



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
SEPTEMBER 2014 SESSION**

SUBJECT CODE : FCB31402

SUBJECT TITLE : NETWORK AND MANAGEMENT SYSTEMS

LEVEL : BACHELOR

**TIME / DURATION : 9.00 AM – 11.30 AM
(2.5 HOURS)**

DATE : 07 JANUARY 2015

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. Please write your answers on the answer booklet provided.**
- 4. Answer should be written in blue or black ink except for sketching, graphic and illustration.**
- 5. Answer ALL questions**
- 6. Answer all questions in English.**

THERE ARE 3 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

INSTRUCTION: Answer ALL questions.
Please use the answer booklet provided.

Question 1

Building network is a new trend in the development of the new building today which known as Building Automation System (BAS). Explain briefly what you understand regarding building network and list the advantage and current challenge that facing by the Building Automation System today.

(20 marks)

Question 2 (15 marks)

a) Ring topology often associated with Token Ring and Fiber Distributed Data Interface (FDDI) networks. Describe, with the aid of diagrams, the operation of a ring topology network.

(5 marks)

b) Networks are important for building automation systems. There are two widely deployed configuration; centralized and decentralized networks. Explain the differences between centralized and decentralized networks.

(5 marks)

c) Attached Resource Computer Network (ARCNET) is one of the LAN standard used in building automation systems. Describe the characteristics of ARCNET.

(5 marks)

Question 3 (15 marks)

a) Describe the importance of '**interoperability**' in building systems.

(3 marks)

b) List the advantages of network-based systems in building environment.

(3 marks)

c) Distinguish the difference between Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP).

(4 marks)

d) Explain the term "*roaming*" in the wireless network

(5 marks)

Question 4 (15 marks)

a) The Open Systems Interconnection (OSI) model describes a seven layer hierarchy, intended for computer network and data communications, also as a framework for developing protocol standards. Outline the names of these layers and briefly describe their function.

(7 marks)

b) Both circuit switching and packet switching are two different technologies used to send messages over network. Distinguish the differences between circuit switching and packet switching.

(5 marks)

c) State three characteristics of weakness in data transmission.

(3 marks)

Question 5 (15 marks)

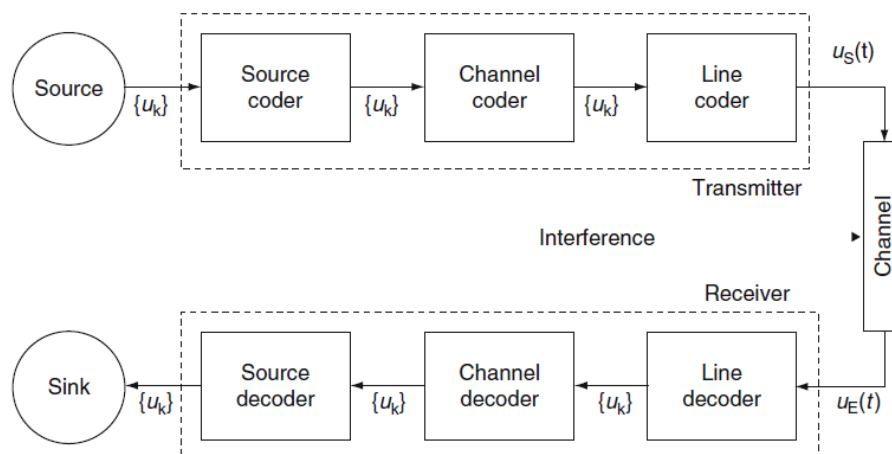


Figure Q5: The process of digital data transmission systems

The figure above shows the process of digital data transmission systems.

a) Based on the figure above, explain how data bits are transferred from source to sink.

(5 marks)

b) Explain the functionalities of **source coding and decoding** in digital data transmission systems.

(6 marks)

c) Cyclic Redundancy Check (CRC) is an error detection technique often used in field buses. Describe the mechanism for error detection using Cyclic Redundancy Check (CRC).

(4 marks)

Question 6 (20 marks)

a) In building automation system, the entire configuration can be depicted using a three-layer model. Outline the three-layer model and briefly describe their function.

(6 marks)

b) BACnet (Building Automation and Control Network) is a standardized data communication protocol developed by ASHRAE. BACnet is used in building automation to enable devices and systems to exchange information.

i. What are the services categories offered by BACnet on its application layer?

ii. What are the supported media links offered by BACnet?

(6 marks)

c) LonWorks is an open networking solution for building automation and control networks. LonWorks be used in centralized building automation controllers as well as in decentralized building control components. Describe the components of LonWorks technology.

(8 marks)

END OF QUESTION