OCR
Oxford Cambridge and RSA

Friday 22 June 2018 – Morning

A2 GCE MATHEMATICS (MEI)

4754/01B Applications of Advanced Mathematics (C4) Paper B: Comprehension

QUESTION PAPER

Candidates answer on the Question Paper.

OCR supplied materials:
* Insert (inserted)
* MEI Examination Formulae and Tables (MF2)

Other materials required:
* Scientific or graphical calculator

Duration: Up to 1 hour

Candidate forename		Candidate surname	

Centre number					Candidate number				

INSTRUCTIONS TO CANDIDATES

* The Insert will be found inside this document.
* Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
* Use black ink. HB pencil may be used for graphs and diagrams only.
* Answer **all** the questions.
* Read each question carefully. Make sure you know what you have to do before starting your answer.
* Write your answer to each question in the space provided. If additional space is required, you should use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.
* Do **not** write in the barcodes.
* The Insert contains the text for use with the questions.
* You are permitted to use a scientific or graphical calculator in this paper.
* Final answers should be given to a degree of accuracy appropriate to the context.

INFORMATION FOR CANDIDATES

* The number of marks is given in brackets **[ ]** at the end of each question or part question.
* You may find it helpful to make notes and do some calculations as you read the passage.
* You are **not** required to hand in these notes with your question paper.
* You are advised that an answer may receive **no marks** unless you show sufficient detail of the working to indicate that a correct method is being used.
* The total number of marks for this paper is **18**.
* This document consists of **8** pages. Any blank pages are indicated.

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Turn over

1   In a 40-over match, Team 1 scored 183/8 in their 40 overs. Team 2, in the first 23 overs of their innings, reached 102/4 when rain caused a delay. This delay meant that only 5 more overs were available to Team 2. Using the ARR method, calculate how many runs Team 2 had to score in these 5 overs in order to win the match. **[3]**

1	

PLEASE DO NOT WRITE IN THIS SPACE

2 In line 94 the article says that the D/L method can set a higher target for Team 2 than the ARR method would have set.

In a 50-over match Team 1 scores 239 runs. Team 2 only have 40 overs available. Calculate how many more runs Team 2 need to score to win the match if the D/L method, rather than the ARR method, is used. **[3]**

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3   Rewrite equation (4) in line 101 to make the *b* the subject.   **[2]**

3	

PLEASE DO NOT WRITE IN THIS SPACE

5

4   The article, in line 147, says that the D/L method can be used to deal with a match in which there are multiple interruptions in either team's innings.

In 2003, a 50-over match between two teams took place and before play began the match was reduced to 46 overs each.

Rain stopped play when Team 1 reached 123/2 from 25 overs. At the restart both innings were reduced to 43 overs.

Rain stopped play again when Team 1 had reached 150/3 from 33 overs, and at the restart both innings were reduced further to 38 overs.

Team 1 finished on 185/3 from their 38 overs.

  (i)   Complete the final column of the table below.   **[4]**

 (ii)   Calculate the target score to win for Team 2 given that in 2003 the value of G50 was 235.   **[2]**

4(i)		Overs left and wickets remaining	Resource as a percentage
	Total resource available to Team 1 at the start	46 overs left, 10 wickets remaining	
	Total resource remaining to Team 1 at the first interruption	21 overs left, 8 wickets remaining	
	Total resource remaining to Team 1 at the restart	18 overs left, 8 wickets remaining	
	Total resource lost by first interruption		
	Total resource remaining to Team 1 at the second interruption	10 overs left, 7 wickets remaining	
	Total resource remaining to Team 1 at the second restart	5 overs left, 7 wickets remaining	
	Total resource lost by second interruption		
	Total resource available to Team 1		
	Total resource available to Team 2	38 overs left, 10 wickets remaining	86.7

4(ii)	

Turn over

5 In lines 148 and 149 the article says

'There are also cases where the D/L method sets a target that requires Team 2 to score *fewer* runs than Team 1 in the same number of overs.'

By calculating the target score required by Team 2 to win, show that the above statement is true in the following scenario.

> **50 overs per innings**
>
> Team 1 scores 110/8 in 35 overs
>
> Rain causes Team 1's innings to be terminated and Team 2 have 35 overs for their innings

[4]

5	

END OF QUESTION PAPER

7

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).