



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2017/2018**

COURSE NAME : COMPUTER NETWORKS
COURSE CODE : BEC41003
PROGRAMME CODE : BEJ
EXAMINATION DATE : JUNE/JULY 2018
DURATION : 3 HOURS
INSTRUCTION : ANSWERS ALL QUESTIONS

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THIS QUESTION PAPER CONSISTS OF NINE (9) PAGES

SECTION A (OBJECTIVE QUESTIONS)

Q1 What is the access point in wireless LAN?

- i. wireless devices itself
- ii. device that allows wireless devices to connect to a wired network
- iii. device that will forward packets toward their ultimate destinations
- iv. device that provides search results, e-mail, Web pages, and videos

- (a) ii
- (b) iii
- (c) i and iii
- (d) ii and iv

(2 marks)

Q2 Website uses this application layer protocol

- (a) SIP
- (b) FTP
- (c) HTTP
- (d) SMTP

(1 mark)

Q3 Which layer provides the services to user?

- (a) Session layer
- (b) Application layer
- (c) Presentation layer
- (d) None of the mentioned

(1 mark)

Q4 Application layer protocol defines

- i. types of messages exchanged
- ii. host-to-host communication service.
- iii. message format, syntax and semantics
- iv. rules for when and how processes send and respond to messages

- (a) i, ii, and iii
- (b) i, ii, and iv
- (c) i, iii, and iv
- (d) ii, iii, and iv

(2 marks)

Q5 Which layer do the data link layer takes the packets from and encapsulates them into frames for transmission?

- (a) Physical layer
- (b) Network layer
- (c) Transport layer
- (d) Application layer

(1 mark)



- Q6** Which layer will link the Network Support Layers with User Support Layers
- (a) session layer
 - (b) network layer
 - (c) data link layer
 - (d) transport layer

(1 mark)

- Q7** In virtual circuit network, each packet contains
- i. a long VC number
 - ii. full source address
 - iii. a short VC number
 - iv. full destination address

- (a) i
- (b) iii
- (c) i, ii, and iv
- (d) ii, iii, and iv

(2 marks)

- Q8** The underlying Transport layer protocol used by SMTP is
- i. FTP
 - ii. TCP
 - iii. UDP

- (a) i
- (b) ii
- (c) i and iii
- (d) ii and iii

(2 marks)

- Q9** User datagram protocol is called connectionless because _____
- (a) it sends data as a stream of related packets
 - (b) all UDP packets are treated independently by transport layer
 - (c) it specifies the format of the packets that are received among routers
 - (d) None of the mentioned

(1 mark)

- Q10** ICMP is primarily used for
- i. addressing
 - ii. forwarding
 - iii. error and diagnostic functions

- (a) ii
- (b) iii
- (c) i and ii
- (d) i and iii



(2 marks)

Q11 The 4 bytes IP address consists of

- i. host address
- ii. network address
- iii. universal address
- iv. subnet mask address

- (a) i and ii
- (b) i and iv
- (c) ii and iii
- (d) iii and iv

(2 marks)

Q12 Which address is used in Internet for employing the TCP/IP protocols?

- i. port address
- ii. logical address
- iii. specific address
- iv. physical address

- (a) i, ii, and iii
- (b) i, iii, and iv
- (c) ii, iii, and iv
- (d) i, ii, iii, and iv

(2 marks)

Q13 IPSec is designed to provide the security at the _____

- (a) session layer
- (b) network layer
- (c) transport layer
- (d) application layer

(1 mark)

Q14 Which one of the following task is not done by data link layer?

- (a) Framing
- (b) Flow control
- (c) Error control
- (d) Channel coding

(1 mark)

Q15 Which sublayer of the data link layer performs data link functions that depend upon the type of medium?

- (a) logical link control sublayer
- (b) media access control sublayer
- (c) network interface control sublayer
- (d) None of the mentioned

(1 mark)

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- Q16** Automatic repeat request error management mechanism is provided by _____
- (a) logical link control sublayer
 - (b) media access control sublayer
 - (c) network interface control sublayer
 - (d) None of the mentioned
- (1 mark)
- Q17** Outline the correct component(s) that belongs to data link protocol?
- i. HDLC
 - ii. ethernet
 - iii. point to point protocol
- (a) i and ii
 - (b) i and iii
 - (c) ii and iii
 - (d) i, ii and iii
- (2 marks)
- Q18** Which multiple access technique is used by IEEE 802.11 standard for wireless LAN?
- (a) CDMA
 - (b) ALOHA
 - (c) CSMA/CA
 - (d) None of the mentioned
- (1 mark)
- Q19** A wireless network interface controller can work in
- i. demo mode
 - ii. ad-hoc mode
 - iii. supervisor mode
 - iv. infrastructure mode
- (a) ii and iv
 - (b) iii and iv
 - (c) i, ii, and iii
 - (d) ii, iii, and iv
- (2 marks)
- Q20** State True or False for the following characteristics of optical fiber cables.
- i. The cost of fiber optic cable is more compared to twisted pair and co-axial.
 - ii. The installation of fiber optic cable is much easier.
- (a) i-True, ii-True
 - (b) i-False, ii-True
 - (c) i-True, ii-False
 - (d) i-False, ii-False
- (2 marks)

