

# Thursday 13 June 2019 – Afternoon

# A Level Further Mathematics B (MEI)

## Y421/01 Mechanics Major

### Printed Answer Booklet

#### Time allowed: 2 hours 15 minutes



#### You must have: • Question Paper Y421/01 (inserted)

Formulae Further Mathematics B (MEI)

#### You may use:

• a scientific or graphical calculator



Please write clea	arly in black	ink. Do no	ot write	e in the barcodes.		
Centre number				Candidate number		
First name(s)						
Last name						

#### INSTRUCTIONS

- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer all the questions.
- Write your answer to each question in the space provided in the Printed Answer **Booklet.** 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.
- 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.
- The acceleration due to gravity is denoted by  $gms^{-2}$ . Unless otherwise instructed, when a numerical value is needed, use g = 9.8.

#### INFORMATION

- 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 used. You should communicate your method with correct reasoning.
- The Printed Answer Booklet consists of 24 pages. The Question Paper consists of 12 pages.

Section A (27 marks)

1(-)	
1(a)	
1(b)	
1(0)	

2	

3

<b>3(a)</b>	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
2(L)	
<b>3(b)</b>	
-	
-	

4(a)	
4(b)	
(0)	

5(a)	
5(b)	

Section B (93 marks)

6	
Ū	

7	
	(answer space continued on next page)

8

7	(continued)

$\mathbf{Q}(\mathbf{a})$	
<b>8(a)</b>	

<b>8(b)</b>	
o(n)	

9(a)	
9(b)	

9(c)	
9(d)	

10(a)	

10(b)	
10(c)	

15

11(a)	

	•
11(b)	
11(c)	
II(t)	

12(-)	
12(a)	

12(b)	
-	
-	
-	
-	
-	
12(c)	
12(0)	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	

12(d)	
ĺ	

13(a)	

12(1)	
13(b)	

13(c)	

#### 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).



#### **Copyright Information**

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.