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University Examinations 2013/2014

THIRD YEAR, FIRST SEMESTER EXAMINATION FOR DEGREE OF BACHELOR OF
BUSINESS INFORMATION TECHNOLOGY

AND

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR DEGREE OF BACHELOR OF
BUSINESS INFORMATION TECHNOLOGY

HBT 2105/BBT 2201: DATA COMMUNICATION AND COMPUTER NETWORKS

DATE: APRIL 2014

TIME: 2 HOURS

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

QUESTION ONE – (30 MARKS)

- (a) Define the following terms as used in Data communication.
- | | |
|--------------------------------|----------|
| (i) Server | (1 mark) |
| (ii) Data communication | (1 mark) |
| (iii) Multipoint communication | (1 mark) |
| (iv) Receiver | (1 mark) |
| (v) Information | (1 mark) |
- (b) Differentiate between the following:
- | | |
|---|-----------|
| (i) Simplex communication and half duplex communication | (2 marks) |
| (ii) Active topology and passive topology | (2 marks) |
| (iii) Local Area Network and Metropolitan Area Network | (2 marks) |
- (c) Computers are networked for various purposes. Describe three. (3 marks)
- (d) Give three disadvantages of using fiber optic transmission over other medium. (3 marks)

- (e) (i) What is network topology? (1 mark)
- (ii) Describe how a ring topology works. (4 marks)
- (iii) What are terminators and why are they an important aspect of the bus topology? (3 marks)
- (f) Collision may occur when computers are communicating. To ensure smooth communication, carrier access methods are created. Briefly describe how CSMA/CD achieves this. (4 marks)
- (g) Detail what the OSI reference model is. (1 mark)

QUESTION TWO – (20 MARKS)

- a) The number of layers in any communication model is derived on some principles. Briefly detail four giving explanation for each. (4 marks)
- b) Briefly explain the advantages of layered network architecture. (3 marks)
- c) i) The OSI model is divided into two halves. Name them. (1 mark)
- ii) Give in detail the functions of each of the following OSI layers:
 - 1. Data link layer (4 marks)
 - 2. Session layer (4 marks)
 - 3. Presentation layer (4 marks)

QUESTION THREE – (20 MARKS)

- a) Differentiate between networking and internetworking devices. (4 marks)
- b) You have been invited to the local secondary school to give a presentation on networking devices. Outline what your presentation will entail giving the students the main networking devices and what each is used for. (16 marks)

QUESTION FOUR – (20 MARKS)

- a) Using well illustrated diagrams, discuss three types of guided media that can be used in data communication. (9 marks)
- b) Draw the following topologies and explain how each works.
 - i. Bus network (4 marks)
 - ii. Star network (4 marks)
 - iii. Mesh network (3 marks)

QUESTION FIVE – (20 MARKS)

- a) Discuss in details the following methods off switching:
 - i. Circuit switching (4 marks)
 - ii. Packet switching (4 marks)
 - iii. Message switching (4 marks)
- b) Differentiate between synchronous and asynchronous time division multiplexing. (4 marks)
- c) The Network Interface Card is a very important device to any computer that must be connected to a network. Give the roles it plays in data communication. (4 marks)