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**University Examinations 2015/2016**

STAGE TWO EXAMINATION FOR

DIPLOMA IN INFORMATION TECHNOLOGY

**CIT 2153: DATA COMMUNICATION AND NETWORKS**

**DATE: AUGUST 2016 TIME: 1 ½ HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two***questions.

**QUESTION ONE (30 MARKS)**

1. List the three modes of data communication (3 marks)
2. Define the terms (3 marks)
3. Data signal
4. Protocol
5. Baud rate
6. A multinational organization intends to hold a meeting with all its board of directors situated in different parts of the world. To achieve this, the managing director has to apply a networking communication technique to hold the meeting.
7. Which technology should the managing director use to facilitate communication?

(1 mark)

1. Name two devices that are to be used together with the computer for this to be achieved. (2 marks)
2. Give two advantages of using this internet service (2 marks)
3. Distinguish the following terms as used in networking
4. Network server and network workstation (2 marks)
5. Peer-to-peer network and client/server network (2 marks)
6. Half duplex and full duplex transmissions (2 marks)
7. Synchronous and asynchronous (2 marks)
8. What is the significance of cladding in fiber optic cable (2 marks)
9. Explain the concept of redundancy in error detection and correction (3 marks)
10. Describe the importance of the following communication devices
11. NIC card (1 mark)
12. Bridge (1 mark)
13. Give two reasons why wireless communication is becoming more common than the cabled network (2 marks)
14. Name three layers in the OSI model which are network support layers (2 marks)

**QUESTION TWO (20 MARKS)**

1. Describe the following categories of Twisted pair cable
2. Cat 3 (2 marks)
3. Cat 4 (2 marks)
4. Cat 5 (2 marks)
5. Name four types of resources which can be shared in a network (3 marks)
6. Give any two factors that affect the performance of a Local Area Network (2 marks)
7. Transmission impairment means that the signal at the beginning of a medium is not the same as the signal at the end of a medium. List and explain the THREE causes of transmission impairment. (6 marks)
8. List any three services provided by the application layer. (3 marks)

**QUESTION THREE (20 MARKS)**

1. With an aid of a diagram, describe the bus topology (6 marks)
2. Define the following terms (4 marks)
3. Computer network
4. Data communication
5. Give three factors that determine whether a communication system is a Local Area Network or a Wide Area Network. (3 marks)
6. Give three devices which can be used in a bus topology. (3 marks)
7. Describe the importance of terminator as used in bus topology (2 marks)
8. List any two layers of the Internet model and describe the duties of each layer (2 marks)

**QUESTION FOUR (20 MARKS)**

1. Explain the concept of distributed processing in networking. (3 marks)
2. Distinguish between a Data Circuit-Terminating Equipment (DCE) and a Data Terminal Equipment (DTE) (4 marks)
3. With an aid of a diagram, describe how light signal travels through a fiber optic cable. (5 marks)
4. Why would an organization prefer to use a switch instead of a hub when setting up a network (4 marks)
5. List two transmission media used in wireless transmission. (2 marks)
6. Determine the type of a network characterized by: (2 marks)
7. Connection between computers, printers and other resources using UTP cables.
8. Over 300 computers connected to share resources in a city.

**QUESTION FIVE (20 MARKS)**

1. Briefly describe the following layers as used in OSI model (6 marks)
2. Physical Layer
3. Network Layer
4. Application Layer
5. Give three problems of networking computers in an organization (3 marks)
6. Distinguish between
7. Thinnet and Thicknet coaxial cables. (2 marks)
8. Bluetooth technology and Infrared transmission (2 marks)
9. Give three advantages of fiber-optic cable over satellite in data communication (3 marks)
10. Give any two examples of network operating system. (2 marks)
11. Explain the *line of sight principle* in wireless communication (2 marks)