CAT 2025

MBA FASTRACK BATCH

Lecture - 02 | Logical Reasoning

Routes & Networks

Easy

Scoring

Imp

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TOPICS *to be covered*

1. Basics of Routes and Networks
2. Questions based on Routes and Networks

Routes & Networks : Basics

Basics

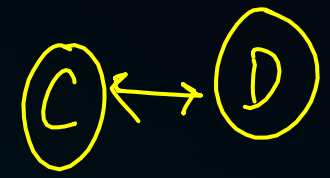
① Diagram → Given

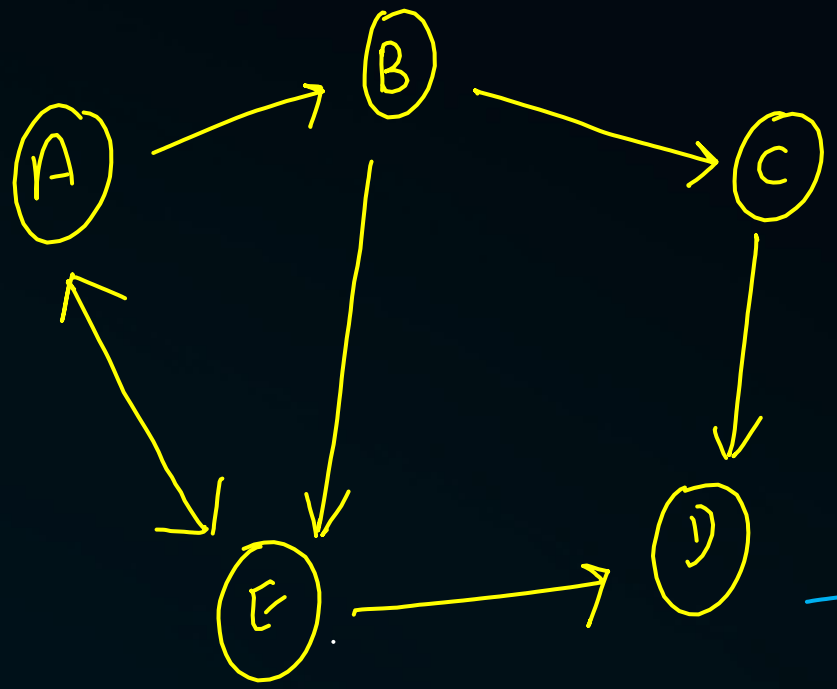
② ↓ Not Given

Direction

→ Uni-Direction (A to B)

→ Bi-Direction (Between C & D)





