

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATIONS
RESIT/SPECIAL EXAMINATION**

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN
APPLIED COMPUTER SCIENCE**

ACSC 261: DATA COMMUNICATION AND NETWORKS

STREAMS: BSC (APPLIED COMPUTER SCIENCE)

TIME: 2 HOURS

DAY/DATE: TUESDAY 02/02/2021

11.30 A.M – 1.30 P.M.

INSTRUCTIONS:

- Attempt question ONE (Section A) and any other TWO from SECTION B
- Marks are awarded for clear and concise answers
- ONLY the first THREE Questions attempted will be marked (Question one inclusive)

SECTION A-Compulsory

Question ONE (30 Marks)

- a) Differentiate the following terms
- Intranet and Extranet (2 marks)
 - Broadband and baseband (2 marks)
 - Unshielded twisted pair and shielded twisted pair (2 marks)
 - Parallel transmission and serial transmission (2 marks)
 - MAN and WAN (2 marks)
- b) Differentiate between Multicast and Broadcast (4 marks)
- c) describe the operation and significance of the Time To Live (TTL) field of an IP packet Briefly header [6Marks]
- d) With an aid of a diagram differentiate between simple mail transfer protocol (SMTP) and the SNMP (6 marks)

- e) Briefly explain the mechanism that Ethernet applies in detection of MAC frame errors.

(4 Marks)

Question TWO (20 Marks)

- a) With an aid of a diagram, explain the OSI reference model (14 marks)

- b) Compare and contrast the channels using electrical cables and those using optical cables
(6marks)

Question THREE (20 Marks)

- a) Assume that you are an employee in the department of computer science.
- i. Make out a purchase order requesting that a newly set up training lab with 40 computers be joined to the network (3 marks)
 - ii. Fully explain on your purchase order why it is necessary to join this new lab to the network (5 marks)
- b) One way of separating a network is by using routers .The other is creating VLANs. Give THREE benefits of creating several LANs to separate hosts into networks (3 marks)
- c) With the use of diagrams explain the three types of multiplexing techniques (9 marks)

Question FOUR (20 Marks)

- a) Explain the following WAN switching techniques (6 marks)
- i. Packet switching
 - ii. Message switching
- b) Explain three features that can be used to measure the effectiveness of data communication (6 marks)
- c) State two advantages of fiber optic cables (2 marks)

Question FIVE (20 Marks)

- a) Briefly describe the operation of the following network standards/technologies. For each of the standards, show the frame/packet structure./architecture
- i. Ethernet (5 marks)
 - ii. FDDI (5 marks)
- b) Give ONE differences between a switch and a hub. (1 mark)
- c) With an aid of a diagram explain three types of topologies. (9 marks)
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