

Thursday 26 May 2022 – Afternoon**AS Level Further Mathematics B (MEI)****Y413/01 Modelling with Algorithms****Printed Answer Booklet****Time allowed: 1 hour 15 minutes****You must have:**

- Question Paper Y413/01 (inside this document)
- the Formulae Booklet for Further Mathematics B (MEI)
- a scientific or graphical calculator

**Please write clearly in black ink. Do not write in the barcodes.**

Centre number

<input type="text"/>				
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Candidate number

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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First name(s)

Last name

INSTRUCTIONS

- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Write your answer to each question in the space provided in the **Printed Answer Booklet**. If you need extra space use the lined pages at the end of the Printed Answer Booklet. The question numbers must be clearly shown.
- Answer **all** the questions.
- Where appropriate, your answer should be supported with working. Marks might be given for using a correct method, even if your answer is wrong.
- Give your final answers to a degree of accuracy that is appropriate to the context.

INFORMATION

- This document has **16** pages.

ADVICE

- Read each question carefully before you start your answer.

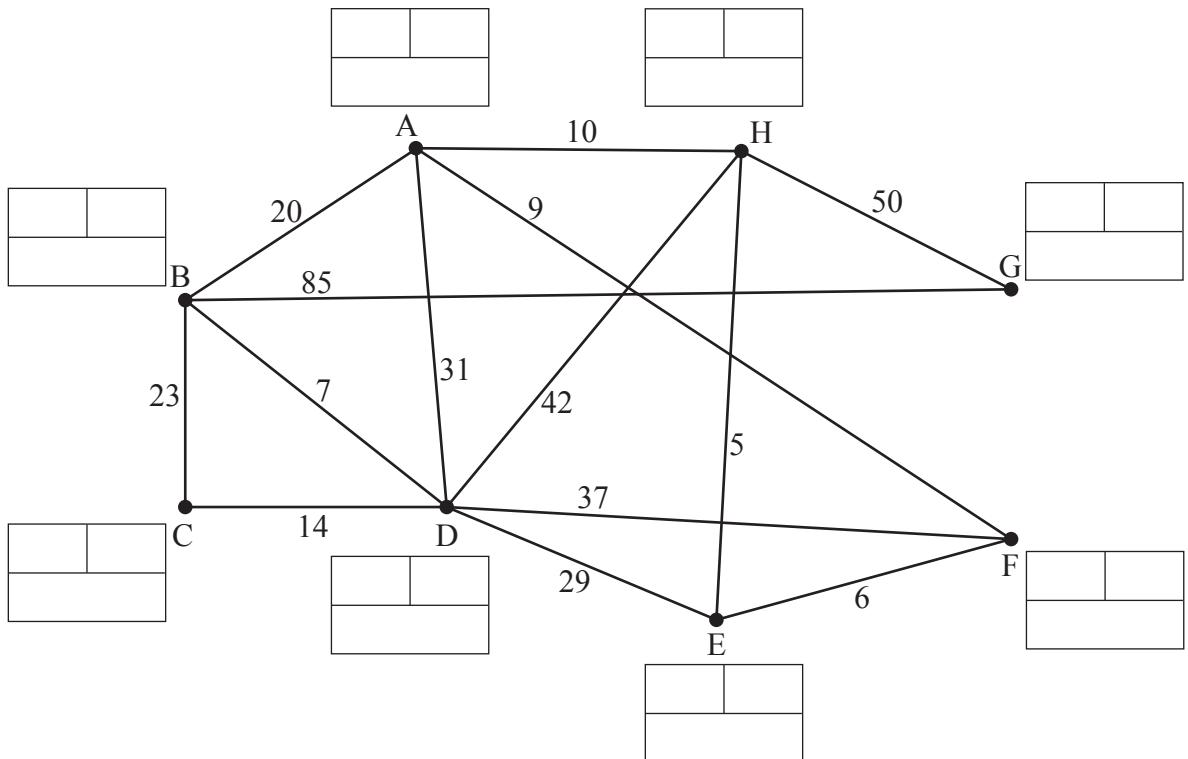
1(a)(i)	
1(a)(ii)	
1(b)(i)	 <p>A diagram showing five points labeled A, B, C, D, and E. Point A is at the top center. Point B is to the lower left of A. Point C is below and to the left of B. Point D is below and to the right of C. Point E is to the right of D.</p>
1(b)(ii)	

2(a)				
2(b)	N	A	B	Is $-10^{-6} < B - A < 10^{-6}$?
Final output				
2(c)				
2(d)				

