



MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY

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**FINAL EXAMINATION  
JANUARY 2016 SEMESTER**

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**SUBJECT CODE** : INB47403  
**SUBJECT TITLE** : WIRELESS NETWORK  
**LEVEL** : BACHELOR  
**TIME / DURATION** : ( 2 1/2 HOURS ) 9.00 am – 11.30 am  
**DATE** : 28 MAY 2016

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**INSTRUCTIONS TO CANDIDATES**

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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 ONE SECTION: SECTION A.
  4. Answer FOUR questions ONLY.
  6. Please write your answers on the answer booklet given.
  7. Answer all questions in English.
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THERE ARE 6 PAGES OF QUESTIONS, INCLUDING COVER PAGE

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**SECTION A (Total: 100 marks)****INSTRUCTION: Answer FOUR (4) questions ONLY.****Please use the answer booklet provided.****Question 1**

- A. Differentiate between the scalability of wired and wireless networks. (4 marks)
- B. IEEE has created a standard as a guideline for manufacturer to develop and produce wireless LAN devices.
- i. State the IEEE standard for wireless LAN devices. (1 mark)
  - ii. Briefly explain TWO (2) advantages of having standard in wireless networking industry. (4 marks)
  - iii. After many years, the WLAN standard has been improved and more updated versions have been released.  
Based on your observation, determine TWO (2) factors the manufacturers try improve in the new standards. (4 marks)
- C. State TWO (2) advantage(s) and TWO (2) disadvantage(s) of infrastructure WLAN, such as BSS and ESS, over an ad-hoc wireless network. (4 marks)
- D. A hot spot is a location that provides wireless broadband services through an access point to which roaming wireless device can connect using an ad-hoc mode.
- i. Give TWO (2) examples where you can find hot spots. (2 marks)
  - ii. Name ONE (1) possible attack when using hotspot. (1 mark)
  - iii. Briefly explain how the attack in D (ii) may harm the users. (5 marks)

[25 marks]

**Question 2**

- A. Name THREE (3) considerations **beyond the network medium** that involves in deciding between a WLAN and a wired LAN. (3 marks)
- B. Explain the security difference between wired and wireless networks. (4 marks)
- C. "Bilal is installing wireless network for his office. The number of users is 30 and they are divided into two departments; IT (20) and Admin (10). All of them are expected to use wireless connection to run their jobs such as sending and receiving emails, web browsing, printing and accessing local server for Admin staff while accessing remote networks and developing multimedia applications for IT staff. To have a reliable connection, all servers will be connected to the network via wired connection."
- Based the above scenario, you are required to assist Bilal to:
- i. Design a WLAN physical topology for his office. (4 marks)
  - ii. Give FOUR (4) devices required to setup the network. (4 marks)
  - iii. If setting of radio channel/s is necessary, suggest the channel/s that should be configured on the proposed devices. (2 marks)
  - iv. Suggest the overlapping percentage should be maintained in providing roaming services in the network. (2 marks)
  - v. Discuss THREE (3) factors to be considered before the installation of wireless devices in the building. This is to ensure better coverage can be provided to the users. (6 marks)

[25 marks]

**Question 3**

- A. "Bangunan Sultan Abdul Samad was an old building constructed long before personal computers and networks were even imagined. Installing network cabling in this older building, which often have thick masonry wall and plaster ceilings, can be difficult and costly. Also, older buildings often contain asbestos which, according to today's regulation in certain country, has to be completely removed before any major cabling infrastructure can be installed. Adding to the difficulties associated with older buildings, local or national landmark regulations often restrict the modification of facilities with historical value."

The above scenario explaining some of the difficulties faced while installing network in the older buildings. Answer the following questions based on the stated requirements.

- i. Elaborate TWO (2) advantages of WLAN that can be beneficial in this scenario. (6 marks)
  - ii. State TWO (2) building materials of Bangunan Sultan Abdul Samad and describe how it may affect the WLAN performance. (6 marks)
- B. Discuss THREE (3) considerations in deciding how many AP to be installed in a network. (6 marks)
- C. To setup outdoor connectivity, line of sight must be available with better quality of Fresnel zone. Suggest TWO (2) ways to improve the Fresnel zone. (4 marks)
- D. State THREE (3) phenomena that may occur when RF signal interacts with materials while traveling through the air. (3 marks)

[25 marks]

**Question 4**

- A. Fatin and her friends are completing their final assignment, which has to be submitted on the next morning. While searching on the internet, her modem has suddenly stops functioning. The only way they can do is connecting to the internet via mobile phone with subscribed data plan, and there is only one phone with that facility.

Help Fatin and her friends to solve the problem, so that everyone can connect to the internet and complete their assignment.

- i. Suggest ONE (1) wireless technology and ONE (1) network device that can be used to enable them to share the internet connection. (2marks)
- ii. Briefly explain how the technology mentioned in A i) can be used to share the internet connection. (6 marks)
- iii. Give TWO (2) advantages and TWO (2) disadvantages of using the technology. (4 marks)

- B. There are two types of access points in the market; Fat access point (AP) and Thin access point (AP)

- i. Differentiate between Fat AP and Thin AP. (4 marks)
- ii. Briefly explain the TWO (2) advantages and TWO (2) disadvantages of using Thin AP. (4 marks)
- iii. State the environment in which installing Fat AP become the most suitable solution. (2 marks)

- C. Nowadays, an enterprise AP has been created in the form of single band and Dual band to support high availability and flexibility of network.

- i. Define dual band access point. (2 marks)
- ii. State an interface which is being used for management interface. (1 mark)

[25 marks]

**Question 5**

A. Kamarul is a network designer. He is assigned to design a wireless network for Maju Holding as addition of the existing wired facility. Before he went to the site, he had conducted a preliminary survey virtually from his office. From the survey, he is able to have an idea on the RF environment of the Maju Holding.

- i. Identify the type of survey has been conducted by Kamarul. (2 marks)
- ii. Briefly explain how the survey mentioned in A i) helps Kamarul to study the RF environment in the building of Maju Holding. (4 marks)
- iii. Give TWO (2) requirements to conduct the survey mentioned in A i). (2 marks)
- iv. As a surveyor, decide THREE (3) actions to be taken if you find the area that you have investigated is facing high level interference. (6 marks)

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

Briefly explain an example of the application of wireless network in the following sectors. (4 marks)

- i. Agriculture
- ii. Travel / Tourism

C. One of the standard set by IEEE in producing 802.11 devices is all devices must have mobility feature.

- i. State TWO (2) 802.11 devices and briefly explain the function of each. (4 marks)
- ii. Determine the wireless device that has the same function as a fiber optic in a wired network. (1 mark)
- iii. Justify how WLAN may help a company to reduce cost in connecting network between buildings. (2 marks)

[25 marks]

**END OF EXAMINATION PAPER**