

# CAN201 Introduction to Networking (25-26 SEM1) In Class Test

Name \_\_\_\_\_

XJTLU ID \_\_\_\_\_

## Instructions:

1. The test is worth 100 points (accounting for 15% of the total module points) and lasts 45 minutes.
2. All questions must be answered, and responses must be written in English.
3. No electronic devices are allowed to be brought or used during the test, including but not limited to laptops, mobile phones, tablets, and smartwatches.

## Please answer the following questions on this paper:

1. The performance of a network can be evaluated using three metrics:

\_\_\_\_\_ , \_\_\_\_\_ , and \_\_\_\_\_. (8 points)

2. The main protocol used to transfer web pages is \_\_\_\_\_. (8 points)

3. The DNS uses a distributed and \_\_\_\_\_ database system. (8 points)

4. In the transport layer, \_\_\_\_\_ is a protocol that provides unreliable, connectionless service. (8 points)

5. In the Go-Back-N protocol, if a packet is lost, the sender will retransmit \_\_\_\_\_. (8 points)

6. TCP increases the congestion window during slow start by \_\_\_\_\_ every RTT. (8 points)

7. The network layer has two main functions: \_\_\_\_\_ and \_\_\_\_\_. (8 points)

8. In socket programming, the \_\_\_\_\_ number is used to direct the packet to the correct process. (8 points)

9. The network topology below illustrates the link costs between routers (nodes) A, B, C, D, and E, where node A is the source (Src.) and node E is the destination (Dst.). Each number on the link represents the cost (or distance) between two directly connected nodes. Assume all links are bidirectional and all nodes initially know the direct link costs of their neighbors.

- a) Explain the main principle behind the Distance Vector algorithm and how each node updates its routing table. (9 points)

- b) Using the Bellman-Ford equation, compute the minimum cost path from source node A to destination node E in Fig 1. (9 points)

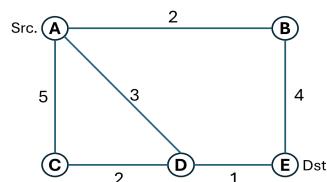


Fig 1.

10. A national government network (AS-Gov) connects to a large telecommunication ISP (AS-ISP) that provides upstream Internet access. A nearby university campus network (AS-Uni) also connects to the same ISP for Internet access. The AS-Gov must securely exchange data with AS-Uni for research collaboration, but both must keep their internal routing policies private. Using this scenario:

- a) How do AS-Gov and AS-Uni establish eBGP sessions with AS-ISP to advertise their reachability information?  
(9 points)
- b) How does each domain/AS use iBGP internally to disseminate learned routes to routers inside its own network?  
(9 points)