3(a)

3(b)(i)

Key:
 Order of labelling 
 Working values
 (do not cross out) 

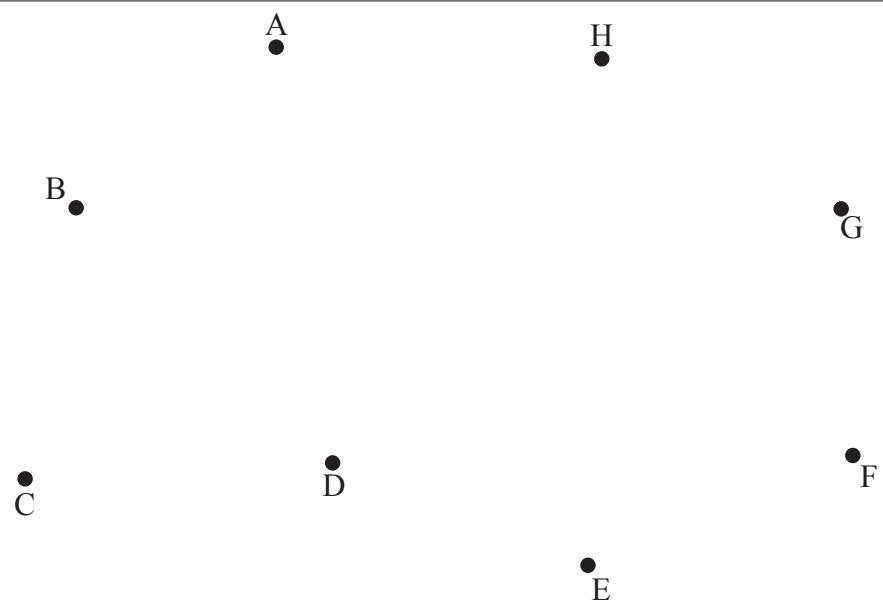


Shortest path from A to C:

Shortest path from C to G:

3(b)(ii)

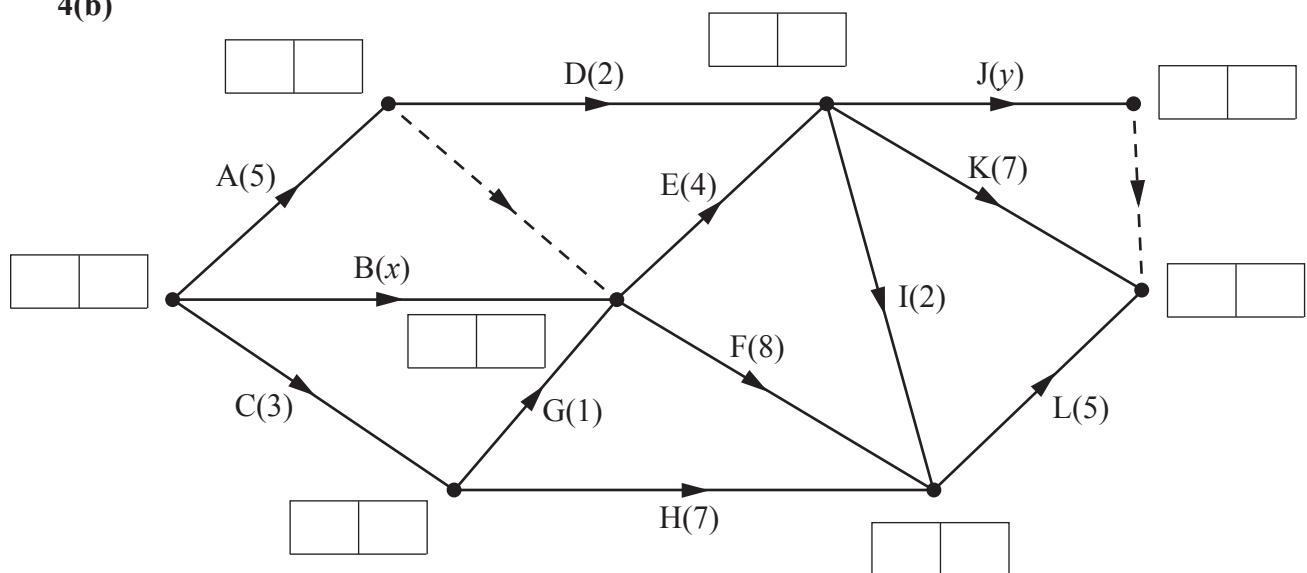
3(c)



