

Paper Reference 9FM0/3D

Pearson Edexcel

Level 3 GCE

Total Marks

Further Mathematics

Advanced

PAPER 3D: Decision Mathematics 1

Friday 20 June 2025 – Afternoon

Time: 1 hour 30 minutes

Answer Booklet

**THIS DOCUMENT MUST BE RETURNED TO
PEARSON AT THE END OF THE EXAMINATION.**

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

Surname					
Other names					
Centre Number					
Candidate Number					

1.

4.7

2.9

5.5

1.4

5.8

2.8

3.8

6.5

5.1

6.3

4.1

Answer lines continue on the next two pages.

[illegible]

1. continued.

4.7

2.9

5.5

1.4

5.8

2.8

3.8

6.5

5.1

6.3

4.1

Turn over

1. continued.

4·7

2·9

5·5

1·4

5·8

2·8

3·8

6·5

5·1

6·3

4·1

(Total for Question 1 is 5 marks)

Turn over

2.

271	828	182	845	904
523	536	028	747	135

Answer lines continue on the next three pages.

Turn over

2. continued.

271	828	182	845	904
523	536	028	747	135

Turn over

2. continued.

271	828	182	845	904
523	536	028	747	135

Turn over

2. continued.

271

828

182

845

904

523

536

028

747

135

(continued on the next page)

Turn over

2. continued.

(c) Refer to Diagram 1 in the Diagram Booklet.

**You may not need to use all the rows
in the table.**

**It may not be necessary to complete all
boxes in each row.**

Answer lines continue on the next two pages.

Output: _____

Turn over

2. continued.

[illegible]

Turn over

2. continued.

(Total for Question 2 is 10 marks)

3. Refer to Diagram 2, Diagram 3 and Diagram 4 in the Diagram Booklet.

(a) Initial time matrix

	A	B	C	D	E	F	G
A							
B							
C							
D							
E							
F							
G							

(continued on the next page)

3. (a) continued.

Spare copy for Initial time matrix

	A	B	C	D	E	F	G
A							
B							
C							
D							
E							
F							
G							

(continued on the next page)

Turn over

3. continued.

(b) Fourth iteration

	A	B	C	D	E	F	G
A							
B							
C							
D							
E							
F							
G							

(continued on the next page)

Turn over

3. (b) continued.

Spare copy for Fourth iteration

	A	B	C	D	E	F	G
A							
B							
C							
D							
E							
F							
G							

(continued on the next page)

Turn over

3. (b) continued.

Fifth iteration

	A	B	C	D	E	F	G
A							
B							
C							
D							
E							
F							
G							

(continued on the next page)

Turn over

3. (b) continued.

Spare copy for Fifth iteration

	A	B	C	D	E	F	G
A							
B							
C							
D							
E							
F							
G							

(continued on the next page)

Turn over

3. continued.

Answer lines continue on the next two pages.

[illegible]

Turn over

3. continued.

[illegible]

Turn over

3. continued.

[illegible]

(Total for Question 3 is 10 marks)

Turn over

- 4. Refer to Diagram 5 and Diagram 6 in the Diagram Booklet.**

Answer lines continue on the next eight pages.

[illegible]

4. continued.

[illegible]

Turn over

4. continued.

[illegible]

Turn over

4. continued.

[illegible]

Turn over

4. continued.

[illegible]

Turn over

4. continued.

[illegible]

Turn over

4. continued.

[illegible]

Turn over

4. continued.

[illegible]

Turn over

4. continued.

[illegible]

(Total for Question 4 is 13 marks)

Turn over

5. Refer to Diagram 7 in the Diagram Booklet.

Answer lines continue on the next three pages.

[illegible]

5. continued.

[illegible]

Turn over

5. continued.

[illegible]

Turn over

5. continued.

(continued on the next page)

5. continued.

(e) (i)

b.v.	X	Y	Z	s_1	s_2	s_3	Value
X	1	0	$-\frac{3}{4}$	$\frac{1}{8}$	0	$-\frac{1}{4}$	$\frac{5}{8}$
s_2	0	0	$\frac{9}{4}$	$\frac{1}{8}$	1	$\frac{3}{4}$	$\frac{117}{8}$
Y	0	1	$-\frac{1}{4}$	$\frac{3}{8}$	0	$\frac{1}{4}$	$\frac{63}{8}$
Q	0	0	$-\frac{5}{4}$	$\frac{15}{8}$	0	$\frac{1}{4}$	$\frac{267}{8}$

(continued on the next page)

Turn over

5. (e) (i) continued.

b.v.	X	Y	Z	S ₁	S ₂	S ₃	Value	Row Ops
Q								

(continued on the next page)

5. continued.

(e) (i) Spare copy

b.v.	X	Y	Z	S ₁	S ₂	S ₃	Value	Row Ops
Q								

(continued on the next page)

5. continued.

(e) (ii)

(Total for Question 5 is 12 marks)

6. Refer to Diagram 8, Diagram 9, Diagram 10 and Diagram 11 in the Diagram Booklet.

(a) Table 1

Activity	Immediately preceding activities
A	
B	
C	
D	
E	
F	

Activity	Immediately preceding activities
G	
H	
I	
J	
K	
L	
M	

(continued on the next page)

Turn over

6. (a) continued.

Spare copy for Table 1

Activity	Immediately preceding activities
A	
B	
C	
D	
E	
F	

Activity	Immediately preceding activities
G	
H	
I	
J	
K	
L	
M	

(continued on the next page)

Turn over

6. continued.

(d)

(continued on the next page)

6. (d) continued.

Table 2

Activity	Number of Workers
A	
B	
C	
D	
E	
F	

Activity	Number of Workers
G	
H	
I	
J	
K	
L	
M	

(continued on the next page)

Turn over

6. (d) continued.

Spare copy for Table 2

Activity	Number of Workers
A	
B	
C	
D	
E	
F	

Activity	Number of Workers
G	
H	
I	
J	
K	
L	
M	

(Total for Question 6 is 13 marks)

Turn over

- 7. Refer to Diagram 12 and Diagram 13 in the Diagram Booklet.**

Answer lines continue on the next three pages.

[illegible]

7. continued.

[illegible]

Turn over

7. continued.

[illegible]

Turn over

7. continued.

(continued on the next page)

Turn over

7. continued.

b.v.																				Value
P																				

(continued on the next page)

7. continued.
Spare copy

b.v.																				Value
P																				

(continued on the next page)

7. continued.

Answer lines continue on the next five pages.

[illegible]

Turn over

7. continued.

[illegible]

Turn over

7. continued.

[illegible]

Turn over

7. continued.

[illegible]

Turn over

7. continued.

[illegible]

Turn over

7. continued.

(Total for Question 7 is 12 marks)

TOTAL FOR PAPER IS 75 MARKS

END OF PAPER