A to D

(1) A - B - C - D ✓

(2) A - B - E - D ✓

(3) A - E - D ✓

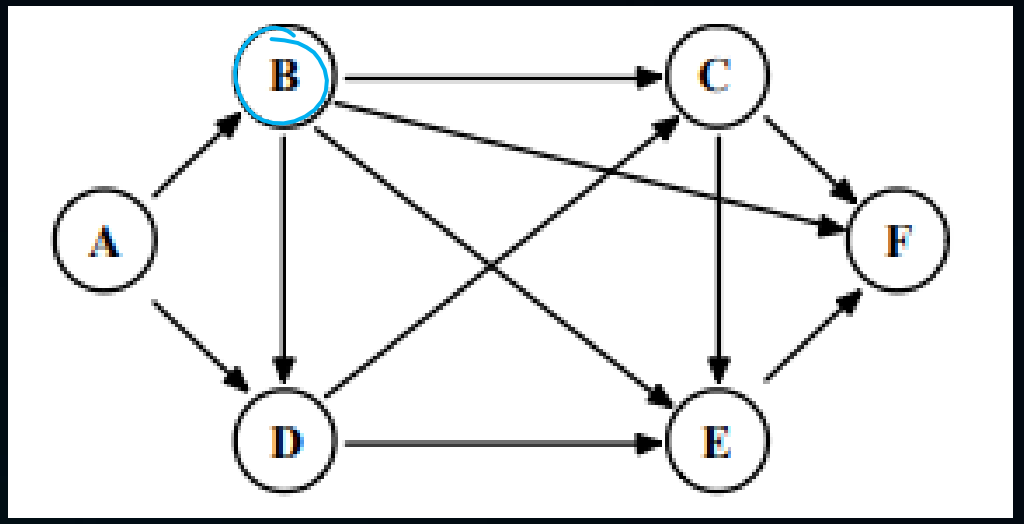
(4) A - E - A - B - C - D

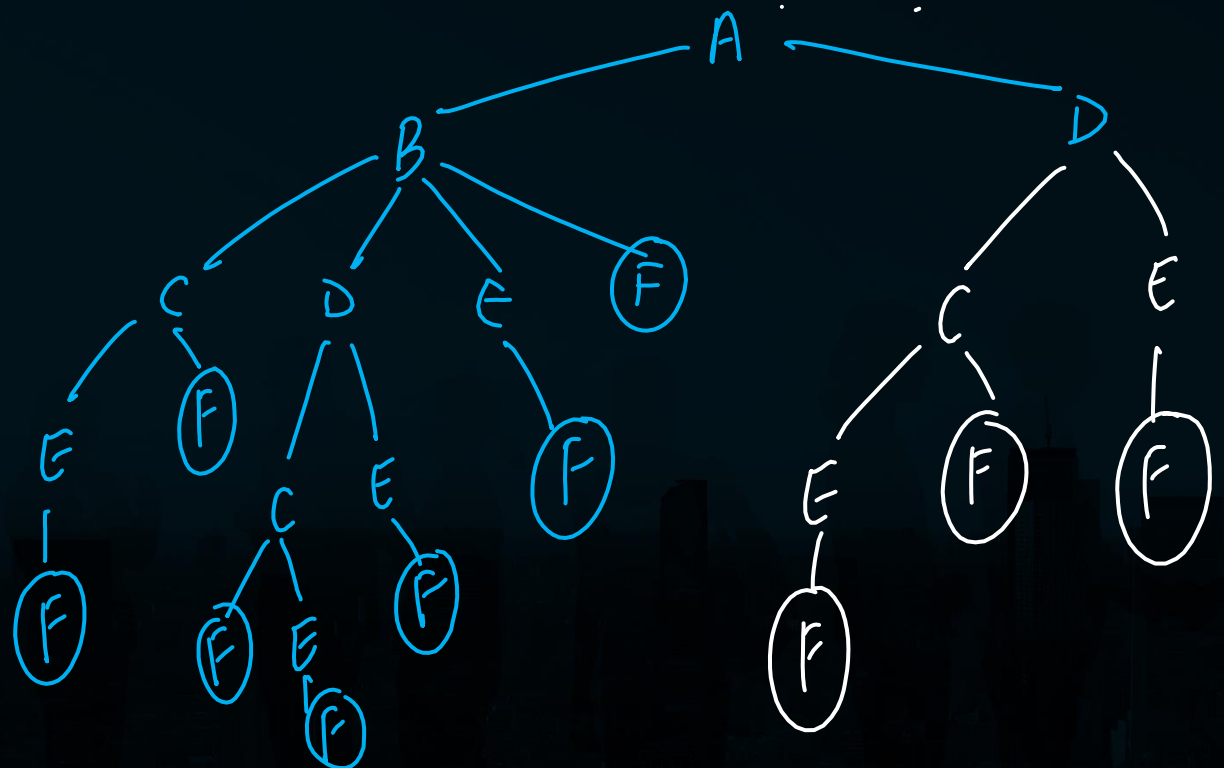
(5) A - E - A - E - A - B - C - D

(6) A - E - A - E - A - E - A - B - C - D

Example :

The figure below shows the network connecting cities A, B, C, D, E, and F. The arrows indicate permissible direction of travel. Without passing through any city more than once, what is the number of distinct paths from A to F?





