

Wednesday 22 June 2022 – Afternoon

A Level Further Mathematics A

Y544/01 Discrete Mathematics

Printed Answer Booklet

Time allowed: 1 hour 30 minutes



- (544/01 (inside this document) oklet 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						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. If you need extra space use the lined pages at the end of the Printed Answer Booklet. The guestion 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 gms^{-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.

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PLEASE DO NOT WRITE ON THIS PAGE

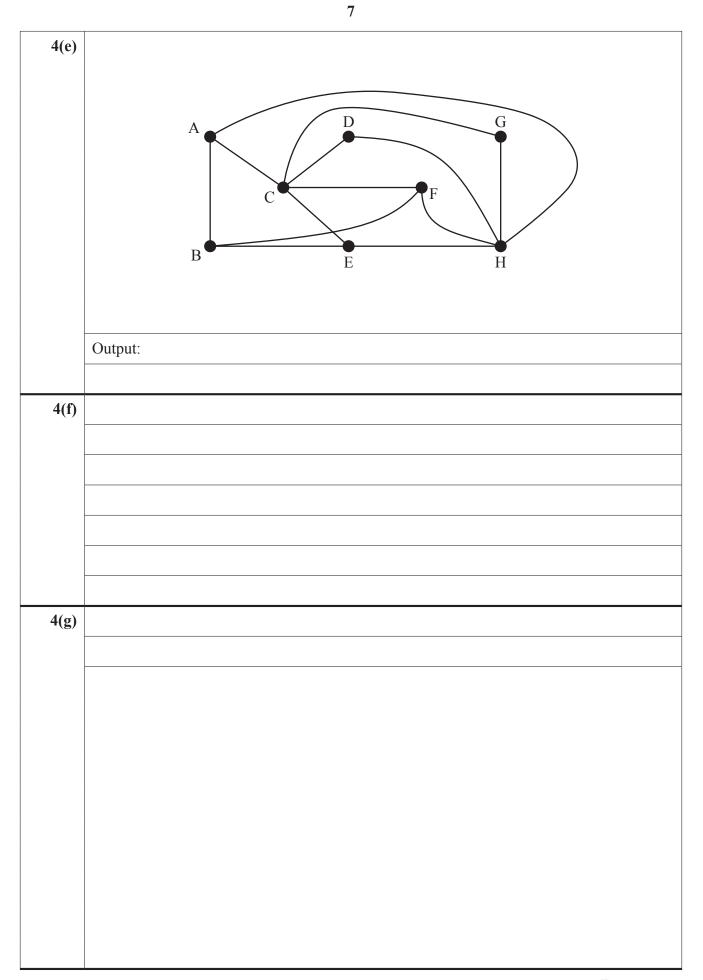
1(a)	
1(b)	
1(c)	

2(a)		
2(b)		
	Minimum project completion time =	minutes
2(c)		

3(a)	
3(b)	
3(a)	
3(c)	
3(d)	
3(e)	

5

4(a)	
4(1-)	
4(b)	
4(c)	
4(d)	

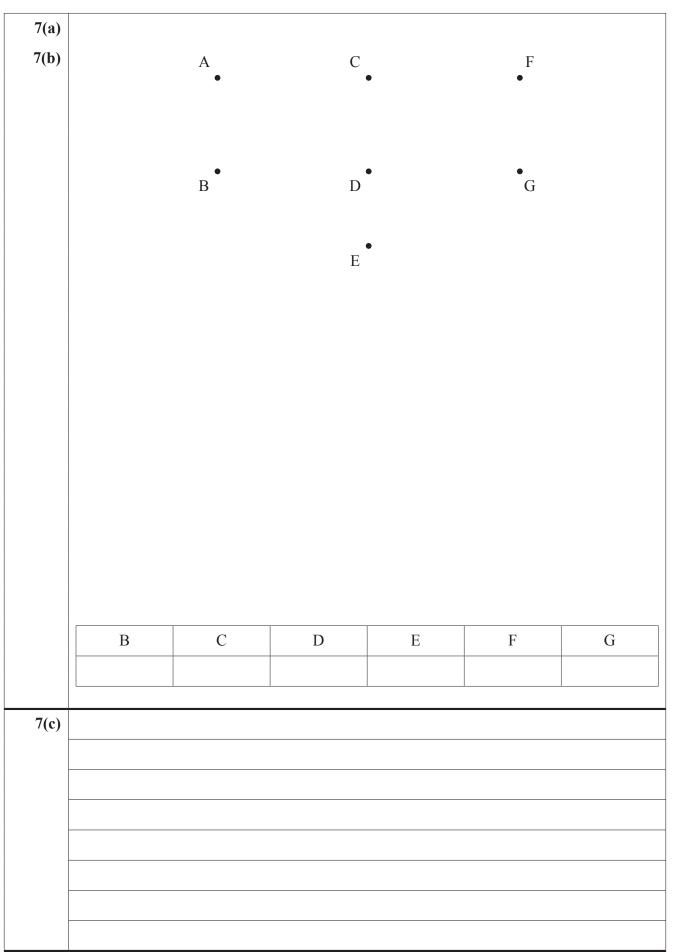


5(a)				Dlavar 2		
			Х	Player 2 Y	Z	
	_	A	(6, 0)	(1, 7)	(5, 6)	
	Player 1	В	(9, 4)	(2, 6)	(8, 1)	
	_	C	(6, 8)	(1, 3)	(7, 2)	
-	Play-safe strategy for pla	iyer 1 is				
-	Play-safe strategy for pla	yer 2 is				
5(b)						
5(b)						
5(b)						
5(b) - -						
-				Player 2		
-				Player 2 Y		
-		A	X (6, 0)	I	Z (5, 6)	
5(b) - - 5(c)	Player 1	A B	(6, 0) (9, 4)	Y	(5, 6) (8, 1)	
-	Player 1		(6, 0)	Y (1, 7)	(5, 6)	
-	Player 1	В	(6, 0) (9, 4)	Y (1, 7) (2, 6)	(5, 6) (8, 1)	
-	Player 1	В	(6, 0) (9, 4)	Y (1, 7) (2, 6)	(5, 6) (8, 1)	
-	Player 1	В	(6, 0) (9, 4)	Y (1, 7) (2, 6)	(5, 6) (8, 1)	
-	Player 1	В	(6, 0) (9, 4)	Y (1, 7) (2, 6)	(5, 6) (8, 1)	

5(d)(i)		
	<i>p</i> =	
5(d)(ii)		
	Player	expects to win the greater number of points when player 1 chooses B

-								
-	Р	x	у	Z	S	t	u	RHS
(a)(ii)								
-								
-		1	1			1	1	1
	<i>P</i>	<i>x</i>	У	Z	S	t	u	RHS
-								
-								
-								
-								
-	Snare table	eau (if requi	red)					
-	P		y	Z	S	t	u	RHS

6(b)(i)	
6(b)(ii)	x =
	y =
	z =
6(b)(iii)	
6(c)	
6(d)	



7(d)	
	seconds
7(e)(i)	
	Lower bound = metres
7(a)(ii)	
7(e)(ii)	
	Upper bound = metres
7(e)(iii)	
	Length of shortest possible tour = metres

ADDI I IUNAL ANSWER SFACE	ADDITIONAL	ANSWER	SPACE
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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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