**KABARAK** **UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**MAIN CAMPUS**

**FIRST SEMESTER, 2019/2020 ACADEMIC YEAR**

# EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE, TELECOMMUNICATIONS, INFORMATION TECHNOLOGY, BACHELOR OF BUSINESS INFORMATION TECHNOLOGY AND BACHELOR OF BUSINESS MANAGEMENT AND INFORMATION TECHNOLOGY

## COMP 312/INTE 213/BBIT 213: NETWORK AND COMMUNICATION TECHNOLOGY/COMPUTER NETWORKS

**STREAM: Y3S1** **TIME: 11:00-1:00PM**

**EXAMINATION SESSION:SEP- DEC** **DATE:6/12/2019**

**VENUE: AUDITORIUM** **COPIES: 135**

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**INSTRUCTIONS TO CANDIDATES**

1. **Answer Question 1 and any other two questions in the answer booklet provided.**
2. **Do not write on your question papers. All rough work should be done in your answer booklet.**
3. **Clearly indicate which question you are answering.**
4. **Write neatly and legibly.**
5. **Edit your work for language and grammar errors.**
6. **Follow all the instructions in the answer booklet**

**SECTION A: (Compulsory) TOTAL MARKS FOR THIS SECTION IS 30.**

**QUESTION ONE**

(a) Explain the meaning of following terms as far as computer networks are concerned

i. Frame format (2mks)

ii. Proxy server (2mks)

(b) Give any four advantages and four disadvantages of using *thicknet* over *STP* cables as means of signal transmission (4mks)

(c) Compare and contrast a *static* and a *dynamic* router routing modes (6mks)

(c) Describe the features of an FDDI network technology (8mks)

(d) For each of these four network issues: ARP, DoS, CRC and RJ45,

i. Write their names in full (2mks)

ii. Explain their functions in networking (4mks)

iii. State the OSI reference model layer they operate at (2mks)

**SECTION B. TOTAL MARKS FOR THIS SECTION IS 40.**

**ANSWER ANY TWO QUESTIONS FROM THIS SECTION. EACH QUESTION IN THIS SECTION CARRIES 20 MARKS.**

**QUESTION TWO**

(a) Explain with an example the meaning of the term *subnet mask* (3mks)

(b) Compare and contrast TCP and UDP protocols (6mks)

(c) Consider the IP address 197.255.0.255

i. Convert each part of the IP address to a binary number and express the address in a binary number format (5mks)

ii. Identify the class, network id, host id and the subnet of the IP address (4mks)

iii. Explain why it is not advisable to assign the address to a network node (2mks)

**QUESTION THREE**

(a) Explain the meaning of the term *thin client* as in network architecture (2mks)

(b) State any five advantages and five disadvantages of using a client-server network structure (5mks)

(c) For communication to be effective from a sender to a receiver, network issues have to be standardized through modeling. Describe how TCP/IP reference model models network issues (9mks)

(d) Briefly, discuss layer 3 issues of the OSI reference model (4mks)

**QUESTION FOUR**

A newly established *Busara University* wishes to set up a network across its three campuses situated in a given region. A set of network devices and links have to be chosen to set up the network as well as segments within each campus.

(a) What would be the effects of using a bridge over a switch in segment connections (5mks)

(b) Which topology would you prefer between *mesh* and *star*? Explain four reasons for your choice (5mks)

(c) Give and explain five reasons for preferring fibre optic cable as transmission medium between the three campuses (5mks)

(d) Discuss CSMA/CD as a method of controlling information access to the network (5mks)

**QUESTION FIVE**

(a) Explain the meaning of the following terms

i. Snooping (2mks)

ii. Token (2mks)

iii. Thinnet (2mks)

(b) Compare and contrast *Ethernet* and *ATM* network standards (5mks)

(c) List five differences between a *traditional LAN* and a *VLAN* network standards (5mks)

(d) Write a packet tracer CLI code that can be used to create a vlan 12 called staff in switch (S1) (4mks)