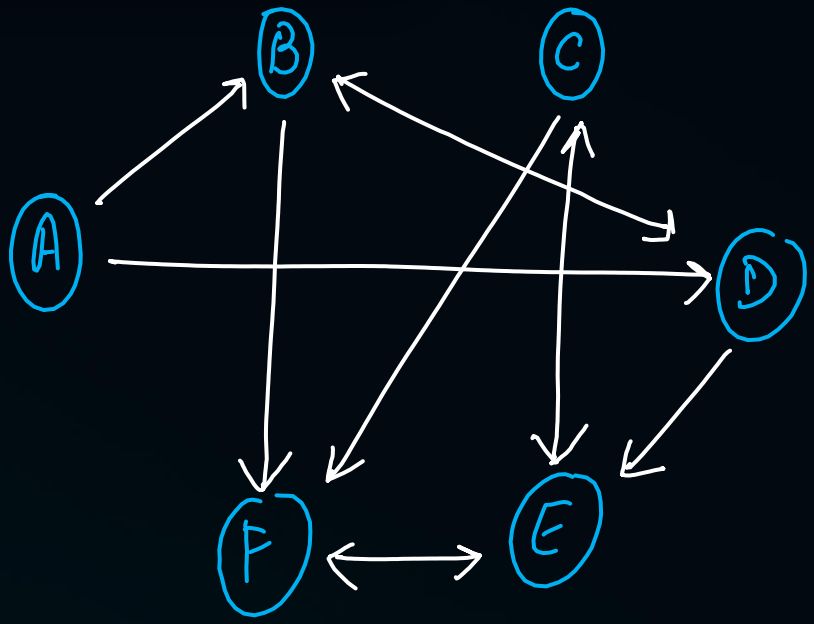
Example :

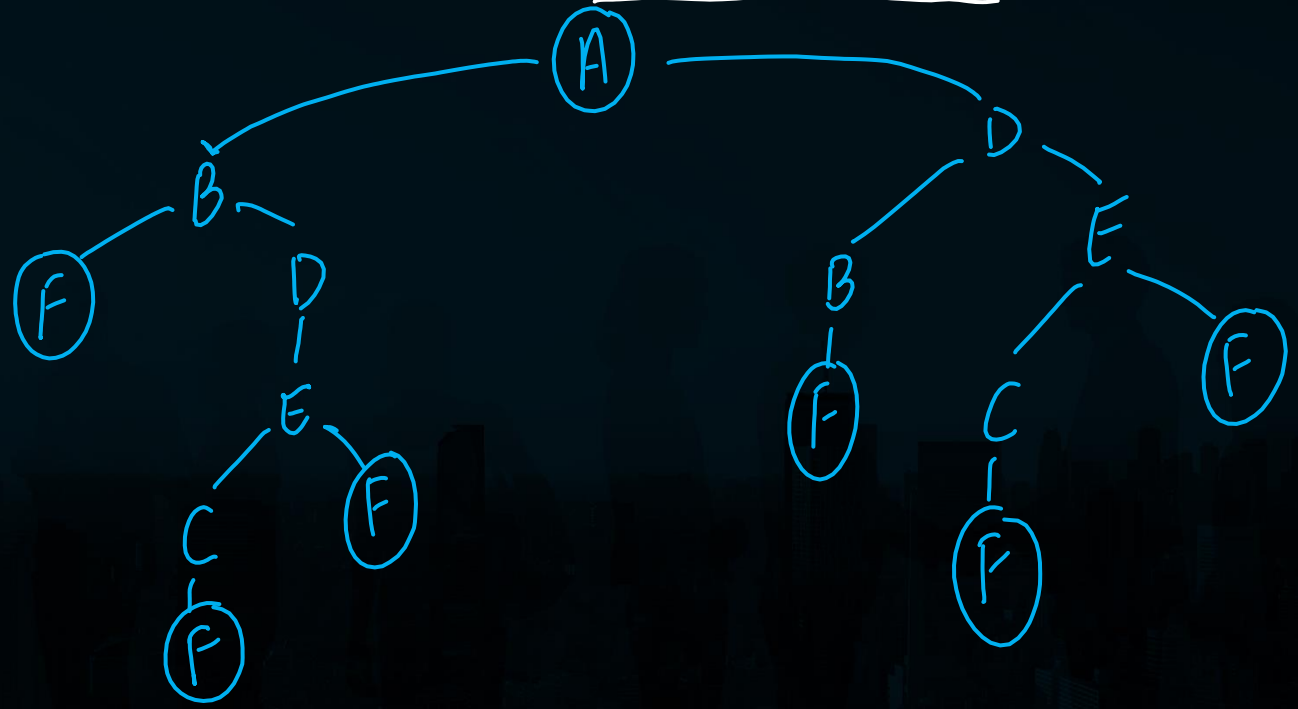
Cities A, B, C, D, E, and F are connected using some 1-way and some 2-ways paths.

