

## AS Level Further Mathematics B (MEI)

### Y413 Modelling with Algorithms

Printed Answer Booklet

Version 2

## Date – Morning/Afternoon

Time allowed: 1 hour 15 minutes

**You must have:**

- Question Paper Y413 (inserted)
- Formulae Further Mathematics B (MEI)

**You may use:**

- a scientific or graphical calculator



First name

Last name

Centre number

Candidate number

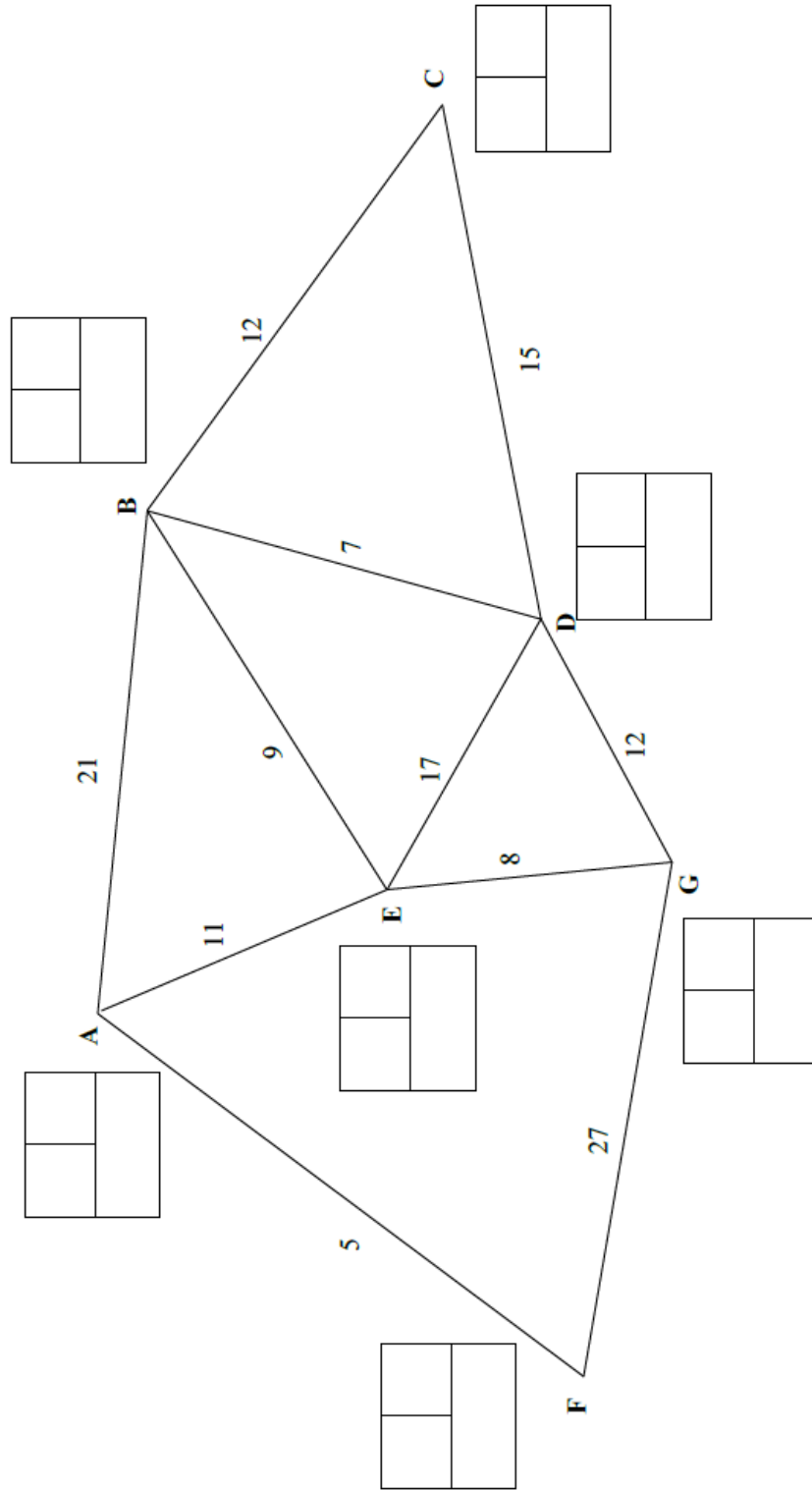
### INSTRUCTIONS

- The Question Paper will be found inside the Printed Answer Booklet.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Complete the boxes provided on the Printed Answer Booklet with your name, centre number and candidate number.
- Answer **all** the questions.
- **Write your answer to each question in the space provided in the Printed Answer Booklet.** Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.
- 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

- 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 **16** pages. The Question Paper consists of **12** pages.

