

Further Mathematics
Advanced
PAPER 4D: Decision Mathematics 2

Monday 24 June 2024 – Afternoon

Diagram Booklet

THIS DIAGRAM BOOKLET MUST BE RETURNED WITH THE
ANSWER BOOKLET 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					

INSTRUCTIONS

There are two copies of each diagram in case you need them.

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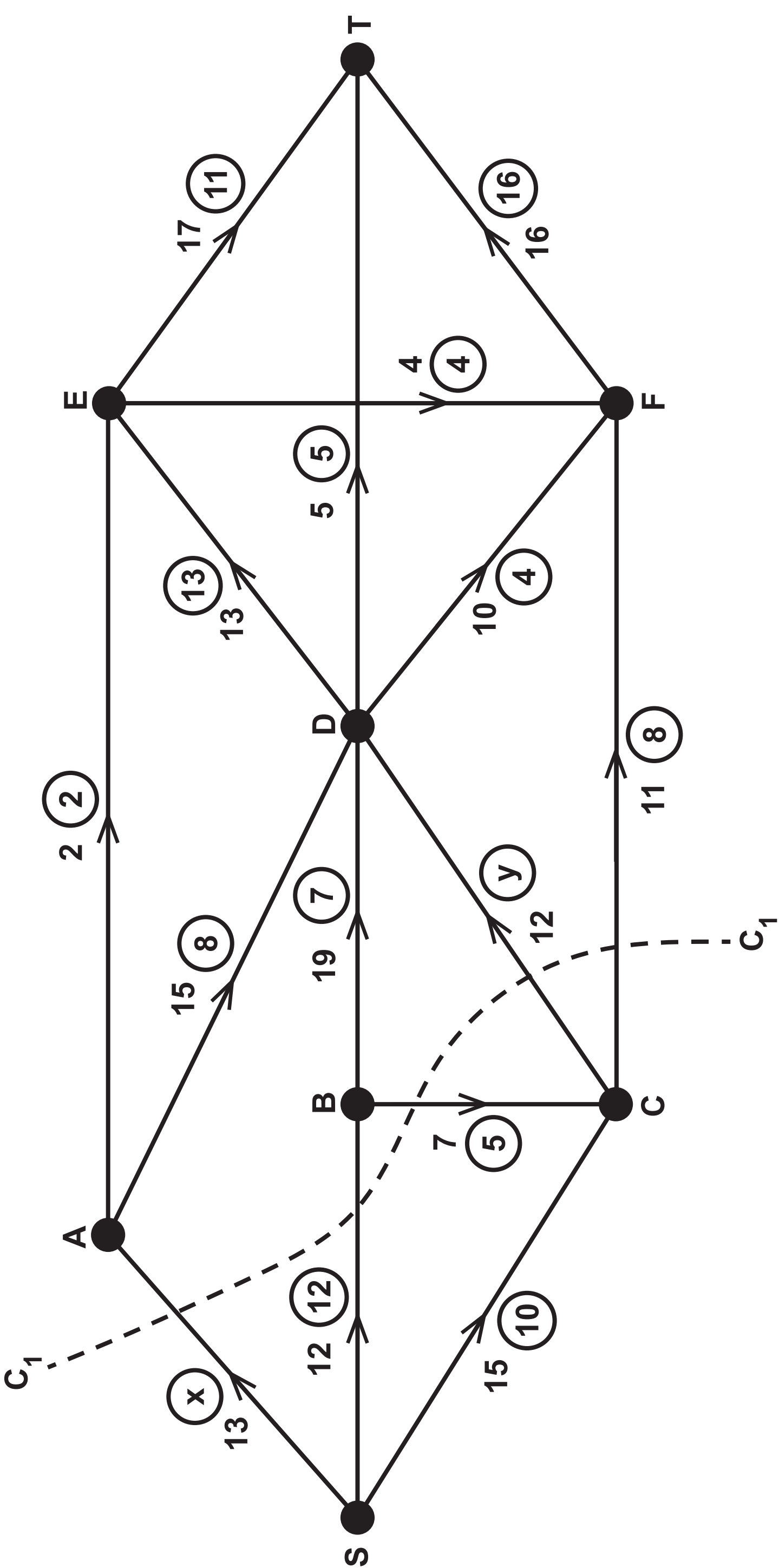
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Diagram 1