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SECTION B (SUBJECTIVE QUESTIONS)

Q21 (a) Consider sending a packet from a source host to a destination host over a fixed route. List the delay components in the end-to-end delay. Identify the constant delay(s) and variable delay(s)?

(8 marks)

(b) Suppose Andy and Brian are sending packets to each other over a computer network. Suppose Sam positions himself in the network so that he can capture all the packets sent by Andy and send whatever he wants to Brian; he can also capture all the packets sent by Brian and send whatever he wants to Andy. Speculate the four (4) malicious things Sam can do from this position?

(8 marks)

Q22 (a) Suppose you wanted to do a transaction from a remote client to a server as fast as possible. Would you use UDP or TCP? Elaborate your answer.

(6 marks)

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- (b) From a user's perspective, determine the difference between the download-and-delete mode and the download-and-keep mode in POP3?

(8 marks)

Q23 UDP and TCP use 1s complement for their checksums. Suppose you have the following three 8-bit bytes:

01010011, 01100110, 01110100

- (a) Identify the 1s complement of the sum of these 8-bit bytes? Show all work.

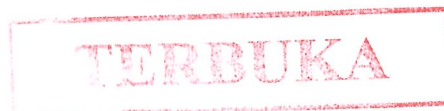
(6 marks)

- (b) Reason why UDP takes the 1s complement of the sum instead of using the sum?

(2 marks)

- (c) With the 1s complement scheme, how does the receiver detect errors?

(2 marks)



- (d) Is it possible that a 1-bit error will go undetected?

(1 mark)

Q24

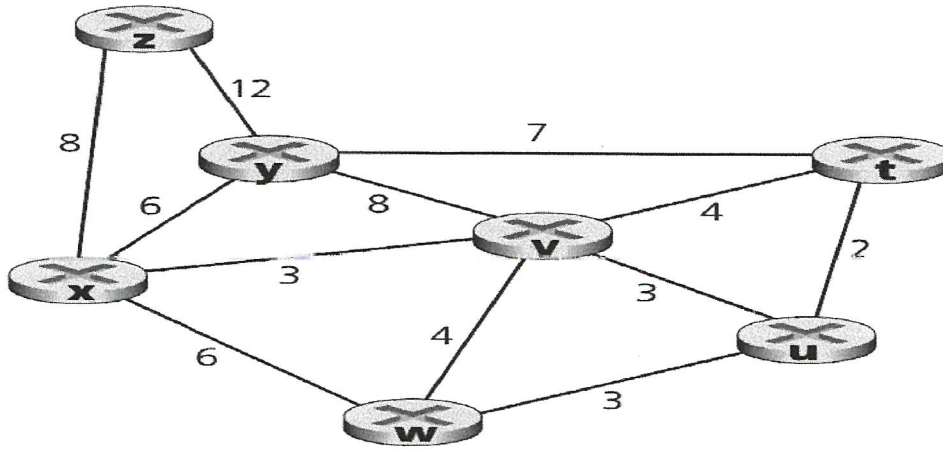


Figure Q24

Consider the network shown in **Figure Q24**. With the indicated link costs, use Dijkstra's shortest-path algorithm to:

- (a) Compute the shortest path from *x* to all network nodes. Show how the algorithm works by using appropriate table

(10 marks)

- (b) Repeat (a) for node *y* to all network nodes.

(10 marks)

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Q25 Suppose there are two ISPs providing Wi-Fi access in a coffee house, with each ISP operating its own AP and having its own IP address block.

- (a) Further suppose that by accident, each ISP has configured its AP to operate over channel 11.
 - (i) Will the 802.11n (with the speed of 600 Mbps) protocol completely break down in this situation? Explain your answer. (5 marks)

- (ii) Discuss what happens when two stations, each associated with a different ISP, attempt to transmit at the same time. (2 marks)

- (b) Now suppose that one AP operates over channel 1 and the other over channel 11. How do your answers change? (2 marks)



– END OF QUESTIONS –