MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY

FINAL EXAMINATION

JANUARY 2016 SEMESTER

SUBJECT CODE	:	IFD21603
SUBJECT TITLE	:	WIRELESS NETWORK
LEVEL	:	DIPLOMA
TIME / DURATION	:	3.00 pm – 5.30 pm (2 1/2 HOURS)
DATE	:	20 MAY 2016

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. This question paper consists of TWO SECTIONS: SECTION A AND SECTION B.
4. Answer ALL questions in SECTION A and THREE questions ONLY in SECTION B.
6. Please write your answers on the ANSWER BOOKLET given.
7. Answer all questions in English.

THERE ARE 11 PAGES OF QUESTIONS, INCLUDING COVER PAGE

SECTION A (Total: 25 marks)

MULTIPLE CHOICE QUESTIONS

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

1. A passive conductor used to transmit electromagnetic waves through space is called a (an) _____.
   A. Bridge
   B. WNIC
   C. Access point
   D. Antenna

2. What is the term used to describe the capability of networking devices from different manufacturers to communicate effectively?
   A. Interconnect
   B. Scalability
   C. Reliability
   D. Interoperability

3. WLAN offers _____ feature by allowing users to access the network using any available devices with Wi-Fi supported.
   A. Mobility
   B. Redundancy
   C. Flexibility
   D. Scalability

4. By having _____ feature, the devices can be added and removed depending on the number of user.
   A. Mobility
   B. Flexibility
   C. High availability
   D. Scalability

5. In wired network, a _____ is used to physically connect end users to the network.
   A. Router
   B. Switch
   C. Server
   D. Bridge

6. Ahmad is trying to connect to new company branch's network with distance 120 meters apart using wired technology. Suggest him one device that can be used for this purpose.
   A. Fiber optic
   B. UTP cable
   C. Wireless bridge
   D. Access point

7. Accessing network using WLAN consumes less battery compared to wired.
   A. True
   B. False

8. WLAN can become a good solution for the following scenario EXCEPT:
   A. Company that regularly move from one location to another location
   B. Hard to wire area
   C. Network that required high speed and high reliable network connection
   D. Less cost network implementation

9. _____ is a protocol that is used to enable wireless devices to locally connect to WLAN with speed more than 11Mbps.
   A. Ethernet
   B. Wireless-Fidelity (Wi-Fi)
   C. WAP
   D. 3G

10. The interference can be reduced by removing the source of interference far from the user and the access point.
    A. True
    B. False

11. Human body can be an obstruction to the WLAN signal.
    A. True
    B. False

12. The following factors should be considered when designing WLAN, EXCEPT:
    A. High availability
    B. Proprietary
    C. Manageability
    D. Scalability

13. Kajol requires high speed and less interference wireless connection to upload his game application to the Internet. Which 802.11 standard should be used by Kajol?
    A. 802.11a
    B. 802.11g
    C. 802.11n
    D. 802.11ac

14. _____ standard should not be enabled concurrently with other standards as it will downgrades the speed of other standards.
    A. 802.11g
    B. 802.11b
    C. 802.11n
    D. 802.11ac

15. Based on the radio rules, as the clients go further from the AP, the signal received will be _____.
    A. Increased
    B. Decreased
    C. Extended
    D. Slower

16. Interoperability might give the following benefits, EXCEPT:
    A. Price of device become lower
    B. Technology update more frequent
    C. Difficult to connect devices from different manufacturers
    D. Easier to connect devices from different manufacturers

17. One of the advantages of 802.11a standard is less exposed to the interference.
    A. True
    B. False

18. You need to add a wireless access point to a new office. Which additional configuration step is necessary in order to connect to an access point that has SSID broadcasting disabled?
    A. Configure open authentication on the AP and the client
    B. Set the SSID value in the client software to public
    C. Set the SSID value on the client to the SSID configured on the AP
    D. Configure MAC address filtering to permit the client to connect to the AP

19. Each of the following is the limitation of wired networks that wireless networks overcome EXCEPT:
    A. A user who shifts the computer on his or her desk may break one or more of the wires in a patch cable.
    B. A cable splice that is down correctly can cause problems that result in intermittent errors that are very difficult to identify.
    C. Moisture can erode metallic conductors on a network connection.
    D. Wired networks require that all equipment be IEEE certified.

20. Which wireless mode is being used by a student, who uses a wireless connection to link her lab partner's notebook PC in a study hall, without using an access point?
    A. IBSS
    B. Infrastructure
    C. Fixed-base
    D. roaming

21. Which of the following is an advantage of wireless data network?
    A. Interference
    B. Security
    C. Mobility
    D. High battery consumption

22. During roaming activity, the _____ on the client is maintained even though it is connected to different AP.
    A. channel
    B. IP address
    C. data rate
    D. coverage

23. _____ is a cellular wireless data network technology through which an user can access the Internet.
    A. 5G
    B. OFDM
    C. DSSS
    D. WLAN

24. An access point has a (n) _____interface that allows it to connect to a wired network.
    A. ethernet
    B. serial
    C. antenna
    D. power

25. _____ is a technology that allows an access point to be placed in locations even though there is not an electrical outlet nearby.

