



Final Exam, Second Semester: 2015/2016
Computer Engineering Department

Course Title: Computer Networks, Communication and computer Networks
Course No: 630411,650522
Lecturer: Eng.Sultan M. Al-Rushdan

Date: 14/06/2016
Time: 2 hours
No. of pages: 4

Instructions:

- **ALLOWED:** Non-programmable calculator, pens and drawing tools (**no red colour**).
- **NOT ALLOWED:** Papers, literatures and any handouts. Otherwise, it will lead to the non-approval of your examination.
- **Shut down** Telephones, and other communication devices.

Please note:

- Write your name and your matriculation number on every page of the solution sheets.
- All solutions together with solution methods (explanatory statement) must be inserted in the labelled position on the solution sheets.
- Support your answer with diagrams, equations and examples when possible
- You can submit your exam after the first hour.

Question 1:

(15 marks)

Chose the correct answer for the following questions.

1- What is the default subnet mask for a class C network?

- A. 127.0.0.1 B. 255.0.0.0 C. 255.255.0.0 D. 255.255.255.0

2- Which of the following is a disadvantage of wireless LAN?

- A. Slower data transmission B. higher error rate
C. interference of transmissions from different computers D. All of the above

3- Which of the following device is used to connect two LANs when the two LANs use different protocols?

- A. hub B. bridge C. router D. repeater

4- What device separates a single network into two segments but lets the two segments appear as one to higher protocols?

- A. Switch B. Bridge C. Gateway D. Router

5- What protocol is used to find the hardware address of a local device?

- A. RARP B. ARP C. IP D. ICMP

6- What is the address range of a Class B network address in binary?

- A. 01xxxxxx B. 0xxxxxxx C. 10xxxxxx D. 110xxxxx

7- Routers operate at layer _____. LAN switches operate at layer _____. Ethernet hubs operate at layer _____.

- A. 3, 3, 1 B. 3, 2, 1 C. 3, 2, 1 D. 3, 3, 2

8- A receiving host has failed to receive all of the segments that it should acknowledge. What can the host do to improve the reliability of this communication session?

- A. Send a different source port number. B. Restart the virtual circuit.
C. Decrease the sequence number. D. Decrease the window size.

9- Which protocol does DHCP use at the Transport layer?

- A. IP B. TCP C. UDP D. ARP



10- What is the purpose of flow control?

- A. To ensure that data is retransmitted if an acknowledgment is not received.
 - B. To reassemble segments in the correct order at the destination device.
 - C. To provide a means for the receiver to control the amount of data sent by the sender.
 - D. To regulate the size of each segment.
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11- Which of the following types of connections can use full duplex?

- 1. Hub to hub
 - 2. Switch to switch
 - 3. Host to host
 - 4. Switch to hub
 - 5. Switch to host
- A. 1, 2 and 4 B. 3 and 4 C. 3 and 5 D. 2, 3 and 5
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12- Which fields are contained within an IEEE Ethernet frame header?

- A. Source and destination MAC address
 - B. Source and destination network address
 - C. Source and destination MAC address and source and destination network address
 - D. Port Number
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13- What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.224 subnet mask?

- A. 14 B. 15 C. 16 D. 30
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14- in which routing strategy all possible routes are tried.

- A. Fixed routing B. Flooding routing C. Random routing D. Adaptive routing
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15- what fields are contained in TCP header

- A. Source and destination Ports.
- B. Acknowledgement number.
- C. Push and Urgent flages.
- D. All of the above.

Question 2:

(3 marks)

Explain the dynamic window sizing congestion control used in TCP protocol.



Question 3: _____ **(2 marks)**
what are the differences between TCP and UDP protocols, and list an application for each one.

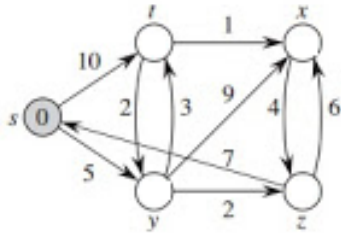
Question 4: _____ **(3 marks)**
What are the error control mechanisms (Automatic repeat Request – ARQ) used in HDLC protocols.

Question 5: _____ **(2 marks)**
Explain the process of fragmentation used in IPv6.

Question 6: _____ **(3 marks)**
IP provides a connectionless service between end systems, what are the advantages of connectionless services.

Question 7: _____ **(2 marks)**
100Base-T4 :-
100 Base-TX :-
10 Base-2 :-
100Base-FX :-

Question 8: **(5 marks)**
Implement the Dijkstra's algorithm to find the shortest Path from node s to all other nodes.



Question 9: **(5 marks)**
Given the following table which represent the Round Trip Time (RTT) for some Data Packets, calculate the Smoothed Round Trip Time for the fourth packet (SRTT(4)), assuming $\alpha=0.9$ then calculate the Retransmission Time Out (TRO) assuming $\beta=1.7$ (Assume the $SRTT(0)=RTT(1)$).

Packet Number (i)	1	2	3	4
RTT(i)	3	4	2	5