Pipes & Networks
CLASS - 3

SET-1

The following is a network of six dams - S, A, B, C, D & E - where S is the source dam, which provides just the necessary supply to each of the other dams and has no minimum requirement for itself.

In the diagram, the direction of flow in the canals connecting one dam to the other is given. Neither the requirement at any dam nor the flow (in cusecs) in any of the pipelines is zero, and is always a multiple of 100. Further

i. The requirement at A is 500 cusecs and that at E is same as that of B.

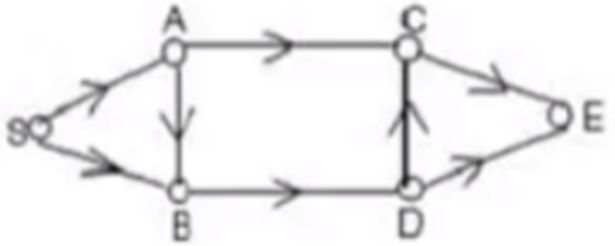
ii. The requirement at C is twice of that at D.

iii. The total of the flows in the canal connecting A and C and that connecting B and D is 900 cusecs.

iv. The flow in the canal connecting S and B is 100 cusecs less than the flow in the canal connecting S and A.

V. The maximum possible flow in an canal is 900 cusecs and for any canal the difference between the maximum possible flow and the actual flow is called the slack in that canal.

vi. The slack in the pipeline connecting C and E is 700 cusecs.



Q1. What is the difference (in cusecs) between the requirement at C and E?

a. 100 b. 200 c. 300 d. 400

Q2. What is the slack (in cusecs) in the canal connecting the dams A and C?

a. 300 b. 400 c. 600 d. cannot be determined

Q3. What is the difference (in cusecs) between the flows in the pipeline connecting A and B and that connecting C and D?

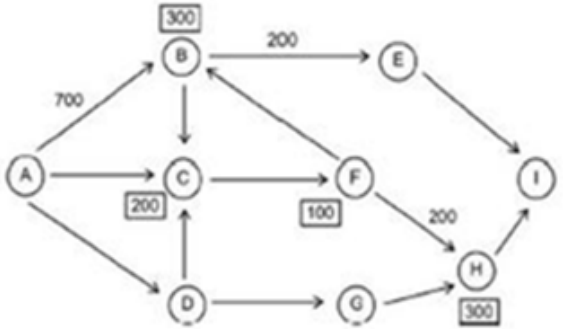
a. 100 b. 500 c. 200 d. 400

Q4. How many times is the slack in the canal connecting CE when compared to the cannel connecting S and B?

a. 6 b. 7 c. 8 d. 9

SET-2

Given below is a network of water pipelines and nine hubs - A through I. The requirement of water at the hubs is exactly met by the flow in the pipelines. The flow in some of the pipelines and the requirement at some of the hubs is also mentioned. A is the only hub which is a source hub, i.e. the hub A does not have any requirement of its own but it supplies the requirements of all the other hubs.

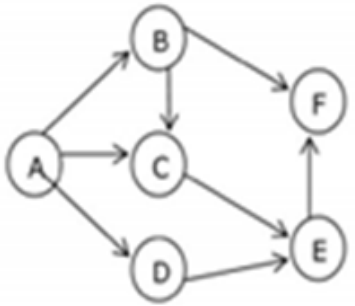


It is also known that
i. The maximum capacity of any pipeline is 1000.
ii. The requirement at any hub except A and I is equal to the flow in exactly one of the pipelines directly connected to it.
iii. No two pipelines directly connected to the same hub carry the same amount of water.
iv. The flow in none of the pipelines shown above is zero.

1. What is the requirement at the hub I?
(1) 100 (2) 200 (3) 300 (4) 400
Q2. What is the amount of water carried by the pipeline D-G?
(1) 500 (2) 600 (3) 700 (4) 800
Q3. What is the total requirement that should be supplied by A?
(1) 1800 (2) 1900 (3) 2100 (4) 2500
04. What is the amount of water carried by the pipeline C-F?
(1) 100 (2) 300 (3) 400 (4) 600

SET-3

A, B, C, D, E and F are close friends. A has a chocolate factory and he distributes some chocolates to his friends and his friends contribute the chocolates among themselves as shown below.



The following information is also known.

1. No person receives the same number of chocolates from two different persons.
2. After the distribution, each person has a different number of chocolates, which are consecutive natural numbers.
3. No person gives the same number of chocolates to two different persons.
4. The number of chocolates with C after the distribution is 4 and that with A is the least.
5. A gives six chocolates to D and C gives one chocolate to E.
6. The number of chocolates with F is twice that wan E.
7. No person gives more than 10 chocolates to any other person.
8. At least one chocolate is passed between two persons who are connected in the network.

Q1. what is the total number of chocolates with A before distribution?
(1) 25 (2) 27 (3) 33 (4) 21 (5) 23

Q2. The number of chocolates with D after distribution is
1) 2 (2) 3 (3) 5 (4) 7 (5) 6

Q3. The number of Ch0Colates given by A to C is
(1) 3 (2) 4 (3) 8 (4) 6 (5) 6

Q4. The total number of chocolates with A, B and D after distribution is
(1) 4 (2) 2 (3) 6 (4) 7 (5) 8