1-Way : A to B, D to E, A to D, B to F, C to F

2-Way : Between B and D, C and E, E and F

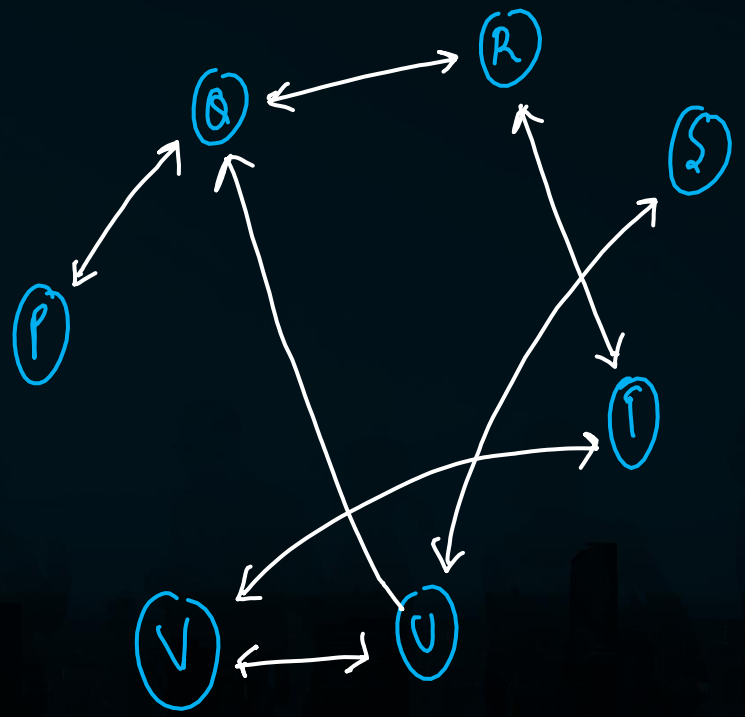
Without passing through any city more than once, what is the number of distinct paths from A to F?





Directions :

Export cargo of a trader can go through seven cities P, Q, R, S, T, U and V. The following cities have a two way connection i.e., Cargo can move in both directions between them; S and U, P and Q, Q and R, V and T, R and T, V and U. Cargo can move only in one direction from U to Q. (Without passing through any city more than once)



S → U < V – T
Q – R – T

P – Q – R – T – V – U

#Q. (1) If the trader wants the cargo to move from City S to City T then excluding cities S and T, what is the minimum number of cities that the cargo has to cross in transit?

A. 4 B. 3 C. 2 D. 5

#Q. (2) If the trader wants the cargo to go to City U from City P through the longest route, how many cities will he be required to cross (excluding cities P and U)?

