessed 16 April 2010>]

- 3.1.1 Define the concept **Centre of Gravity**. (3)
- 3.1.2 How could an athlete benefit from lowering their Centre of Gravity? What body position would they adopt? Identify an example of a sport type which depends on the athlete's ability to rapidly lower their Centre of Gravity. (7)
- [10]

QUESTION 4

Balance, locomotion and manipulation are the underpinning cornerstones of successful performance in all sports.

Select a sport of your choice and analyse an action related to that sport where balance is the key to ensure achievement of optimal performance. Demonstrate why balance is so important to ensure achievement of optimal performance.

[20]

QUESTION 5

Read the following TWO extracts written by top international sports stars.

'This was my ninth injury setback since setting foot upon the ladder of top-class rugby. Was I flogging a dead horse by trying to come back again and again? Was I rubbish? I had goals still to achieve and I intended to stick around to see them through. Setbacks – I'd seen them, done them, been there. I was determined to overcome them again and again. ... If you want something enough, then you have to fight. I mean standing tall and believing in myself when others stop doing so.'

[Extract adapted from *Tackling Life* by Jonny Wilkinson, Headline Publishers, 2008]

'Confidence is normally the key to anyone's batting; it affects everything from foot movement to calmness and decision-making. It was really important during my preparation process before a game.'

'I felt the pressure was on me once again to perform; perhaps some of it was self-induced, but certainly not all. Opening the batting is a key position, I was a key player and I was captain. That was all very well understood. But there was certainly some pressure from the public and the media and I'm no different to any other sportsman in the way that I felt about that.'

'I was struggling with my back, but my tennis elbow was even worse. I can cope with pain, I'm no different to most professional cricketers in that regard, but this was something I haven't experienced before.'

[Extract adapted from *Graeme Smith. A Captain's Diary 2007 – 2009*, Jonathan Ball Publishers, 2009]

There is common ground between these two top athletes in terms of competitive pressure and overuse injuries.

- 5.1 Using your knowledge of Sports Psychology and Goal Setting, explain how they would need to prepare themselves mentally to compete over and over again at a top level. (30)
- 5.2 Both Jonny Wilkinson and Graeme Smith have captained their respective teams. Assuming that Jonny Wilkinson is a **person-oriented** leader and Graeme Smith is a **task-oriented** leader, what would be the outcome of their respective leadership styles on their teams? (5)

5.3 As read in the extracts above, a team or group of athletes are bound to suffer some injury or illness during a season. A good manager will keep records of all injuries and the management thereof.

5.3.1 What type of information would be recorded about these injuries or illness? (5)

5.3.2 What purpose or use would this information have? (3)

[43]

QUESTION 6

Shoaib Akhtar, Pakistan fast bowler, releases the ball at 161 km/h because he is able to give maximum momentum to the ball.



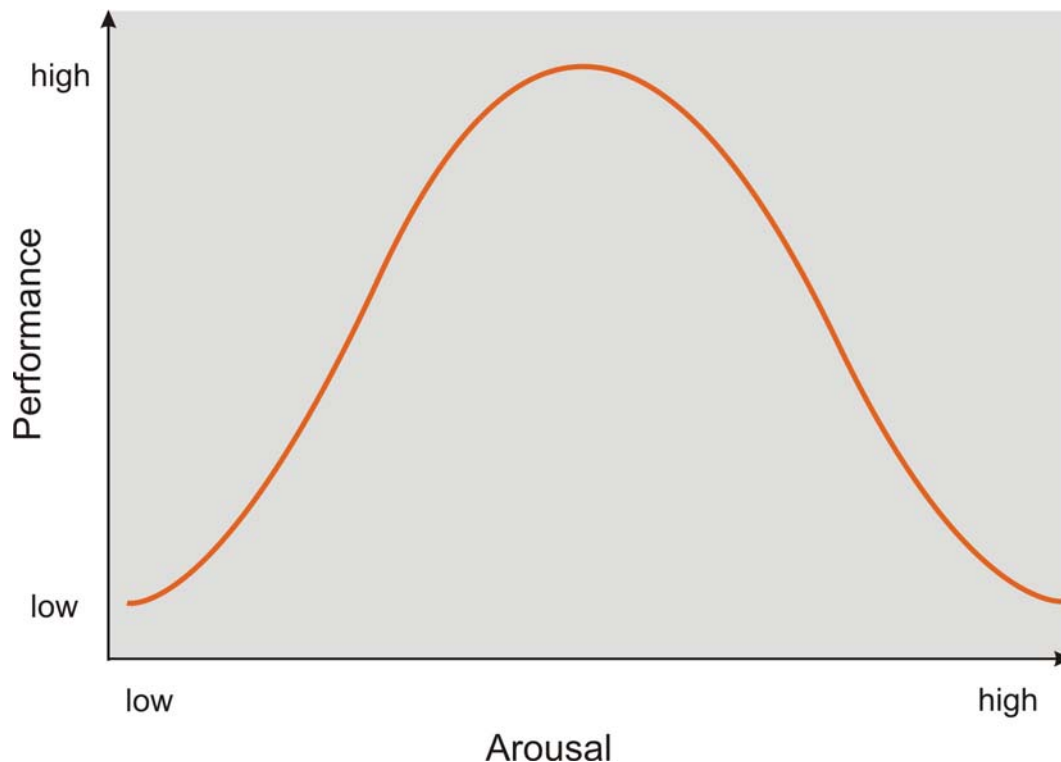
[<<http://4.bp.blogspot.com> Accessed 8 April 2010>]

6.1 Using your knowledge of momentum, explain how he generates the most momentum to the cricket ball when he releases it. (15)

6.2 If his timing was not executed in the correct order, what would occur? (2)

6.3 Bowlers are at risk of overuse injuries. Identify the extrinsic and intrinsic risk areas for a fast bowler. (7)

[24]

QUESTION 7

[Extracted from *Advanced studies in Physical Education & Sport*.
 Edited by Paul Beashel and John Taylor. 1996]

Different sports require different levels of arousal. Yerkes and Dodson (1908), developed the **Inverted 'U' Hypothesis** to explain the relationship between arousal and performance in sport.

An athlete needs to reach the optimal level in order to perform at their best.

- 7.1 Explain this statement, referring to the diagram above. (10)
 - 7.2 As a coach of a shooting team, what level of arousal do you think will complement the accuracy of the shootist? Motivate your answer. (4)
 - 7.3 Give an example of a sport that needs high arousal levels in order for the athlete to perform at an optimum level. (2)
 - 7.4 All athletes show varying levels of achievement motivation. These vary according to the reasons for taking part and the different importance put on success or failure. Thus an athlete may have the tendency to be either **task-oriented** or **outcome-oriented**. Discuss. (6)
- [22]

QUESTION 8

[Picture taken by Examiner]

In a hockey rule book there is no mention made about the maximum length of a hockey stick.

- 8.1 How would a hockey player benefit, biomechanically, from a longer stick length? (2)
- 8.2 What would happen to the range of the player's movement when hitting or dribbling a ball, should the hockey stick be longer? (2)
- 8.3 What TWO factors would a coach take into account to determine the length of a hockey stick for a player? (2)
- [6]**

Total: 150 marks