1



A spare copy of the diagram for question 1 can be found on page 13

---



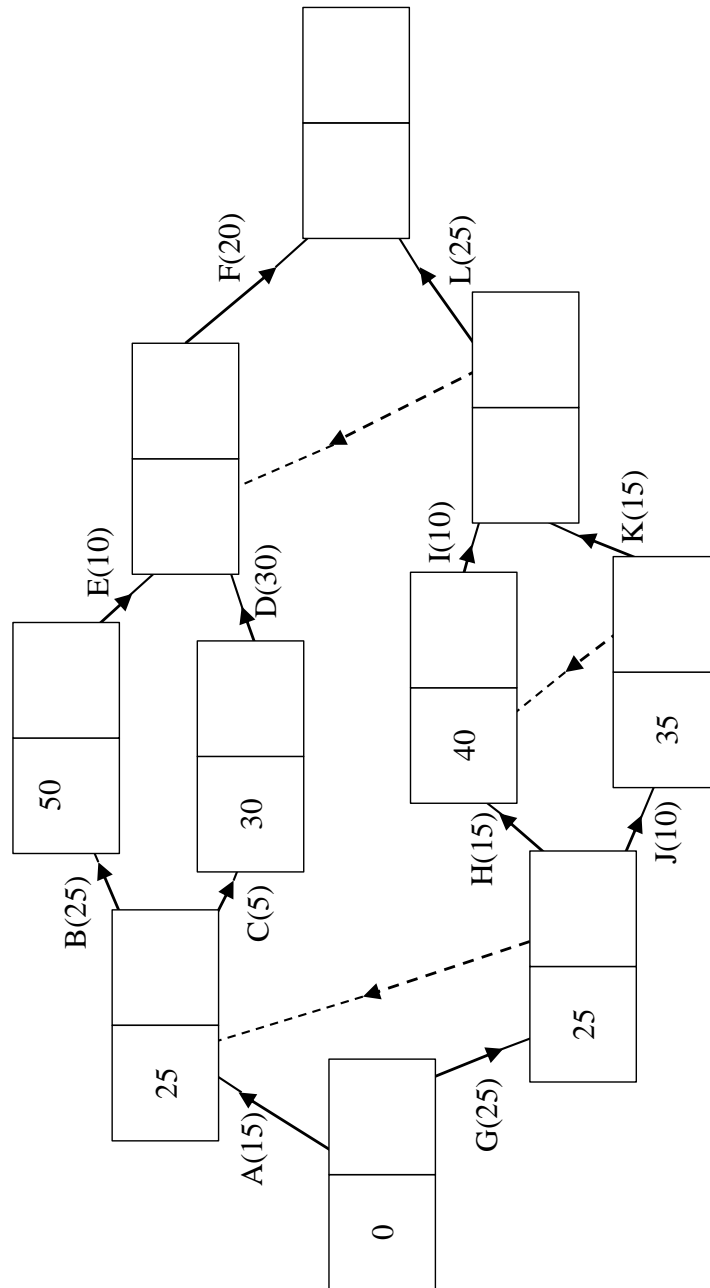
---



---

<b>2 (i)</b>	
<b>2 (ii)</b>	
<b>2 (iii)</b>	
<b>2 (iv)</b>	

3 (i)



A spare copy of the diagram for question 3 (i) can be found on page 14

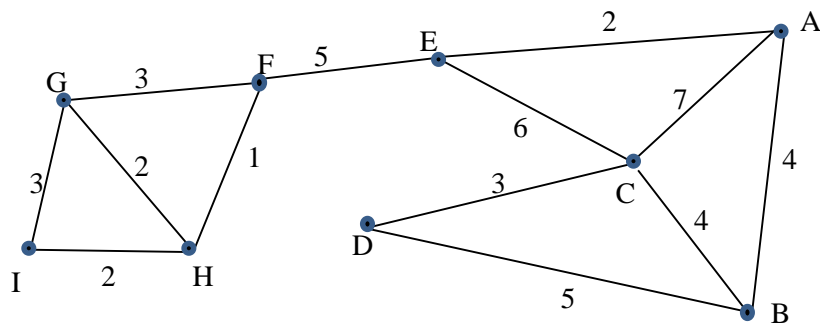
(answer space continued on next page)

<b>3 (i) (continued)</b>	
<b>3 (ii)</b>	
<b>3(iii)</b>	

**DO NOT WRITE IN THIS SPACE**

4 (i)  
(A)

	A	B	C	D	E	F	G	H	I
A		4	7		2				
B	4		4	5					
C	7	4		3	6				
D		5	3						
E	2		6			5			
F					5		3	1	
G						3		2	3
H						1	2		2
I							3	2	