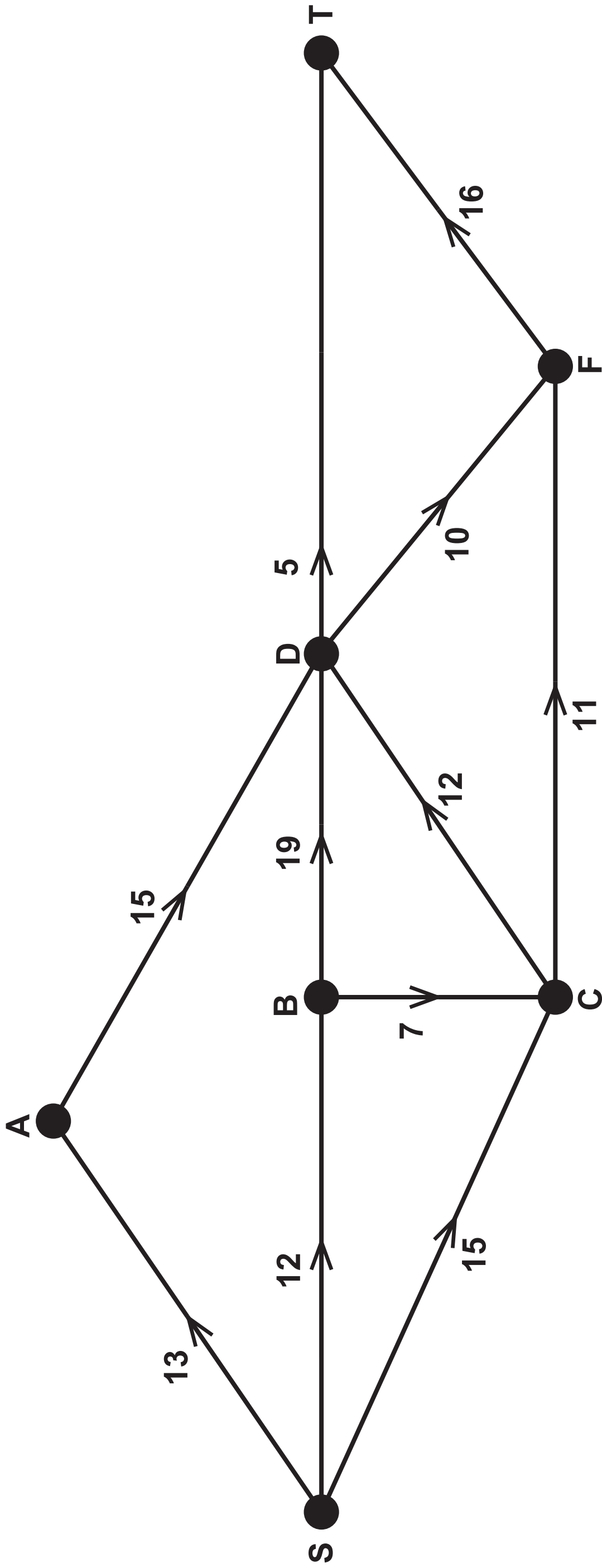


Diagram 3

	A	B	C	Supply
E	23	28	22	21
F	26	19	29	32
G	29	24	20	29
H	24	26	19	23
Demand	45	19	23	

Diagram 4

	A	B	C	D	Supply
E	23	28	22		21
F	26	19	29		32
G	29	24	20		29
H	24	26	19		23
Demand	45	19	23		

Diagram 5

	A	B	C	D
E	21			
F	19	13		
G		6	23	
H	5			18

Diagram 6

	P	Q	R	S
A	65	72	69	75
B	71	–	68	65
C	70	69	73	77
D	73	70	–	71

	Cost of travel option	Journey time (in hours) without delays	Probability of a 1–hour delay	Probability of a 2–hour delay	Probability of a 3–hour delay	Probability of a 24–hour delay
Plane	£200	3	0·09	0·05	0	0·03
Train	£130	5	0·07	0·03	0	0
Coach	£70	6	0·15	0·1	0·05	0