A. 2 B. 4 C. 3 D. 5

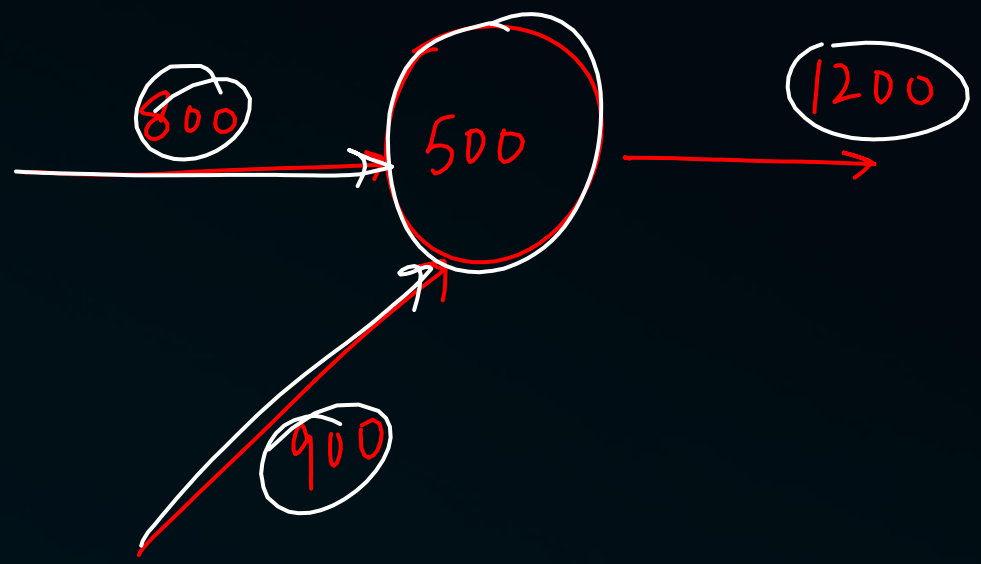
#Q. (3) To move cargo from City P to City U, which of the following statements will minimise the number of cities to be crossed in transit?

A. Connect cities U to R with a two way connection

B. Connect cities P to S with a one way connection from city S to P

C. Connect cities U to Q with a two way connection

D. Connect cities R to V with a two way connection



1700 − 500

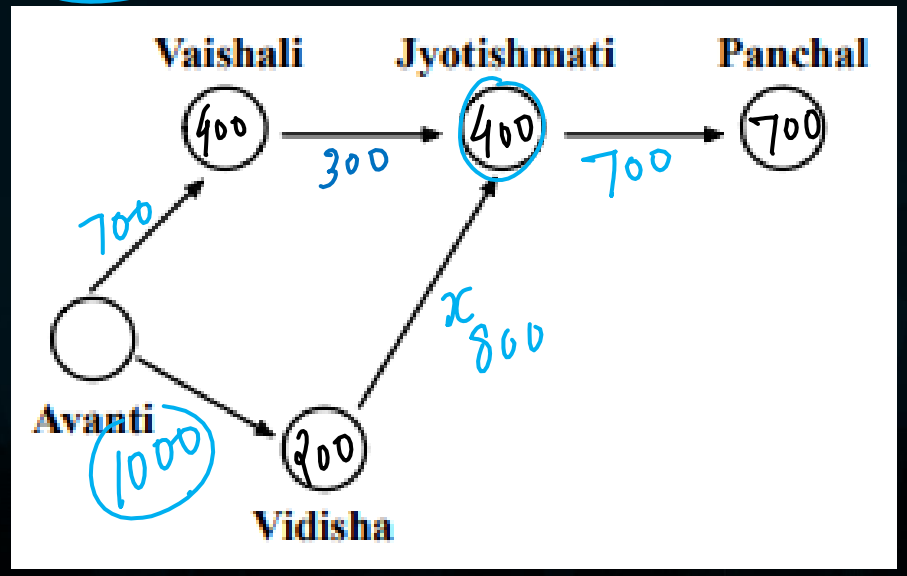
Input = 800 + 900 = 1700

Dem = 500

Output = 1700 − 500 = 1200

Directions :

- Each location has a demand for material. The demand at Vaishali is 400, at Jyotishmati is 400, at Panchal is 700, and at Vidisha is 200. Each arrow indicates the direction of material flow through the pipeline. The flow from Vaishali to Jyotishmati is 300. The quantity of material flow is such that the demands at all these locations are exactly met. The capacity of each pipeline is 1,000.



Input = 300 + x

Demand = 400

Output = 700

300 + x − 400 = 700

#Q. The quantity moved from Avanti to Vidisha is

A. 200
B. 800
C. 700
D. 1,000

1000 − 700 = 300

#Q. What is the free capacity available in the Avanti-Vaishali pipeline?

