

Name Surname:

No:

**BLG433E-Bilgisayar Computer Communications, Fall 2018**  
**Final Exam., Jan.7,2019.**

1	2	3	4	5	6	7	8	Total

**Name Surname:**

**Student Number:**

**Department:**

**Signature:**

*Write your answers in the space provided for them.*

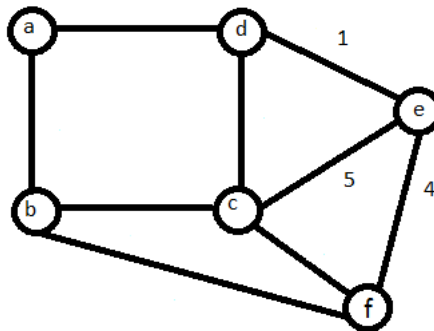
*Show all your work and write neatly.*

*Good luck.....*

**Duration: 100 minutes**

Answer ALL questions questions below.

- 1) (12 points) For the network below, calculate *Distance* and *NextHop* values for Node e based on the vectors arriving from Node c, Node d, and Node f.

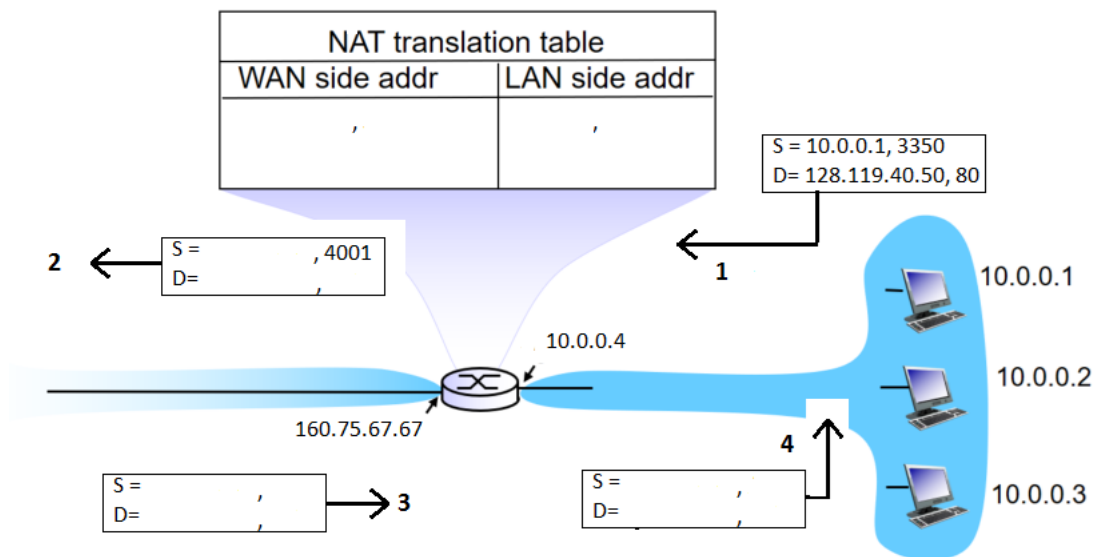


	c	d	f	e
a	10	6	12	Distance: NextHop:
b	6	8	4	Distance: NextHop:
c	0	2	5	Distance: NextHop:
d	3	0	7	Distance: NextHop:
e	2	6	4	Distance: NextHop:
f	5	7	0	Distance: NextHop:

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- 2) (12 points) In the figure below, considering the IP addresses and port numbers written, a) complete the NAT translation table, the headers at Step 2, Step 3, and Step 4.



- b) Which layers are related with the NAT protocol?

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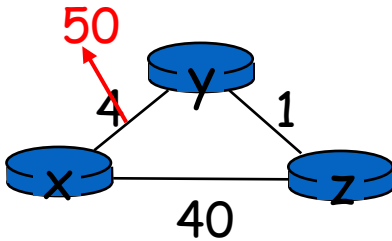
- 3) (12 points) Assume that the IP packet below enters to a network of which MTU is 800 Bytes. How many fragments are formed? Draw and fill the fields shown below for each fragment header.

	Length = 1600	ID =x	DF=0	MF=0	offset=0	
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- 4) (10 points) What is the problem caused by the update shown in the figure below when the distance vector routing is employed? Explain. Could it be solved? How/Why not?



- 5.1) (5 points) Name three packet scheduling techniques:

- a)
- b)
- c)

- 5.2) (5 points) Is it possible to have a connection oriented transport protocol working on a connectionless network protocol? Why/Why not? Give an example.

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- 5.3) (5 points) In an Open-Flow SDN router, which one of the below (information) options could be used for forwarding:

- a) Src/Dest MAC addresses
- b) Src/Dest IP addresses
- c) Src/Dest TCP Port Numbers
- d) All

- 5.4) (5 points) Assume that we have a LAN with the nodes generating heavy traffic. Which MAC protocol type should be employed: a) Channel partitioning type, b) Random access type? Why?

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- 5.5) (4 points) What is the expansion of ARP? In two sentences give its use and the layer(s) it considers.

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6) (10 points) Consider an ISP subnet with prefix 128.150.40.128/22. **Give the network mask** for this subnet block. Suppose this ISP wants to create four subsets from this block, with each subnet having the same number of IP addresses. **What are the prefixes** (of form a.b.c.d/x) for these **four** subsets?

7) (10 points) What is hot potato routing? Where is it employed? Does it enhance performance always? Why?

8) (10 points) In the sliding window protocol employing *selective repeat*, if the distance between the sender and the receiver is 2400 km; the propagation speed is 200 000 km/sec; the frame size is 800 bytes; and the data rate is 1.6 Mbps, what should be the minimum window size for the best link utilization?