

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Centre Number

Candidate Number

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Pearson Edexcel Level 3 GCE

Time 1 hour 30 minutes

**Paper
reference**

9FM0/3D

Further Mathematics

Advanced

PAPER 3D: Decision Mathematics 1

Answer Book

Do not return the question paper with the answer book.

Total Marks

Turn over ►

P72094A

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Pearson

1.

4.3 6.1 5.1 4.7 2.5 5.9 3.4 1.7 2.1 0.4 1.3

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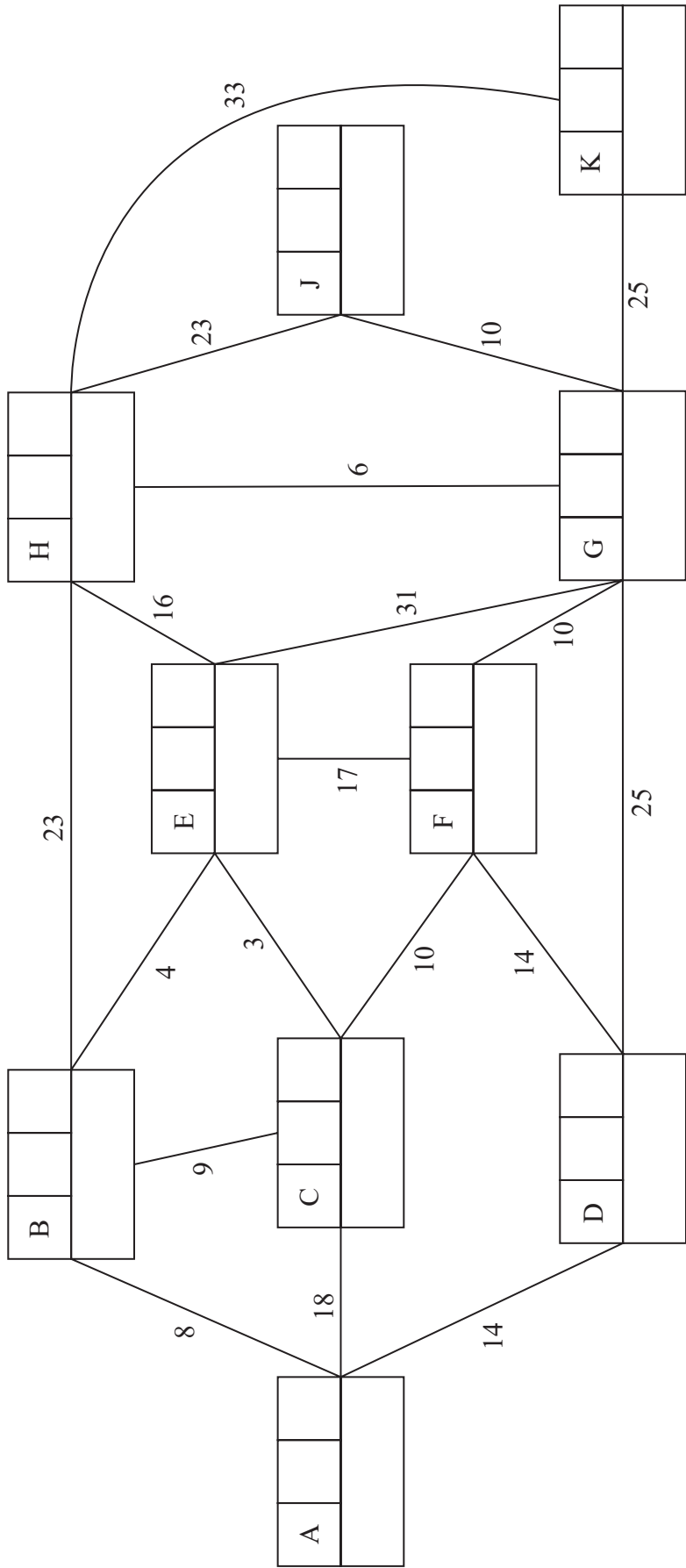
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(Total for Question 1 is 5 marks)





2.



Key:

Vertex	Order of labelling	Final value
Working value		

Shortest path from A to K:

Length of shortest path from A to K:

Question 2 continued

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Question 2 continued

Handwriting practice area with horizontal lines.

(Total for Question 2 is 13 marks)



3.