4(a)

Activity	Immediate Predecessor(s)
A	
B	
C	
D	
E	
F	
G	
H	
I	
J	
K	
L	

4(b)



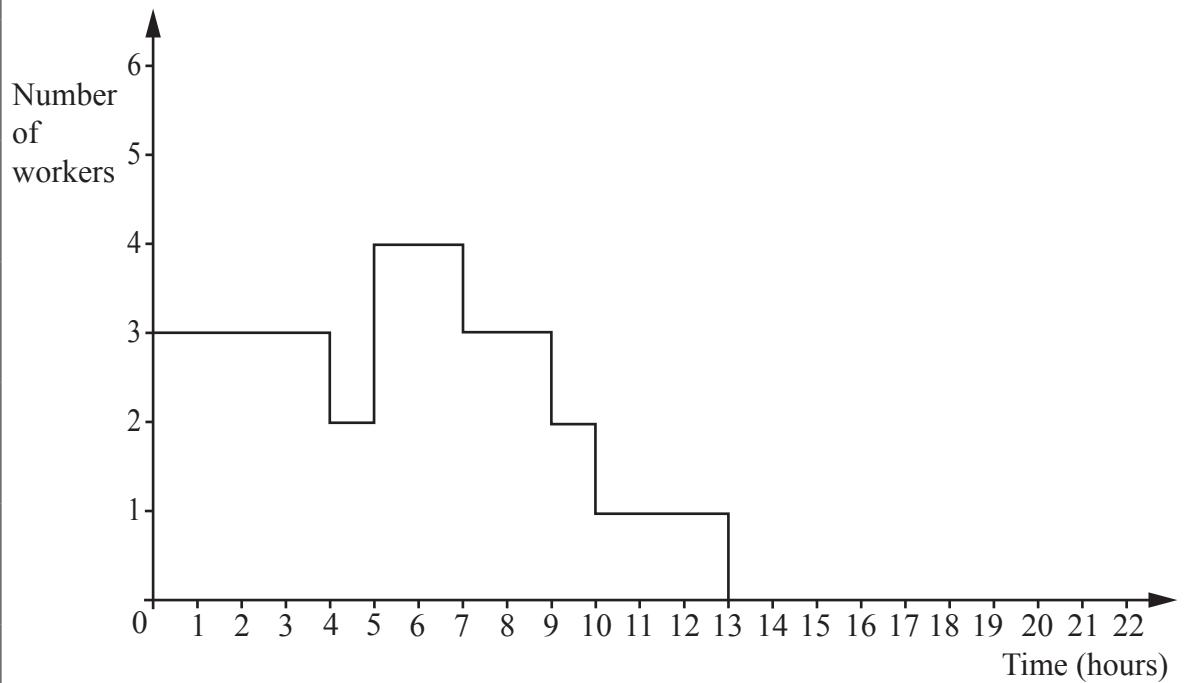
Minimum completion time:

Critical activities:

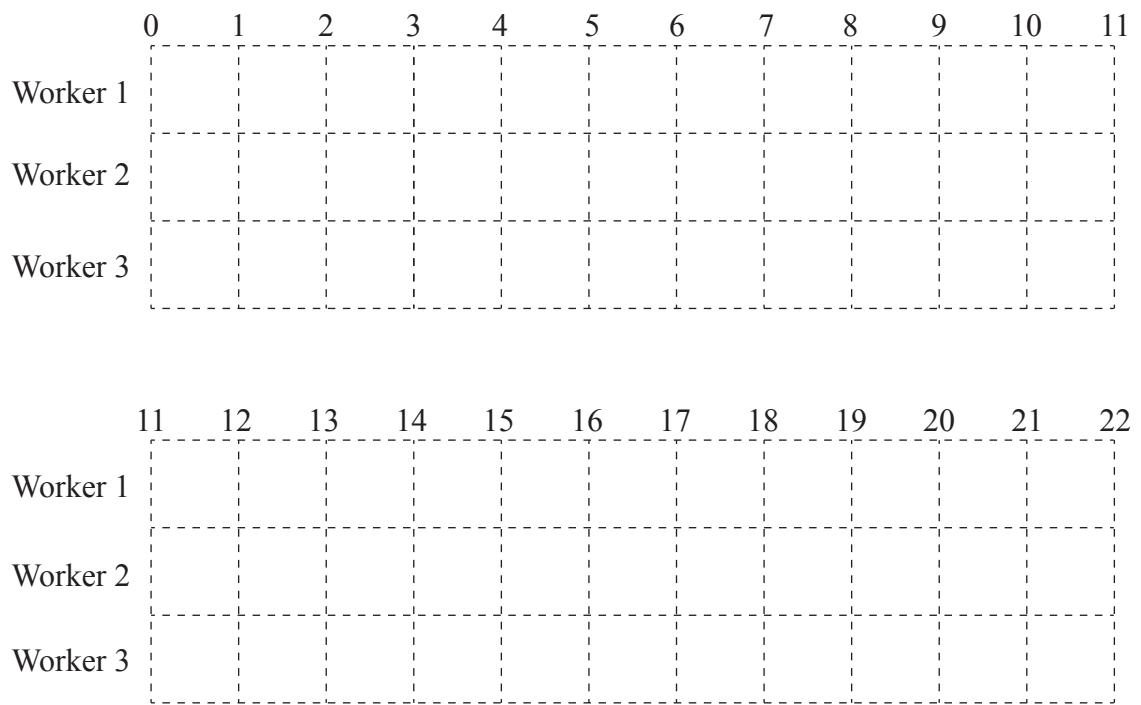
4(c)

