北京工业大学 2022-2023 学年第一学期

《计算机网络》考试试卷 A 卷

考试说明： 闭卷考试，共 90 分钟。

承诺：

本人已学习了《北京工业大学考场规则》和《北京工业大学学生违纪处分条例》，承诺在考试过程中自觉遵守有关规定，服从监考教师管理，诚信考试，做到不违纪、不作弊、不替考。若有违反，愿接受相应的处分。

承诺人： _____   **学号：** _____   **班号：** _____

注：本试卷共 __5__ 大题，共 __5__ 页，满分 100 分，回答题时必须使用卷后附加的统一答题纸。

卷 面 成 绩 汇 总 表（阅卷教师填写）

题号	一	二	三	四	五	六	七	八	九	十	总成绩
满分	40	30	10	10	10						
得分											

得分 [ ]

一、True/false questions (40 points, 2 points per question) (Please circle or check ONLY one answer)

1. Computer network means a collection of autonomous computers interconnected by a single technology.
   (1) True   (2) False

2. In modern computer communication networks, only broadcast transmission technology is actually used.
   (1) True   (2) False

3. Flow control can be performed in the data link and transport layers.
   (1) True   (2) False

4. Packet switching needs to set up an end-to-end path before any data can be sent.
   (1) True   (2) False

5. The static channel allocation methods (e.g. FDM and TDM) work well for computer networks.
   (1) True   (2) False

6. In connection-oriented services, packets from a source node to a destination would follow the same path during the period of a connection.
   (1) True   (2) False

7. The media access control (MAC) sublayer is the bottom part of the data link layer.
   (1) True   (2) False

8. The pure ALOHA is more efficient than the slotted ALOHA.
   (1) True   (2) False

9. Both classic Ethernet and switched Ethernet use CSMA/CD protocol.
   (1) True   (2) False

10. The addresses are 32 bits in IPv4 packets and 128 bits in IPv6 packets.
    (1) True   (2) False

11. The routing algorithm is responsible for filling in and updating the routing tables.
    (1) True   (2) False

12. The intra-domain routing protocols not only need to move packets as efficiently as possible from the source to the destination, but also consider politics, security, or economic policies.
    (1) True   (2) False

13. DHCP is a protocol for automatic assignment of a dynamic IP address to a requesting node.
    (1) True   (2) False

14. Timeout can be used to trigger frame retransmission to cope with frame loss in protocol design.
    (1) True   (2) False

15. Slow-start increases the sending rate slowly to reach roughly the right level.
    (1) True   (2) False

16. TCP will stop sending data if either the congestion or the flow control window is temporarily full.
    (1) True   (2) False

17. The most effective way to control congestion is to reduce the load that the transport layer is placing on the network.
    (1) True   (2) False

18. To support connectionless services, a path from a source to a destination must be established before data transmission can begin.
    (1) True   (2) False

19. HTTP is a request-response protocol that normally runs over TCP.

    (1) True   (2) False

20. The Address Resolution Protocol (ARP) can be used to solve the problem of IP address shortage.

    (1) True   (2) False

得 分

二、Concept questions (30 points in total, 5 points for each question)

1. Explain network architecture and protocol stack.

2. Describe the basic principle of sliding window.

3. List the main differences between CSMA/CD and CSMA/CA.

4. Compare datagram network and virtual-circuit network.

5. List the main differences between UDP and TCP.

6. Describe the main functionality of DNS (Domain Name System).

得 分

三、General question（10 points）

Discuss routing algorithms:

(1) Describe the basic principles of link state routing algorithm and distance vector routing algorithm.

(2) List the main intradomain routing protocols and interdomain routing protocols in the Internet.
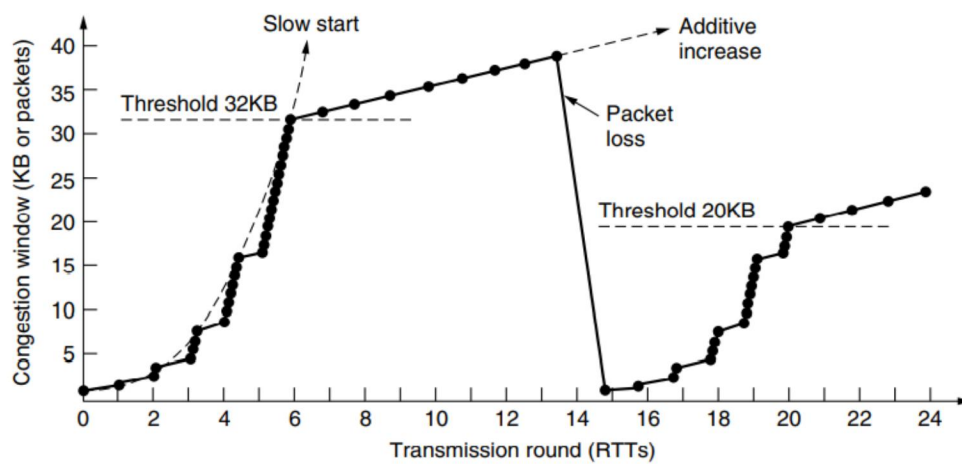

得 分

四、General question（10 points）

Discuss the TCP/IP reference model:

(1) Describe the TCP/IP reference model and main functionalities of each layer.

(2) List at least two protocols in each layer of the TCP/IP reference model.

得 分

五、General question（10 points）

Explain how TCP performs congestion control by referring to the figure below.

答题格式

姓名：＿＿＿＿＿＿＿＿＿＿　　　学号：＿＿＿＿＿＿＿＿＿＿＿

一、

1.　　2.　　3.　　4.　　5.　　6.　　7.　　8.　　9.　　10

11.　　12.　　13.　　14.　　15.　　16.　　17.　　18.　　19.　　20.

二、

1.

2.

3.

4.

5.

6.

三、

（1）

（2）

四、

（1）

（2）

五、