

Tuesday 20 October 2020 – Afternoon

A Level Further Mathematics B (MEI) Y433/01

Modelling with Algorithms

Printed Answer Booklet

Time allowed: 1 hour 15 minutes

You must have:

- Question Paper Y433/01 (inside this document)
- the Formulae Booklet for Further Mathematics B (MEI)
- a scientific or graphical calculator



Please write cle	arly in I	black i	nk. I	Do no	ot writ	e in the barcodes.		
Centre number						Candidate number		
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. You can use extra paper if you need to, but you must clearly show your candidate number, the centre number and the question numbers.
- 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 12 pages.

ADVICE

· Read each question carefully before you start your answer.

1(a)	

1(b)	
1(c)	

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	A	В	С	D	Е	F	G	Н	I	J
A	_	9	_	10	13	2	17	6	_	_
В	9	_	14	_	_	_	10	7	2	10
С	_	14	_	8	18	7	_	6	_	5
D	10	_	8	_	_	16	_	11	_	15
Е	13	_	18	_	_	_	7	_	_	8
F	2	_	7	16	_	_	13	10	9	_
G	17	10	_	_	7	13	_	13	11	_
Н	6	7	6	11	_	10	13	_	_	9
I	_	2	_	_	_	9	11	_	_	_
J	_	10	5	15	8	_	_	9	_	_

2(b)	
2 (d)	

PMT

2(c)	Key:
	Order of becoming — Permanent label permanent — Temporary labels (working values)
	Do not cross out your temporary labels.
	A B C
	D
	G H I I
	J
	Length of shortest path from G to J via D =
	spare copy A B C
	D
	G H I I
	J

3(a)	A 45 C 60 G 80 K 55 25 25 45 55 55 L 45 55 M 45 75 J 70 M
3(b)	
3(c)	
3(d)(i)	
3(d)(ii)	

3(e)	
	$\frac{c}{c}$
	$\begin{array}{c} A \\ \end{array}$
	DH
	L
	$\stackrel{\text{E}}{\longrightarrow}$
	M
	IVI
	$F \longrightarrow J$
	Maximum flow =
3(f)	

4 (a)				
	Activity	Duration	Immediate predecessors	
	A			-
	В			
	С			
	D			
	Е			
	F			
	G			
	Н			
	I			
	J			
	K			
4(3)(2)				
4(d)(i)				
4(-1)(!!)				
4(d)(ii)				
4(1)(***)				
4(d)(iii)				

4(b)(c)	

Q	P	x	у	<i>s</i> ₁	s_2	<i>s</i> ₃	a_1	RHS
Q	P	x	У	<i>s</i> ₁	<i>s</i> ₂	<i>s</i> ₃		RHS

P	X	у	s_1	s_2	s_3	RHS
						Γ
P	Х	У	<i>s</i> ₁	s_2	<i>s</i> ₃	RHS

5(c)	
5(d)	

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