4(d)

4(e)

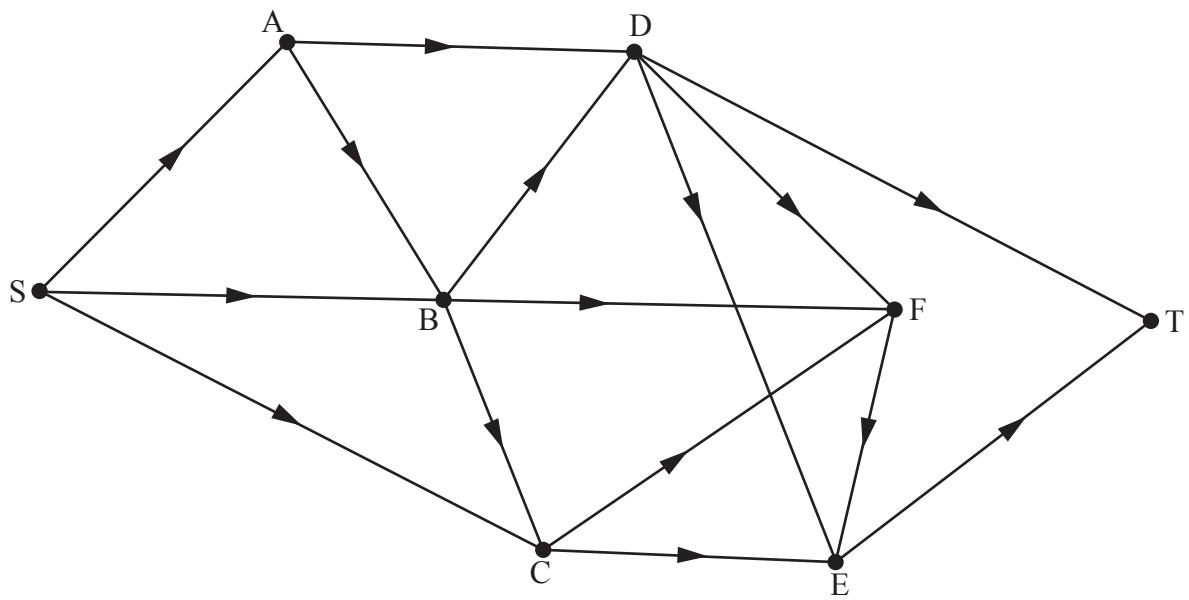


4(f)



5(a)(i)	
5(a)(ii)	
5(b)	
5(c)	
5(d)	
5(e)	

5(f)



5(g)

6(a)

P	x	y	z	s_1	s_2	s_3	s_4	RHS

6(b)(i)

P	x	y	z	s_1	s_2	s_3	s_4	RHS
1	0	$-\frac{10}{3}$	0	0	$\frac{10}{3}$	1	0	0
0	0	$\frac{4}{3}$	0	1	$-\frac{1}{3}$	0	0	32
0	0	$-\frac{1}{3}$	1	0	$\frac{1}{3}$	0	0	0
0	1	-2	0	0	3	1	0	0
0	0	$\frac{104}{3}$	0	0	$-\frac{107}{3}$	-11	1	1000

P	x	y	z	s_1	s_2	s_3	s_4	RHS

6(b)(ii)	
6(c)(i)	
6(c)(ii)	

6(d)

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).



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