(a)

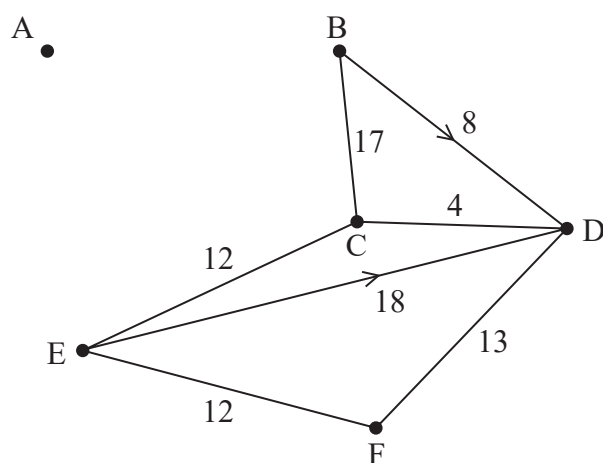


Diagram 1

(b)

There are spare copies of these tables, if required, on Page 9.

3rd iteration

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

4th iteration

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



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Question 3 continued

Lined area for writing the answer to Question 3.



Question 3 continued

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



[illegible]

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

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

4.

b.v.	x	y	z	s_1	s_2	s_3	a_1	a_2	Value
s_1	2	3	4	1	0	0	0	0	13
a_1	1	-2	2	0	-1	0	1	0	8
a_2	3	0	-4	0	0	-1	0	1	12
P	$2 - 4M$	$-3 + 2M$	$-1 + 2M$	0	M	M	0	0	$-20M$



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Question 4 continued

Handwriting practice area with horizontal lines.

(Total for Question 4 is 6 marks)



5.

Activity	Immediately preceding activity	Activity	Immediately preceding activity
A		F	
B		G	
C		H	
D		J	
E		K	

Table 1

(b)

(c)(i)

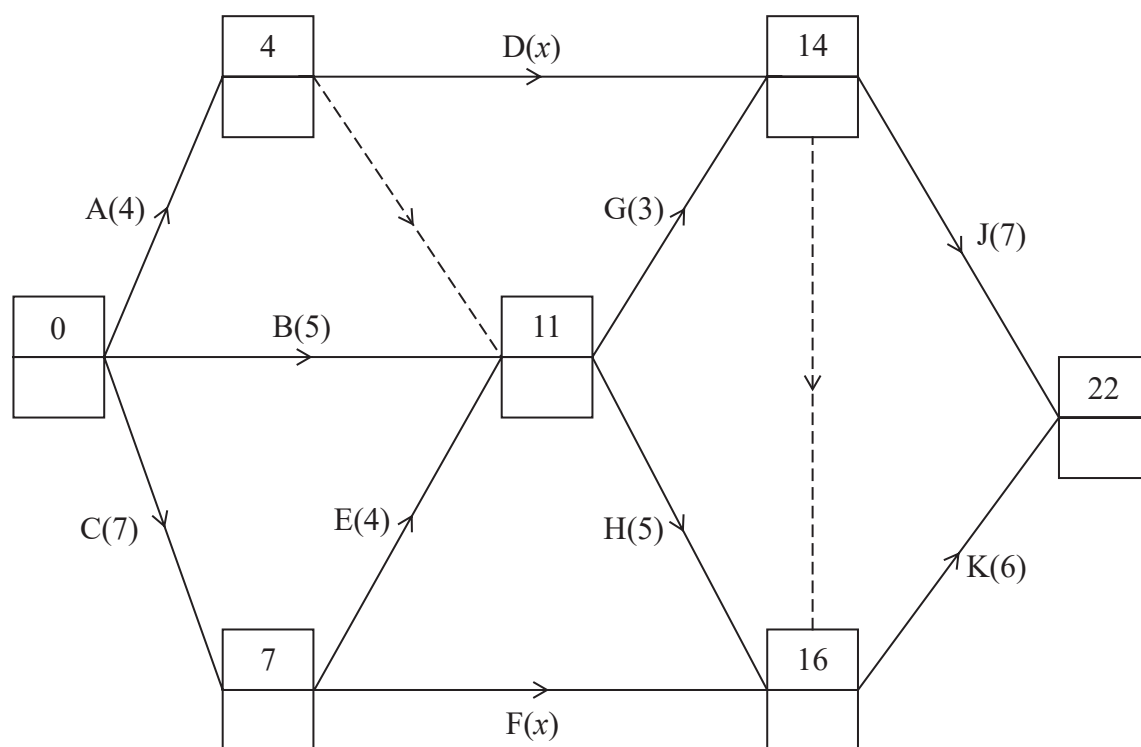


Diagram 1

(c)(ii)



