

Thursday 22 June 2023 – Afternoon

A Level Further Mathematics A

Y544/01 Discrete Mathematics

Printed Answer Booklet

Time allowed: 1 hour 30 minutes



You must have:

- Question Paper Y544/01 (inside this document)
- the Formulae Booklet for A Level Further Mathematics A
- a scientific or graphical calculator



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

Centre number

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Candidate number

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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 non-exact numerical answers correct to **3** significant figures unless a different degree of accuracy is specified in the question.
- The acceleration due to gravity is denoted by $g \text{ m s}^{-2}$. When a numerical value is needed use $g = 9.8$ unless a different value is specified in the question.

INFORMATION

- The total mark for this paper is **75**.
- The marks for each question are shown in brackets [].
- This document has **16** pages.

ADVICE

- Read each question carefully before you start your answer.

1(a)&(b)	
1(c)	<p>Minimum project completion time:</p>

2(a)	
2(b)	
2(c)	
2(d)	

3(a)

P	x	y	z	s	t	RHS
1	-2	3	-1	0	0	0
0	5	-4	1	1	0	20
0	2	-1	0	0	1	6

P	x	y	z	s	t	RHS

P	x	y	z	s	t	RHS

3(b)

$P =$						
$x =$	$y =$	$z =$				
$s =$	$t =$					

3(c)

3(d)

If needed for working:

P	x	y	z	s	t	RHS

P	x	y	z	s	t	RHS

4(a)	
4(b)	
4(c)	

4(d)	

DO NOT WRITE IN THIS SPACE

5(a)	Original list	3	24	8	1	4	20	30	18
	First pass								
	Second pass								
5(b)(i)									
5(b)(ii)									
5(c)									

6(a)	
6(b)	
	Total weight =
6(c)	
	Total weight =

6(d)(i)	
Lower bound =	
6(d)(ii)	
	Upper bound =
6(e)	

7(a)(i)	Player 2				
		A	B	C	
	X	2	-3	-4	
	Player 1 Y	0	1	3	
	Z	-2	2	4	
Play-safe strategy for player 1 is					
Play-safe strategy for player 2 is					
7(a)(ii)					
7(b)					

7(c)	
7(d)	
$x =$ $y =$ $z =$	
Value of the game to player 1 =	