A. 300
B. 200
C. 100
D. 0

#Q. The free capacity available at the Avanti-Vidisha pipeline is

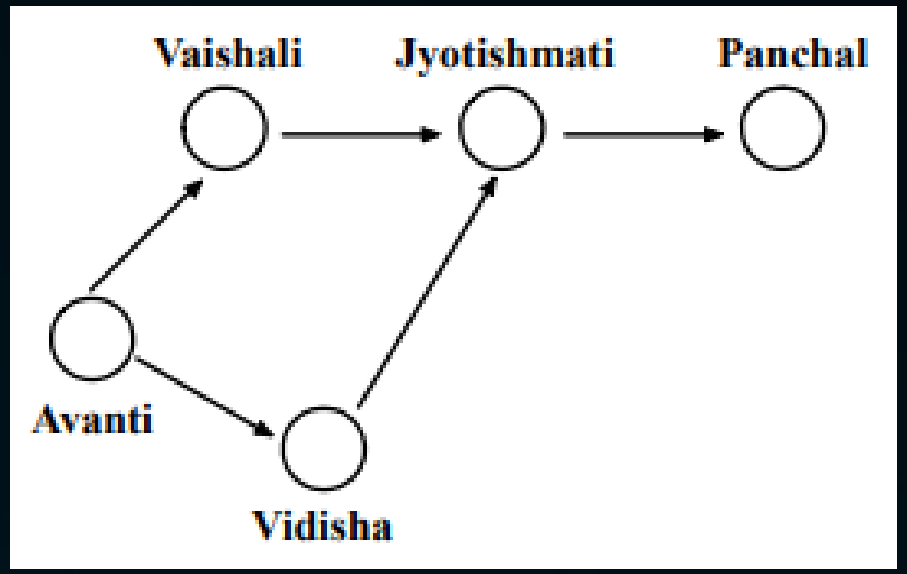
1000 − 1000 = 0

A. 0
B. 100
C. 200
D. 300

#Q. The quantity moved from Avanti to Vidisha is

A. 200 B. 800

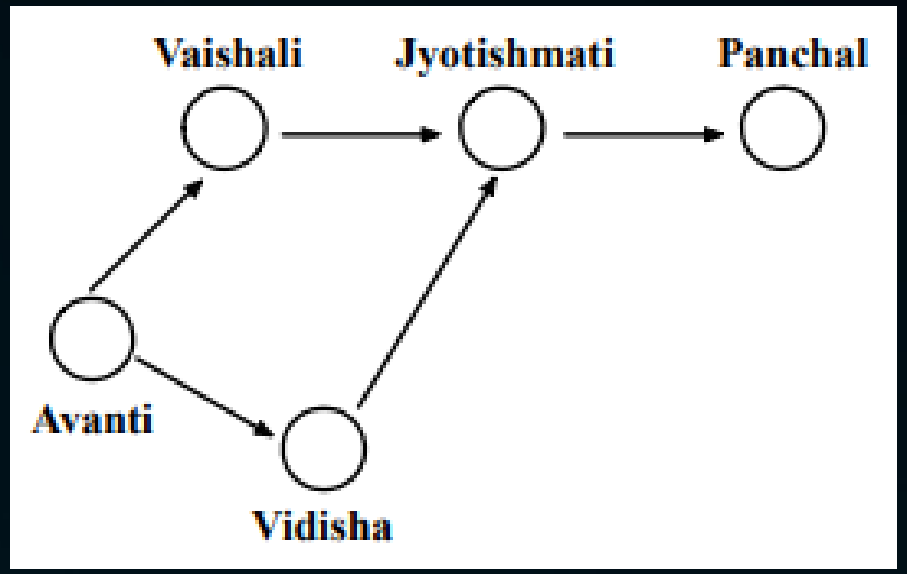
C. 700 D. 1,000



#Q. What is the free capacity available in the Avanti-Vaishali pipeline?