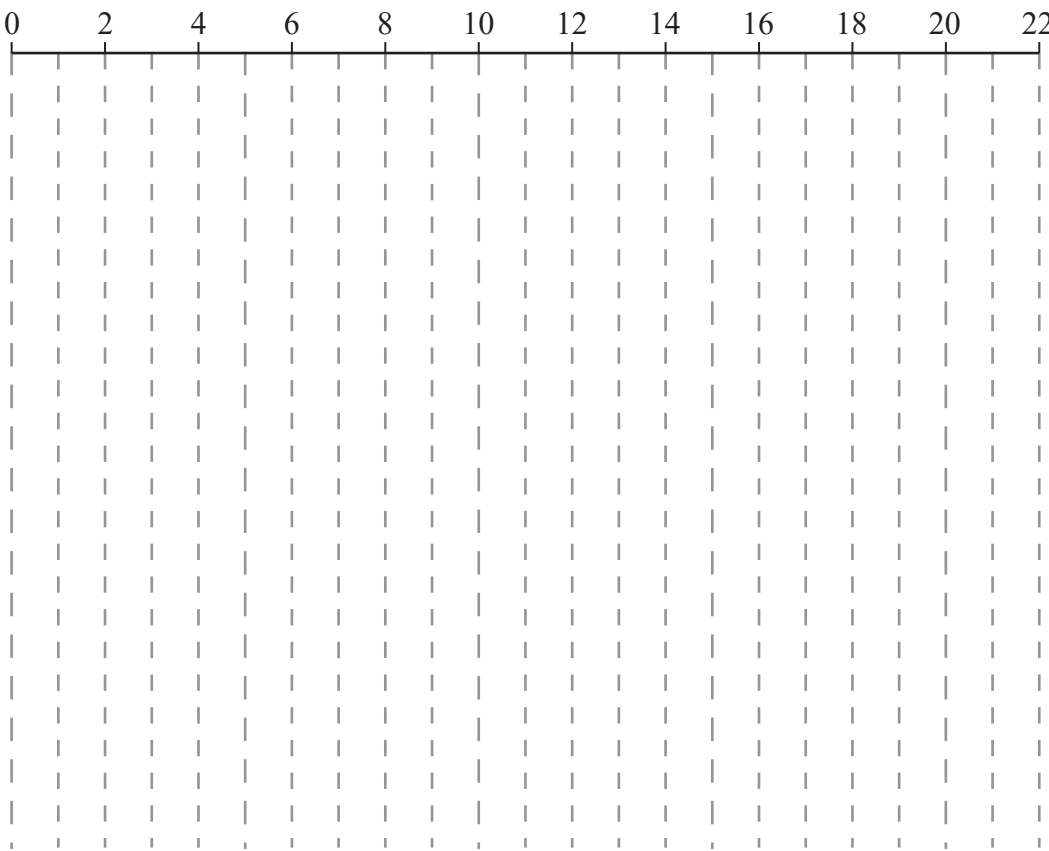
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(d)

(e)

Activity	Number of workers	Activity	Number of workers
A		F	
B		G	
C		H	
D		J	
E		K	

Table 2



Grid 1

(Total for Question 5 is 14 marks)



6.

*You may not need to use all the rows in this table.**It may not be necessary to complete all the boxes in each row.*

n	a	b	c

Output: _____



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Question 6 continued

17 21 24 14 23 13 15 19 28 20

Lined area for writing answers.



Question 6 continued

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

Question 6 continued

Lined area for writing answers.

(Total for Question 6 is 12 marks)



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This image shows a single sheet of white paper with horizontal blue or grey 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.

b.v.	x	y					Value
P							

Question 7 continued

b.v.	x	y	s_1	s_2	s_3	s_4	Value
s_1	0	0	1	$-\frac{3}{5}$	0	$\frac{1}{5}$	1
x	1	0	0	$\frac{1}{5}$	0	$-\frac{2}{5}$	2
s_3	0	0	0	$-\frac{11}{5}$	1	$\frac{12}{5}$	22
y	0	1	0	$\frac{2}{5}$	0	$\frac{1}{5}$	5
P	0	0	0	$\frac{1}{5} + \frac{2}{5}k$	0	$-\frac{2}{5} + \frac{1}{5}k$	$5k + 2$

b.v.	x	y	s_1	s_2	s_3	s_4	Value	Row Ops
P								

Spare copy

b.v.	x	y	s_1	s_2	s_3	s_4	Value	Row Ops
P								



Question 7 continued

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(Total for Question 7 is 15 marks)

TOTAL FOR PAPER IS 75 MARKS

