

Paper Reference 9FM0/3D
Pearson Edexcel
Level 3 GCE

Total Marks

Further Mathematics

Advanced

PAPER 3D: Decision Mathematics 1

Friday 23 June 2023 – Afternoon

Time: 1 hour 30 minutes

Answer Booklet

In the boxes below, write your name, centre number and candidate number.

Surname					
Other names					
Centre Number					
Candidate Number					

Read the instructions on the next page.

X72799A

INSTRUCTIONS

Do not return the Question Paper with the Answer Booklet.

**THIS ANSWER BOOKLET MUST BE RETURNED
WITH THE DIAGRAM BOOKLET AT THE END OF
THE EXAMINATION.**

- 1. Refer to Diagram 1, Diagram 2 and Diagram 3 in the Diagram Booklet.**

Answer lines continue on the next three pages.

[illegible]

1. continued.

[illegible]

Turn over

1. continued.

[illegible]

Turn over

1. continued.

(e) Initial time matrix

	A	B	C	D	E
A	—				
B		—			
C			—		
D				—	
E					—

(continued on the next page)

Turn over

1. (e) continued.

Spare copy for Initial time matrix

	A	B	C	D	E
A	—				
B		—			
C			—		
D				—	
E					—

(continued on the next page)

1. continued.

(f) Final iteration

	A	B	C	D	E
A	–				
B		–			
C			–		
D				–	
E					–

(continued on the next page)

1. (f) continued.

Spare copy for Final iteration

	A	B	C	D	E
A	–				
B		–			
C			–		
D				–	
E					–

(Total for Question 1 is 7 marks)

2. Refer to Diagram 4, Diagram 5, Diagram 6 and Diagram 7 in the Diagram Booklet.

Answer lines continue on the next three pages.

2. continued.

[illegible]

Turn over

2. continued.

[illegible]

Turn over

2. continued.

(Total for Question 2 is 7 marks)

- 3. Refer to Diagram 8 and Diagram 9 in the Diagram Booklet.**

Answer lines continue on the next three pages.

[illegible]

3. continued.

[illegible]

Turn over

3. continued.

[illegible]

Turn over

3. continued.

(Total for Question 3 is 8 marks)

4.	15	22	3	9	23	x
	5	4	18	20	13	

[illegible]

Turn over

4. continued.

15

22

3

9

23

X

5

4

18

20

13

[illegible]

4. continued.

15	22	3	9	23	x
5	4	18	20	13	

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

4. continued.

15

22

3

9

23

X

5

4

18

20

13

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

4. continued.

15

22

3

9

23

X

5

4

18

20

13

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

4. continued.

15	22	3	9	23	x
5	4	18	20	13	

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

4. continued.

15

22

3

9

23

X

5

4

18

20

13

[illegible]

4. continued.

15

22

3

9

23

X

5

4

18

20

13

[illegible]

4. continued.

15	22	3	9	23	x
5	4	18	20	13	

[illegible]

4. continued.

15

22

3

9

23

X

5

4

18

20

13

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

4. continued.

15

22

3

9

23

X

5

4

18

20

13

[illegible]

4. continued.

15	22	3	9	23	x
5	4	18	20	13	

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

4. continued.

15	22	3	9	23	x
5	4	18	20	13	

(Total for Question 4 is 12 marks)

- 5. Refer to Diagram 10 and Diagram 11 in the Diagram Booklet.**

Answer lines continue on the next eight pages.

[illegible]

5. continued.

[illegible]

Turn over

5. continued.

[illegible]

Turn over

5. continued.

[illegible]

Turn over

5. continued.

[illegible]

Turn over

5. continued.

[illegible]

Turn over

5. continued.

[illegible]

Turn over

5. continued.

[illegible]

Turn over

5. continued.

(Total for Question 5 is 13 marks)

6. Refer to Diagram 12 and Diagram 13 in the Diagram Booklet.

Answer space and lines continue on the next five pages.

6. continued.

6. continued.

Turn over

6. continued.

[illegible]

Turn over

6. continued.

[illegible]

Turn over

6. continued.

(Total for Question 6 is 9 marks)

- 7. Refer to Diagram 14 and Diagram 15 in the Diagram Booklet.**

Answer lines continue on the next five pages.

[illegible]

7. continued.

[illegible]

Turn over

7. continued.

[illegible]

Turn over

7. continued.

[illegible]

Turn over

7. continued.

[illegible]

Turn over

7. continued.

(continued on the next page)

7. continued.

b.v.	x	y	z								Value
P											
I											

(continued on the next page)

Turn over

7. continued.

Spare copy

b.v.	x	y	z								Value
P											
I											

Parts (c), (d) and (e) to be answered on the following pages.

Turn over

7. continued.

b.v.	x	y	z	s ₁	s ₂	s ₃	s ₄	Value	Row Ops
P									

(continued on the next page)

7. continued.

Spare copy

b.v.	x	y	z	s ₁	s ₂	s ₃	s ₄	Value	Row Ops
P									

(continued on the next page)

Turn over

7. continued.

Answer lines continue on the next page.

[illegible]

7. continued.

(Total for Question 7 is 19 marks)

TOTAL FOR PAPER IS 75 MARKS

END OF PAPER