A. 300 B. 200

C. 100 D. 0



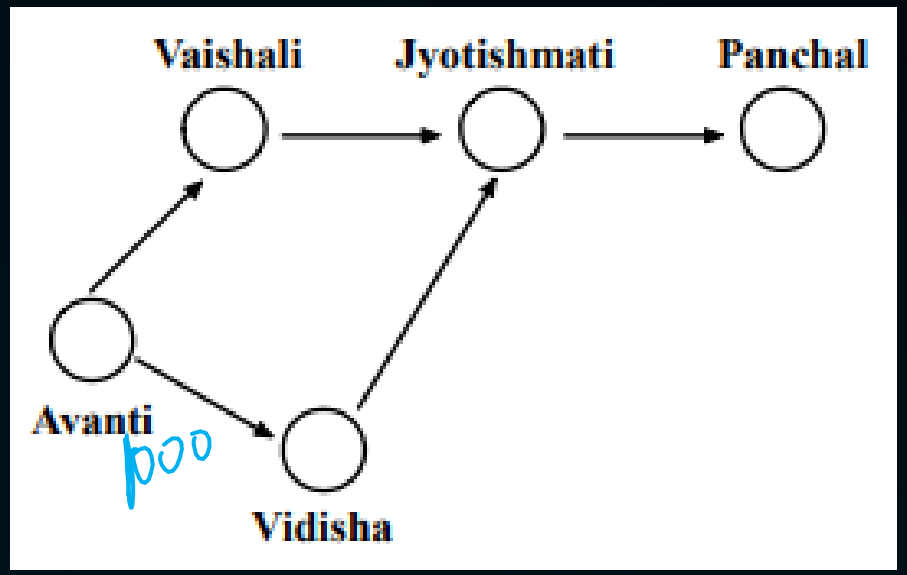
#Q. The free capacity available at the Avanti-Vidisha pipeline is

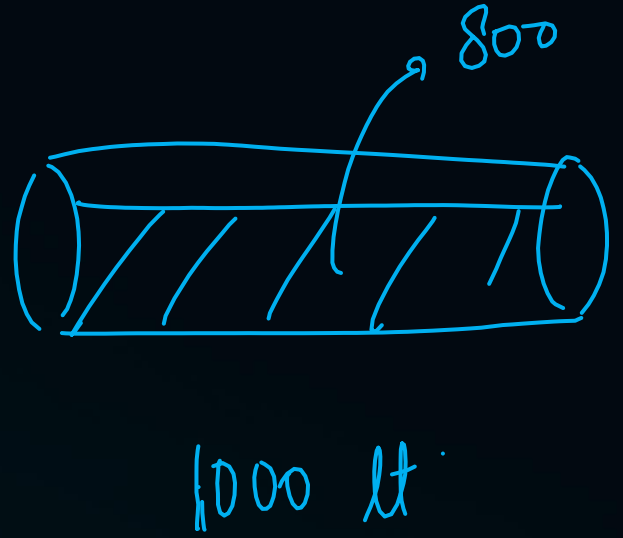
A. 0 ✓

B. 100

C. 200

D. 300





Directions :

Two days (Thursday and Friday) are left for campaigning before a major election, and the city administration has received requests from five political parties for taking out their processions along the following routes.

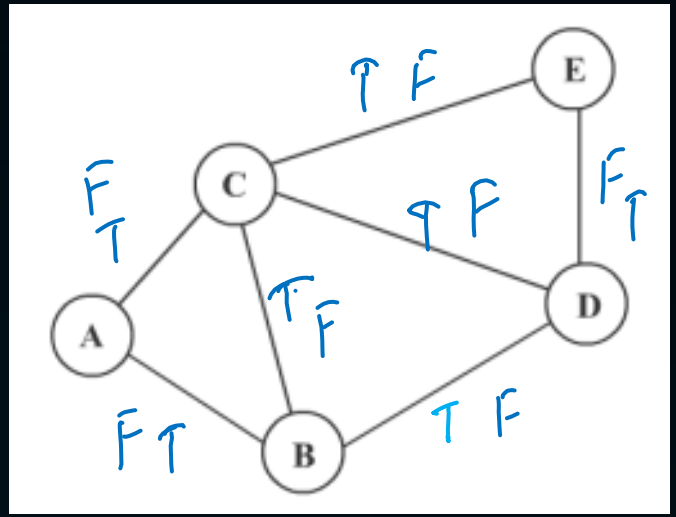
Congress: A-C-D-E → Thursday

BJP: A-B-D-E → Friday

SP: A-B-C-E → Thursday

BSP: B-C-E → Friday

CPM: A-C-D → Friday



- Street B-D cannot be used for a political procession on Thursday due to a religious procession.
- The district administration has a policy of not allowing more than one procession to pass along the same street on the same day.
- However, the administration must allow all parties to take out their procession during these two days.