A. Bridging
B. Power over Ethernet
C. Roaming
D. Redundancy

SECTION B (Total: 75 marks)

INSTRUCTION: Students are required to answer THREE (3) questions ONLY. Please use the answer booklet provided.

Question 1:

A. "Wireless data communications are found across all sectors of the economy. However, several sectors use wireless more extensively than others."

Briefly explain ONE (1) of application of wireless data communication each for the following sectors. (4 marks)

i. Agriculture
ii. Travel / Tourism

B. One of the standards set by IEEE in producing 802.11 devices states that all devices must have mobility feature.

i. Explain TWO (2) benefits of having standard in the growing process of wireless technology. (4 marks)
ii. State TWO (2) 802.11 devices and briefly explain the function of each. (4 marks)
iii. State which device has the same function as a fiber optic in a wired network. (1 mark)

C. As RF travels through the air, it will interact with different type of materials which may change the characters of the wavelength.

i. State ONE (1) phenomenon that can cause high signal strength yet low quality. (2 marks)
ii. Suggest TWO (2) solutions that can help to reduce RF interference in an office environment. (4 marks)

D. Briefly explain TWO (2) issues in using WLAN. (6 marks)

[25 marks]

Question 2:

A. WLAN become a need for company which requires temporary LAN connection. Briefly explain how WLAN can help the company to reduce operation cost. (4 marks)

B. WPAN is one of the global wireless standards used to connect devices in short range.

i. Give TWO (2) examples of technology which using WPAN standard. (2 marks)

ii. Give TWO (2) disadvantages of WPAN standard. (4 marks)

C. There are two type of antenna; detachable and non-detachable antenna.

i. Differentiate these two types of antenna. (4 marks)

ii. Give TWO (2) example of non-detachable antenna. (2 marks)

D. Jamal plans to extend his company's network to the new branch located approximately 150m apart. As a network designer in the company, you have been assigned to help Jamal to plan the new network.

i. Suggest him TWO (2) suitable wireless devices to be used in extending the existing network. (2 marks)

ii. If wired technology become an option, which wired devices are equivalent to the proposed devices in D (i). (2 marks)

iii. Suggest ONE (1) software that can be used to monitor the signal strength of the existing WLAN surround the deployment area. (1 mark)

E. One of the parameter to setup WLAN is SSID.

i. Define SSID. (2 marks)

ii. Explain how hiding SSID may secure WLAN. (2 marks)

[25 marks]

Question 3:

A. Ad-hoc network is normally being setup when unplanned network connectivity is required.

i. Define ad-hoc network. (2 marks)

ii. List TWO (2) advantages and TWO (2) disadvantages of the implementation of Ad-hoc network. (4 marks)

iii. Suggest TWO (2) scenarios in which ad-hoc network becomes the most suitable wireless technology to be used. (4 marks)

B. Imran is a network engineer in Berkat Legal Firm Sdn Bhd. He is installing new WLAN in his office as an addition to the existing LAN.
As a legal firm, all the data are treated as private and confidential. Based on the plan, the wireless access is restricted only to the lawyers and the rest will be connected to the network through wired.

i. Propose THREE (3) possible methods to be used by Imran to secure the network. (6 marks)

ii. Give ONE (1) possible attack if the connection is not secured. (1 mark)

iii. As an admin, suggest ONE (1) action to be taken to secure the WLAN in case you found one of the connected device sending unnecessary packet. (2 marks)

C. For outdoor network connection, it is important to ensure the Line of sight (LoS) is available. Therefore the Fresnel Zone must be cleared.

Briefly explain THREE (3) methods to improve Fresnel Zone. (6 marks)

[25 marks]

Question 4:

A. Site survey is an activity done before a WLAN implementation in one site.

i. Explain TWO (2) purpose of performing site survey. (4 marks)

ii. List THREE (3) factors to consider when performing site survey. (3 marks)

iii. Give TWO (2) devices to be used when performing site survey. (2 marks)

B. Amira is designing a WLAN for a secondary school in Klang Valley. The expected of concurrent user per floor is between 30 to 40. In addition, the school building consists of two blocks (Block A and Block B) and three floors for each block. Network at the Block A will be connected to Block B.

i. Suggest which type of access point is most suitable to be installed in the network. (1 mark)

ii. Other than AP, suggest THREE (3) more devices need to be purchased to install the network. (3 marks)

iii. How many AP is required to cover the estimated number of users per floor? (2 marks)

iv. Suggest channel ID to be configured in the AP/APs to avoid channel overlapping. (2 marks)

v. Based on your answer in question B (ii) to B (iv), design your network with correct label. (4 marks)

C. You have decided to install wireless networking at your home. Which TWO (2) of the IEEE 802.11 standards would you use? Justify your selection. (4 marks)

[25 marks]

END OF EXAMINATION PAPER