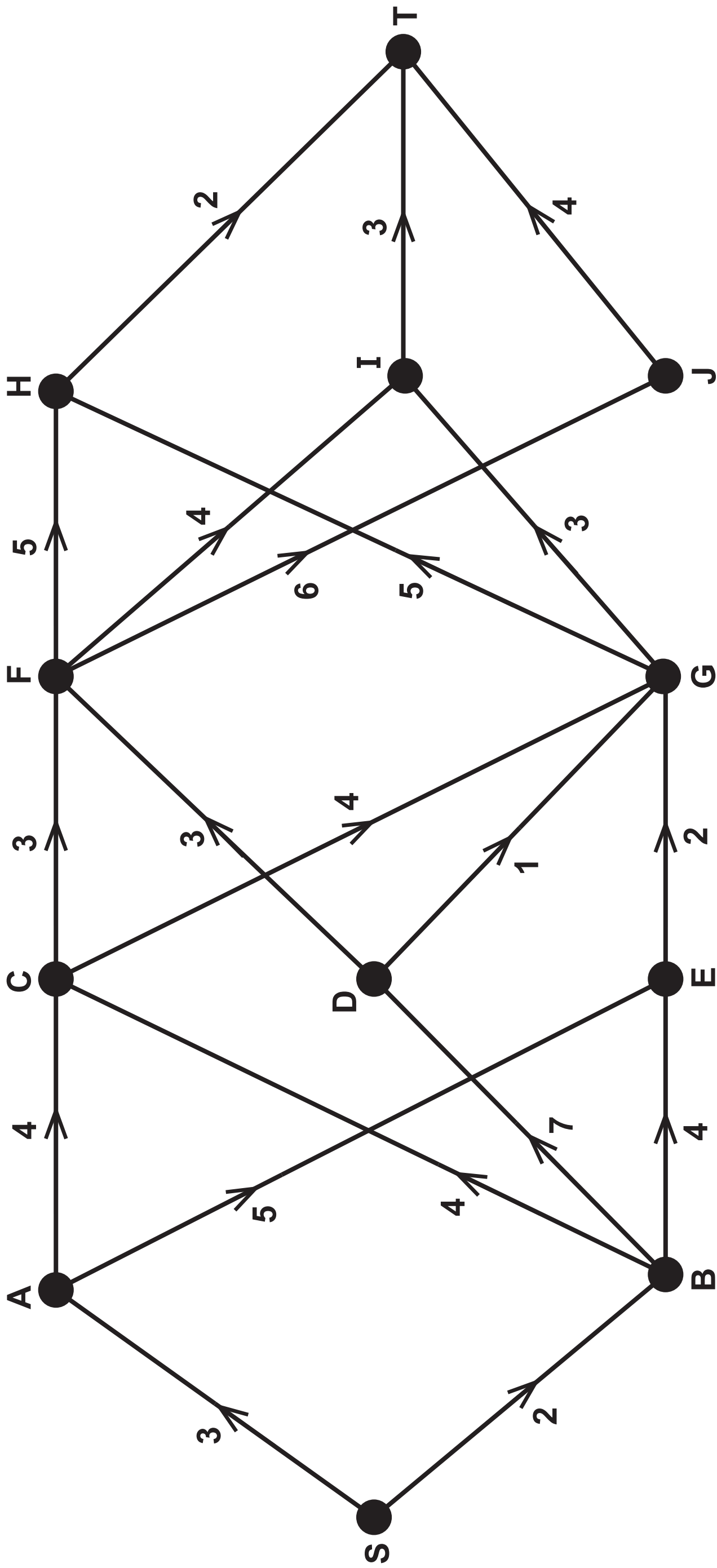


Diagram 9

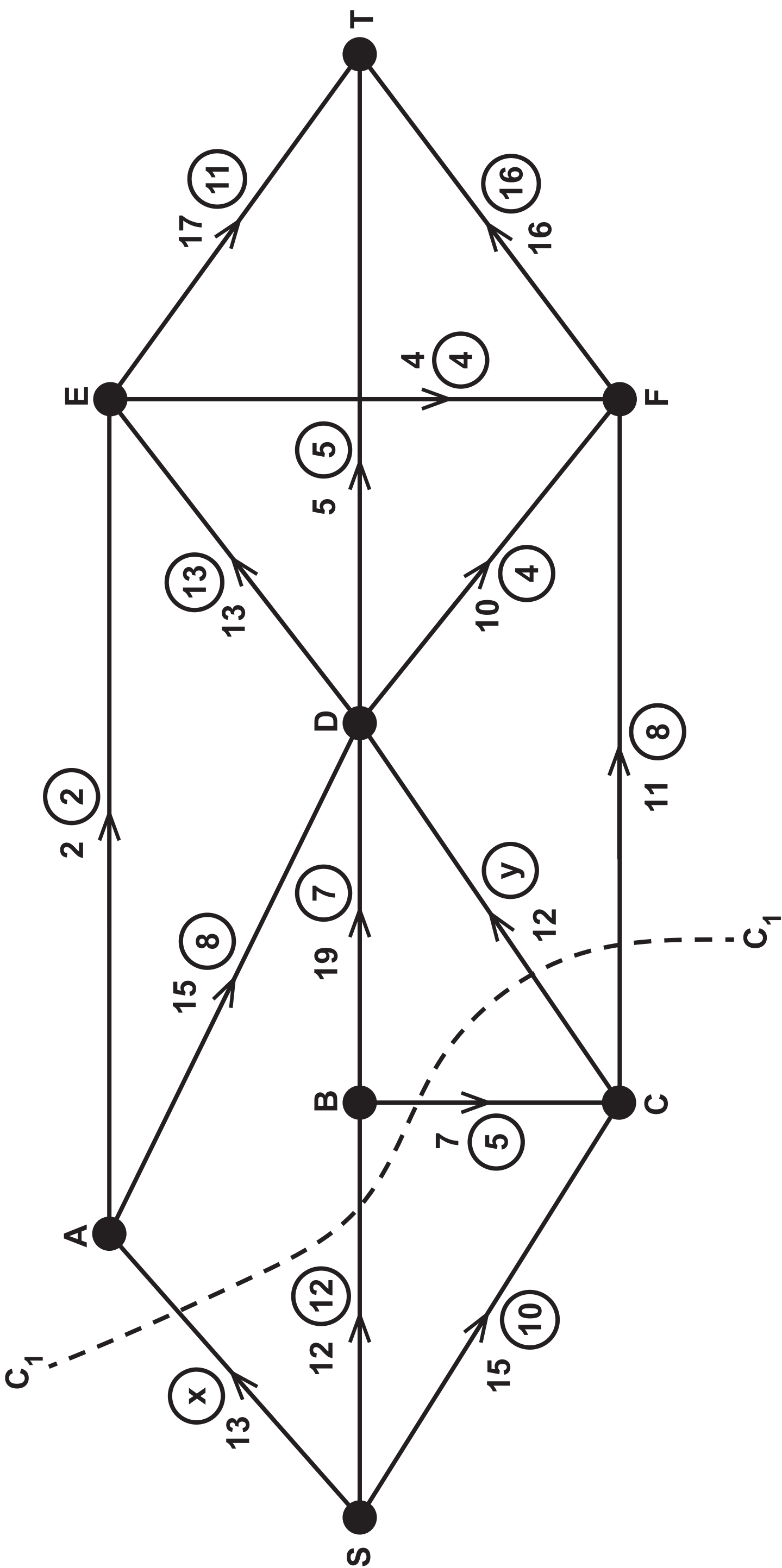
Stage	State	Action	Destination	Value

Diagram 10

		Player B		
		Option X	Option Y	Option Z
Player A	Option R	3	2	−3
	Option S	4	−2	1
	Option T	−1	3	6

b.v.	V	p ₁	p ₂	p ₃	r	s	t	u	Value
p ₃	0	0	0	1	$\frac{1}{10}$	$-\frac{3}{80}$	$-\frac{1}{16}$	$\frac{33}{80}$	$\frac{33}{80}$
p ₂	0	0	1	0	$-\frac{1}{10}$	$\frac{13}{80}$	$-\frac{1}{16}$	$\frac{17}{80}$	$\frac{17}{80}$
V	1	0	0	0	$\frac{1}{2}$	$\frac{5}{16}$	$\frac{3}{16}$	$\frac{73}{16}$	$\frac{73}{16}$
p ₁	0	1	0	0	0	$-\frac{1}{8}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
P	0	0	0	0	$\frac{1}{2}$	$\frac{5}{16}$	$\frac{3}{16}$	$\frac{73}{16}$	$\frac{73}{16}$