#Q. Congress procession can be allowed

A. only on Thursday. B. only on Friday.

C. on either day. D. only if the religious procession is cancelled.

#Q. Which of the following is not true?

A. Congress and SP can take out their processions on the same day. True

B. The CPM procession cannot be allowed on Thursday. True

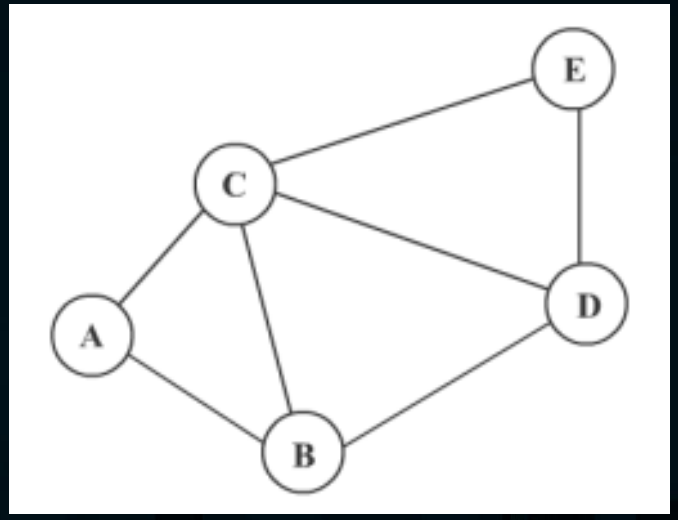
C. The BJP procession can only take place on Friday. True

D. Congress and BSP can take out their processions on the same day. False.

#Q. Congress procession can be allowed

A. only on Thursday. B. only on Friday.

C. on either day. D. only if the religious procession is cancelled.



Congress: A-C-D-E

BJP: A-B-D-E

SP: A-B-C-E

BSP: B-C-E

CPM: A-C-D

Street B-D cannot be used for a political procession on Thursday due to a religious procession.

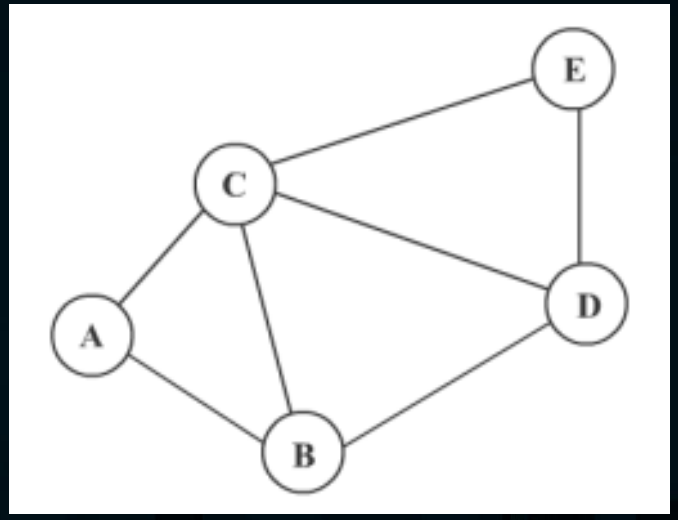
#Q. Which of the following is not true?

A. Congress and SP can take out their processions on the same day.

B. The CPM procession cannot be allowed on Thursday.

C. The BJP procession can only take place on Friday.

D. Congress and BSP can take out their processions on the same day.



Congress: A-C-D-E

BJP: A-B-D-E

SP: A-B-C-E

BSP: B-C-E

CPM: A-C-D

Street B-D cannot be used for a political procession on Thursday due to a religious procession.


THANK
You
52%
64%
85%
26,465.54
28,161.92
26,465.54
198.45
37,492.43
201.55
1,097.95
0.00
26,717.43
7,534.44
12,512.54
28,875.56