

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
A2 GCE**

4754/01B

MATHEMATICS (MEI)

**Applications of Advanced Mathematics
(C4) Paper B: Comprehension**

QUESTION PAPER

TUESDAY 16 JUNE 2015: Afternoon

**DURATION: Up to 1 hour
plus your additional time allowance**

MODIFIED ENLARGED

Candidate forename		Candidate surname	
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Centre number						Candidate number				
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Candidates answer on the Question Paper.

OCR SUPPLIED MATERIALS:

Insert

MEI Examination Formulae and Tables (MF2)

OTHER MATERIALS REQUIRED:

Scientific or graphical calculator

Rough paper

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the boxes on the first page. 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. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).

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.

Any blank pages are indicated.

1 In a building with a single lift, the car is located on the ground floor. The following calls arrive in quick succession, all before the car has started on its upward journey.

- Passenger P on floor 9 calls for a down-car (intending to go to floor 1);**
- Passenger Q on floor 5 calls for an up-car (intending to go to floor 10);**
- Passenger R on floor 4 calls for a down-car (intending to go to floor 1).**

The following events need to take place, but not necessarily in the order given.

- E1. Pick up P**
- E2. Pick up Q**
- E3. Pick up R**
- E4. Drop off P and R**
- E5. Drop off Q**

Assuming the car serves requests as described in lines 26 to 34,

- (i) which event occurs first? [1]**
- (ii) which event occurs second? [1]**
- (iii) which event occurs last? [1]**

1 (i)	
1 (ii)	
1 (iii)	

PLEASE DO NOT WRITE IN THIS SPACE

2 In lines 137 to 139 it says “For most journeys, more than half the journey time is composed of load time and transfer time”. For what percentage of the journey time for the round trip made by car A in Table 4 is the car stationary? [2]

2	

3 Using the expression on line 88, work out the answer to the question on lines 69 and 70 for the case where there are 10 upper floors and 7 people. Give your answer to 2 decimal places. [2]

3	

4 In lines 154 to 157 it says “... on average there will be approximately 8 stops per trip. A round trip with 8 stops would take between 188 and 200 seconds”. Explain how the figure of 188 seconds has been derived. [2]

4	

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- 5 (i) Referring to Strategy 3 and lines 172 to 179, complete the table below for car C. [3]
- (ii) Calculate the time car C will take to transport all the people who work on floors 7 and 8, and return to the ground floor. [1]

5 (i)	Car C		
		Arrival time (seconds)	Departure time (seconds)
	Ground floor	0	20
	Floor 1		
	Floor 2		
	Floor 3		
	Floor 4		
	Floor 5		
	Floor 6		
	Floor 7		
	Floor 8		
	Floor 9		
	Floor 10		
	Return to ground floor		

5 (ii)	

6 8 people make independent visits to any one of the upper floors of a building with 10 upper floors. What is the probability that at least one of the visitors goes to the top floor? [2]

6	

7 On lines 162 to 165 it says “Table 4 gives the timings for round trips in which the cars are required to stop at every floor they serve; Table 2 suggests this is a common occurrence in this case”. Explain how Table 2 is used to make this claim. [3]

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