Diagram 1



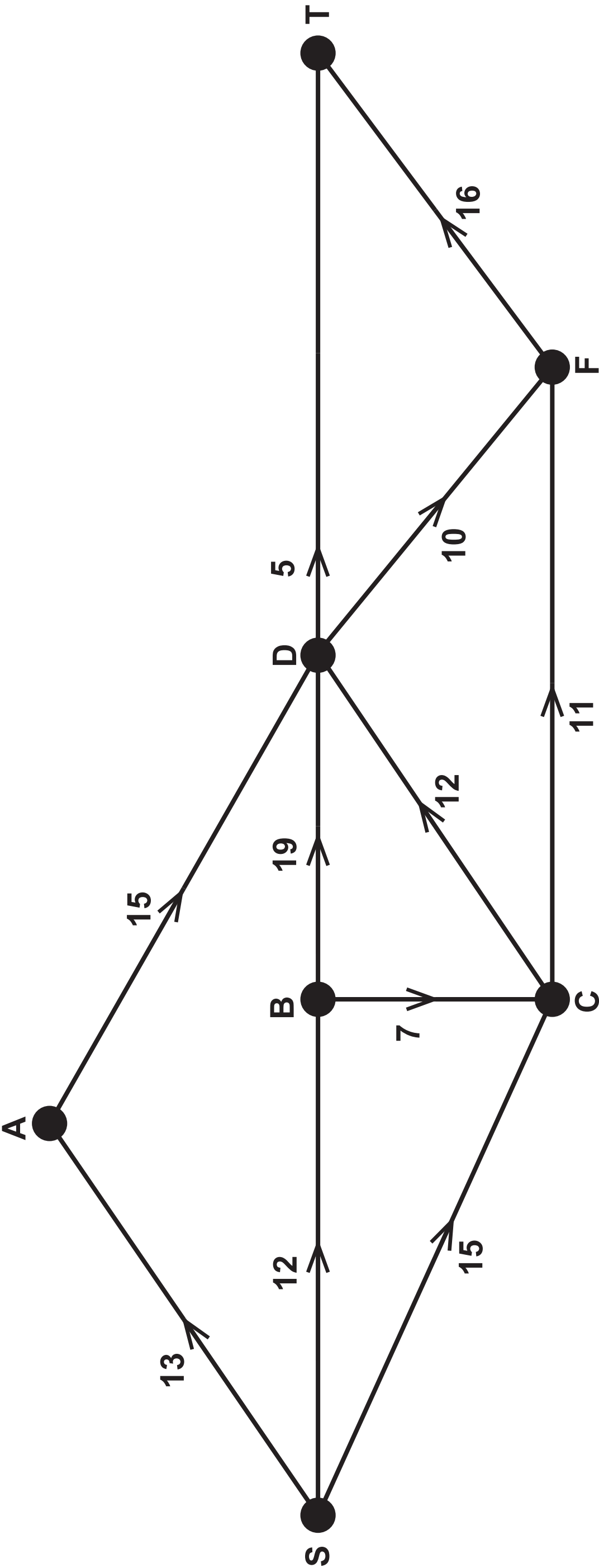


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Coach	£70	6	0·15	0·1	0·05	0

Diagram 8

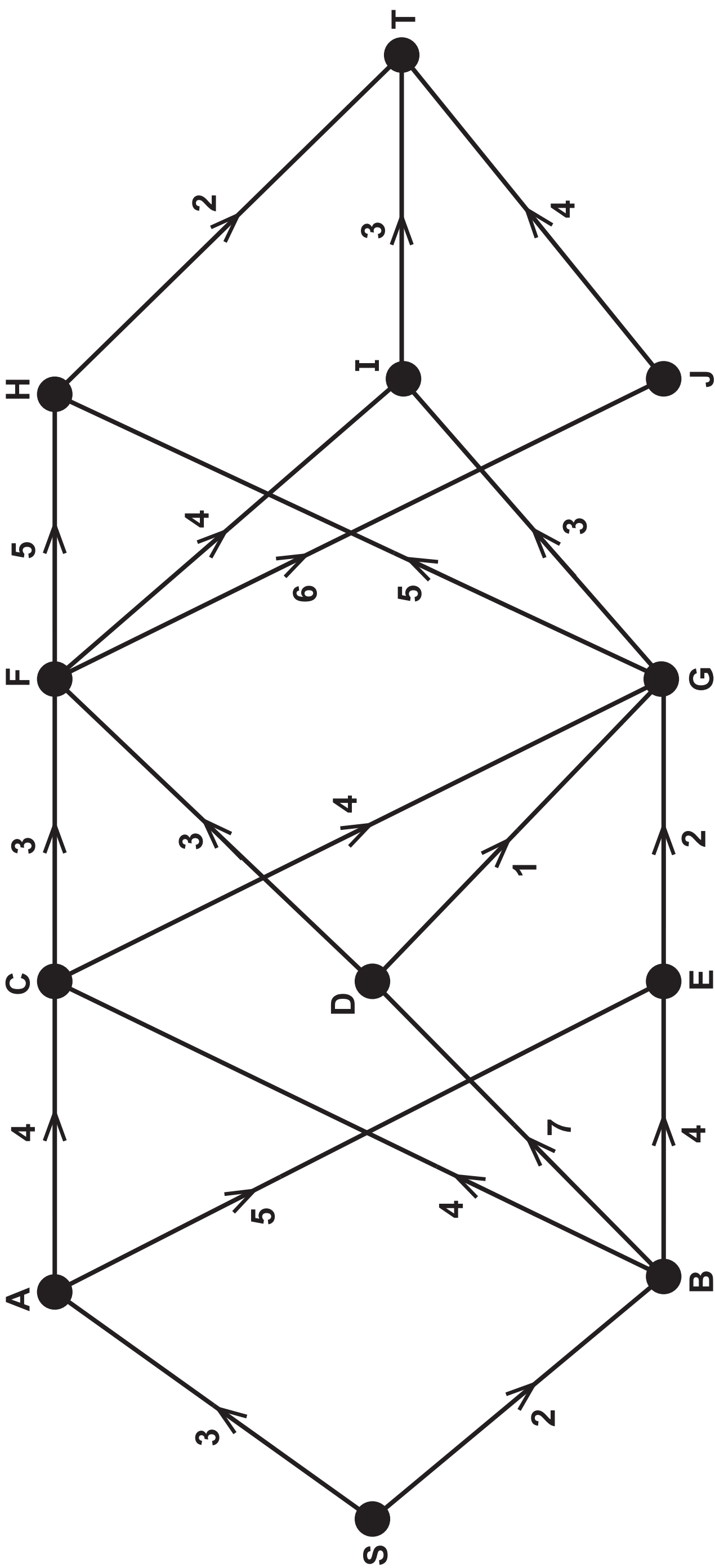


Diagram 9

Stage	State	Action	Destination	Value

Diagram 10

		Player B		
		Option X	Option Y	Option Z
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p ₃	0	0	0	1	$\frac{1}{10}$	$-\frac{3}{80}$	$-\frac{1}{16}$	$\frac{33}{80}$	$\frac{33}{80}$
p ₂	0	0	1	0	$-\frac{1}{10}$	$\frac{13}{80}$	$-\frac{1}{16}$	$\frac{17}{80}$	$\frac{17}{80}$
V	1	0	0	0	$\frac{1}{2}$	$\frac{5}{16}$	$\frac{3}{16}$	$\frac{73}{16}$	$\frac{73}{16}$
p ₁	0	1	0	0	0	$-\frac{1}{8}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
P	0	0	0	0	$\frac{1}{2}$	$\frac{5}{16}$	$\frac{3}{16}$	$\frac{73}{16}$	$\frac{73}{16}$