(answer space continued on next page)

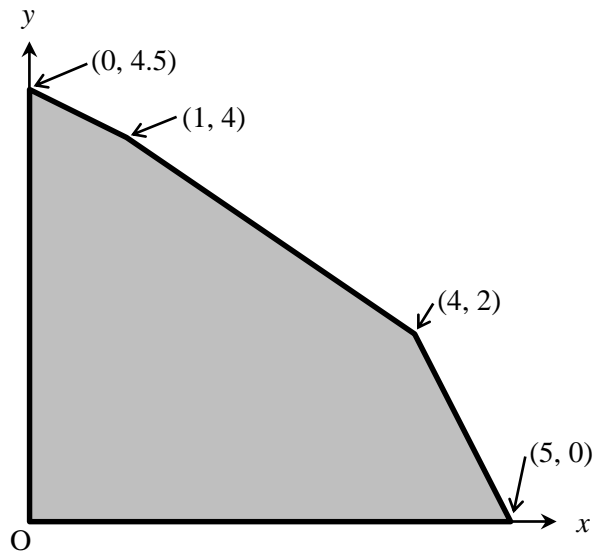


<b>4 (ii)</b>	

**DO NOT WRITE IN THIS SPACE**



5 (i)



5 (ii)

5 (iii)  
(A)

$P$	$x$	$y$	$s_1$	$s_2$	$s_3$	RHS
1	0	0	0	$\frac{1}{6}$	0	$\frac{7}{3}$
0	0	0	1	$-\frac{3}{4}$	$\frac{1}{4}$	1
0	1	0	0	$-\frac{1}{4}$	$\frac{3}{4}$	4
0	0	1	0	$\frac{1}{2}$	$-\frac{1}{2}$	2

$P$	$x$	$y$	$s_1$	$s_2$	$s_3$	RHS

Spare copy of tableau

$P$	$x$	$y$	$s_1$	$s_2$	$s_3$	RHS

5 (iii)  
(B)

