

Flow Algorithms | Coursera

coursera.org/learn/advanced-algorithms-and-complexity/exam/aM1sa/flow-algorithms/attempt?redirectToCover=true

Make Images, Video... Python Certification... Python Courses & S... Learn Python - Free... Voice Controlled Ch... How to create a si... How to Read Emails... How to send beauti...

Flow Algorithms  
Graded Quiz - 10 min

Due Jun 22, 12:29 PM IST

✓ **Congratulations! You passed!**  
10 PASS 60% or higher

Keep Learning

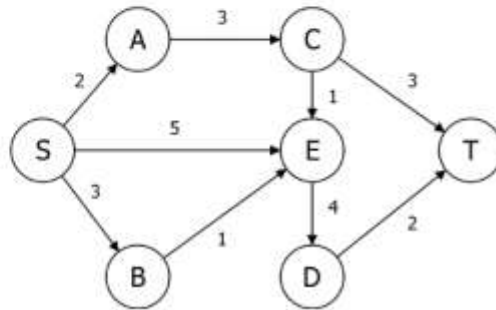
GRADE  
100%

## Flow Algorithms

LATEST SUBMISSION GRADE  
100%

1. Which vertices are in the minimum S-T cut in the network below?

1/3 points



Flow Algorithms | Coursera

coursera.org/learn/advanced-algorithms-and-complexity/exam/aM1sa/flow-algorithms/attempt?redirectToCover=true

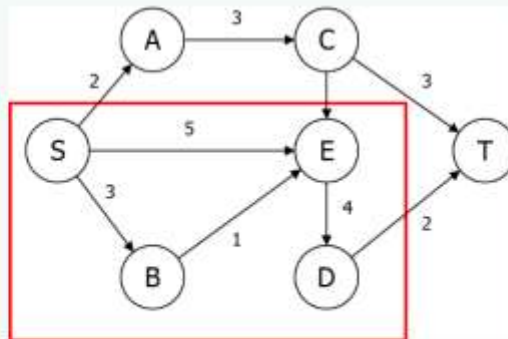
Make Images, Video... Python Certification... Python Courses & S... Learn Python - Free... Voice Controlled Ch... How to create a si... How to Read Emails... How to send beauti...

Flow Algorithms  
Graded Quiz - 10 min

Due Jun 22, 12:29 PM IST

- ☐ A
- ☒ B

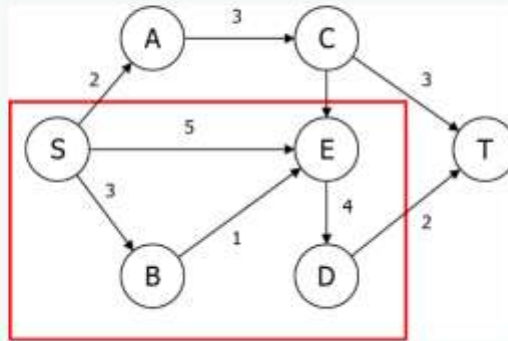
✓ **Correct**  
The mincut below has size 4 and contains B.



☐ C

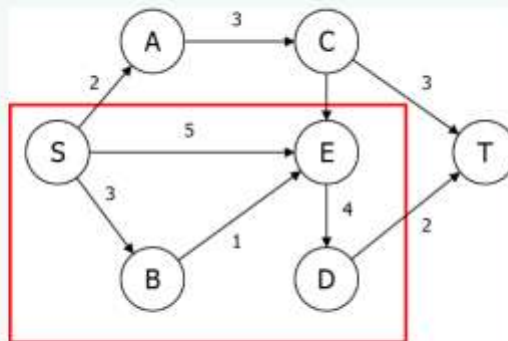
☒ D

✓ Correct  
The mincut below has size 4 and contains D.



☒ E

✓ Correct  
The mincut below has size 4 and contains E.



☒ S

✓

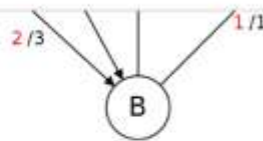
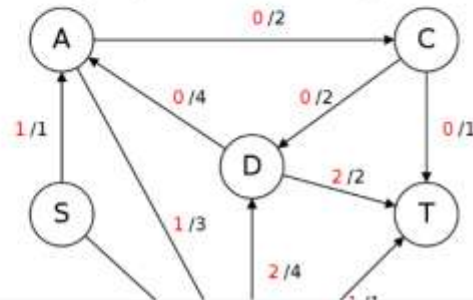
✓ Correct

The source is always in a cut.

✗

2. What is the augmenting path that will be used by the Edmonds-Karp algorithm to increase the flow given below?

1/1 point



- ☐ S-B-D-C-T
- ☐ S-A-C-T
- ☐ S-B-A-C-D-T
- ☐ S-B-T
- ☒ S-B-A-C-T

✓ Correct

Correct

3. Which of the statements below is true?

1/1 point

✗ The sum of the capacities of the edges of a network equals the sum of the capacities of the edges of any residual network.

✓ Correct

True. The reduced capacity of any edge of the network is exactly compensated for the by the capacity of the reverse edge.

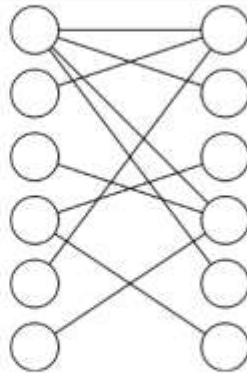
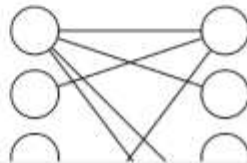
3. Which of the statements below is true?

1/1 points

- ☒ The sum of the capacities of the edges of a network equals the sum of the capacities of the edges of any residual network.
- ☒ Correct.  
True. The reduced capacity of any edge of the network is exactly compensated for the by the capacity of the reverse edge.
- ☐ The Edmonds-Karp algorithm is always faster than the Ford-Fulkerson algorithm.
- ☒ The Ford-Fulkerson algorithm runs in polynomial time on graphs with unit edge capacities.
- ☒ Correct.  
True. For such graphs, the maximum flow is at most  $|V|$ .

4. What is the size of the maximum matching of the following graph?

1/1 points

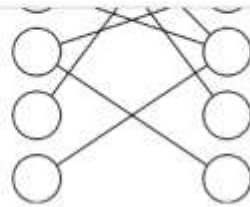


4

☒ Correct

5. Consider the image segmentation problem on a picture that is given by an  $n$  by  $n$  grid of pixels. Suppose that

1/1 points



4

✓ Correct

5. Consider the image segmentation problem on a picture that is given by an  $n$  by  $n$  grid of pixels. Suppose that separation penalties are imposed only for adjacent pairs of pixels. If we use the Edmonds-Karp algorithm to solve this problem as described in class, the final runtime is  $O(n^a)$  for some  $a$ . What is the best such  $a$ ?

1/1 point

5

✓ Correct

Correct. We need to compute maximum flow on a graph with  $V=O(n^2)$  and  $E=O(n^2)$ . The runtime of Edmonds-Karp is at worst  $O(E^2 V) = O(n^6)$ .