---



---

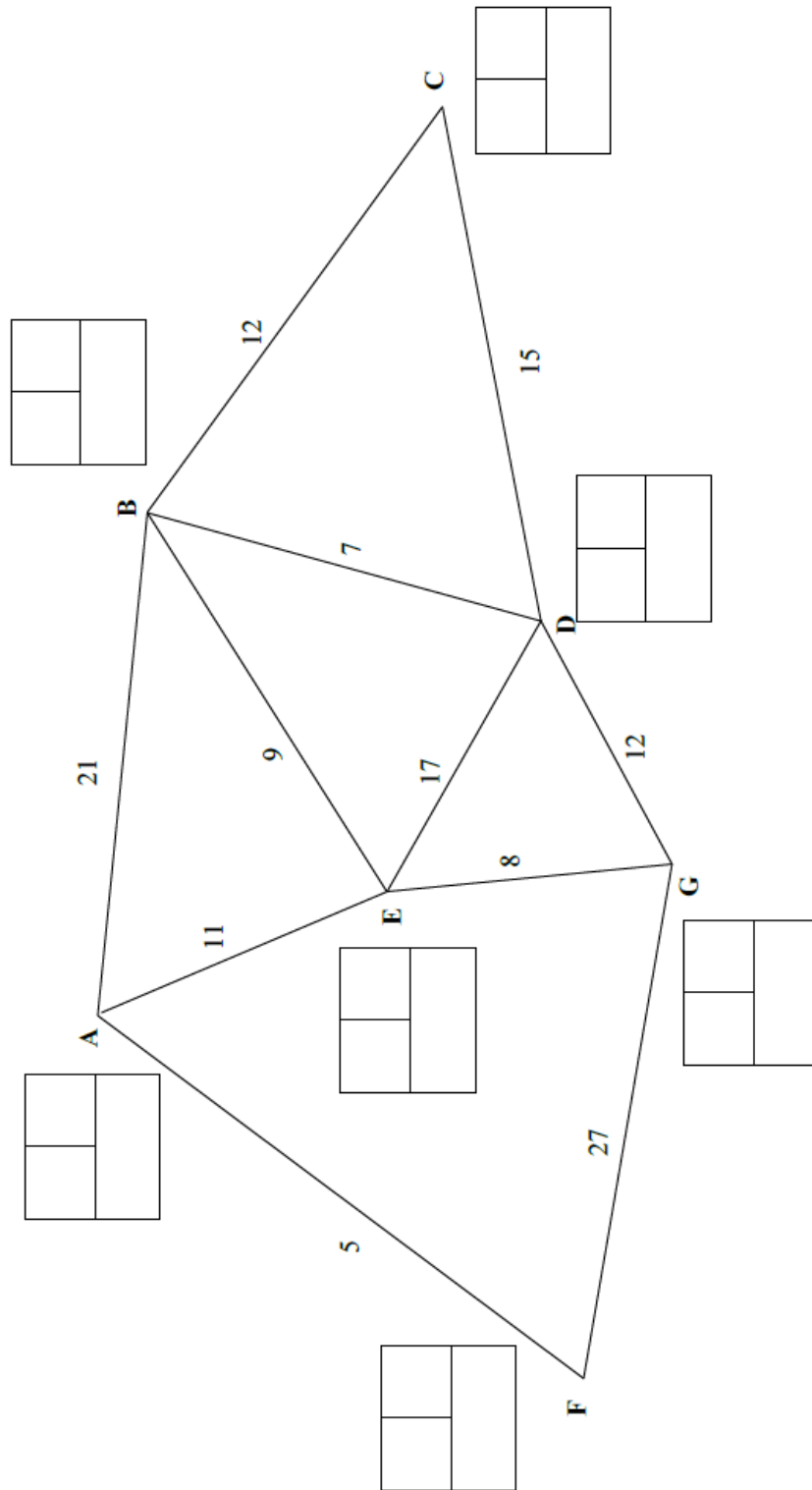


---

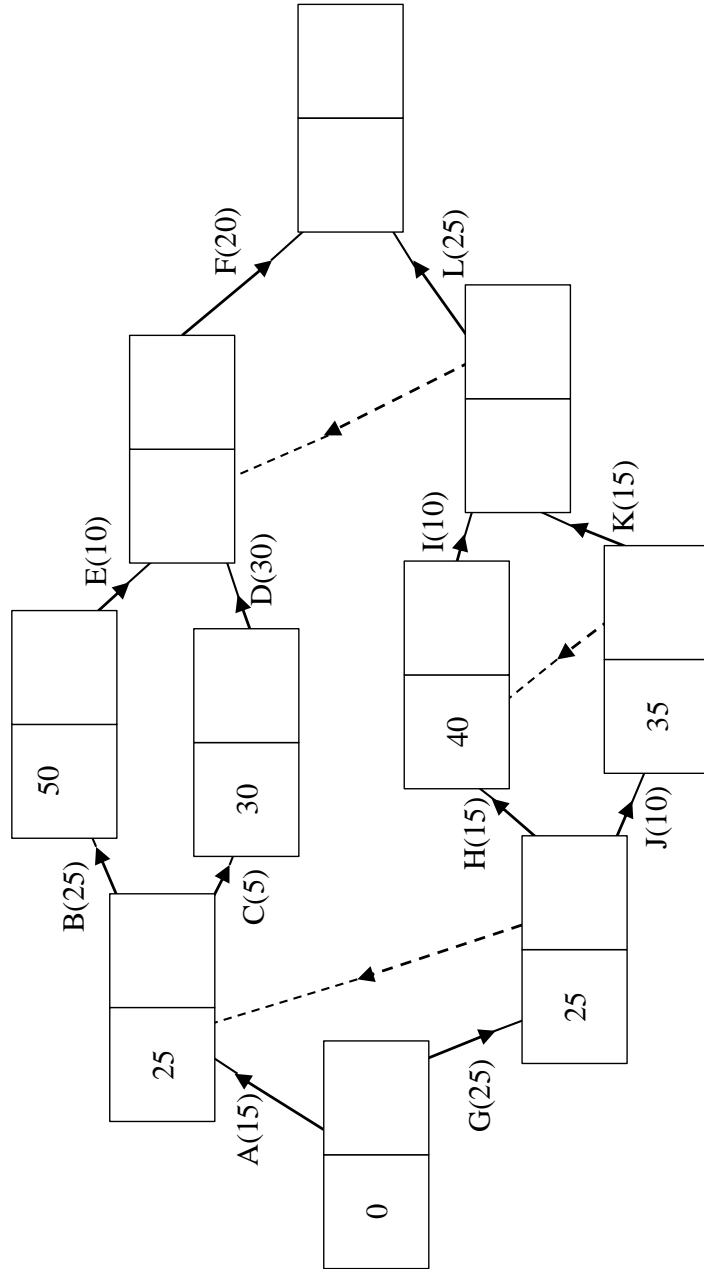
<b>6 (i)</b>	
<b>6 (ii)</b>	
<b>6 (iii)</b>	

<b>6 (iv)</b>	
<b>6 (v)</b>	
<b>6 (vi)</b>	

Spare copy of diagram for question 1



Spare copy of diagram for question 3 (i)



**DO NOT WRITE ON THIS PAGE**

**DO NOT WRITE ON THIS PAGE**

Copyright Information:

OCR is committed to seeking permission to reproduce all third-party content that it uses in the 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](http://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 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