



DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

University Examinations 2019/2020

**EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN
TELECOMMUNICATIONS INFORMATION ENGINEERING**

TIE 2307 COMPUTER NETWORKS

DATE: APRIL 2020

TIME:

Instructions: Answer Question 1 and Any Other Two.

QUESTION ONE

- a) Explain the following terms as applied in computer network: (3 marks)
- i. Cloud computing
 - ii. Throughput
 - iii. End device
- b) What are two reasons a network administrator might want to create subnets? (2 marks)
- c) Discuss two reasons generally make DHCP the preferred method of assigning IP addresses to hosts on large networks (4 marks)
- d) Communication between several protocols. Explain the role of protocols and list two examples of protocols involved in communication process cited. (4 marks)
- e) Differentiate between the following:
- i. Half duplex and full duplex communication (2 marks)
 - ii. Static routes and default routes (2 marks)
- f) A company is contemplating whether to use a client/server or a peer-to-peer network. Outline three reasons, you would advise the company to set up a peer-to-peer network (3 marks)

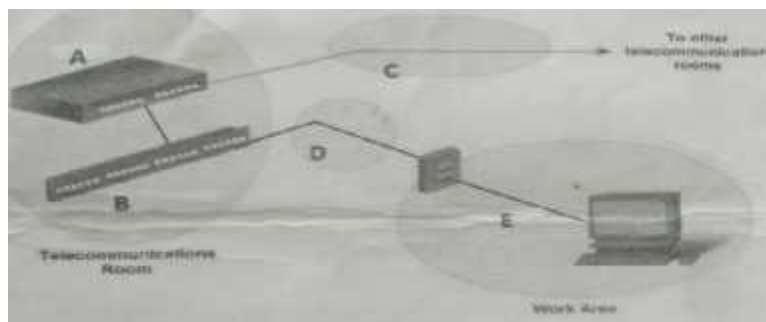
- g) Explain how the Ethernet determine the protocol to which a processed frame should be delivered (2 marks)
- h) Explain THREE criteria other than cost are used to help select a network medium from various network media (3 marks)
- i) Explain Two characteristics of Internet Protocol (IP) (2 marks)
- j) Explain two tasks can be performed by a local DNS server (4 marks)
- k) Explain the use of the **ping** command in windows based computers (1 mark)

QUESTION TWO

- a) A company has purchased two AR G3 routers that require commissioning before they can be used in the enterprise network. Required:



- i. Configure device system time parameter including device name, the system time and the system time zone (3 marks)
 - ii. Configure console port parameters including the login information and login password (5 marks)
 - iii. Configure IP addresses for the router interface and description of AR1 (3 marks)
- b) Identify the devices and cabling region labelled A to E in the LAN diagram below (5 marks)



- c) Wireless media carry electromagnetic signals that represent the binary digits of data communications using radio or microwave frequencies. Discuss TWO concerns or challenges associated with wireless networks (4 marks)

QUESTION THREE

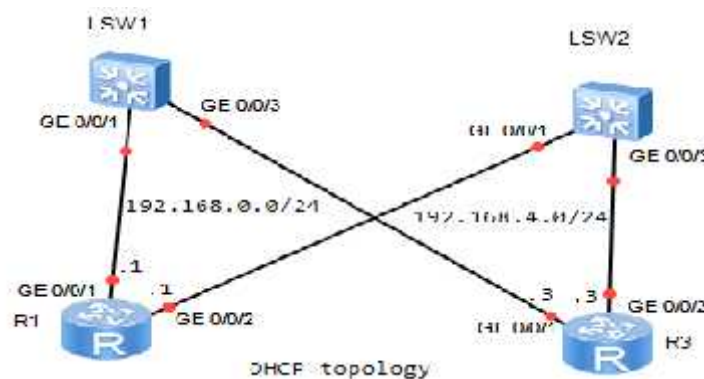
- a) Assume that you are a network administrator of a company. The company consists of two layers: core layer and access layer. The network uses a design that support network redundancy. STP will be used to prevent loops. Required:



- b) S1 and S2 are connected through two links, and STP is used. Enable STP on S1 and S2 and set S1 as the root. (4 marks)
- c) Configure S2 as the root bridge and S1 as the backup root bridge using priority values (4 marks)
- d) Shutdown / disables any two interface to ensure test result accuracy (2 marks)
- e) Given the IP address 192.168.10.192/30. List the range of the valid host addresses. (2 marks)
- f) Discuss, using examples and explaining their role in the network, the four major components of a networks. (8 marks)

QUESTION FOUR

- a) As the network administrator of the DKUT you have been tasked with implementing DHCP application services within the network. The gateway router in the university network is to be configured as a DHCP server. IP addressing from an Address pool are to be offered by the gateway(s) (R1 and R3) to respective access layer devices.



- i. Configure the global DHCP pool (5 marks)
- ii. Configure an interface based DHCP pool GigabitEthernet 0/0/2 for R1 (2 marks)

iii. Isolate addresses from the pool GigabitEthernet0/0/2 for R1 and for DNS services.

(3 marks)

b) Briefly explain four possible reasons a user may be getting this message while trying to access the internet (4 marks)



c) Briefly discuss the features of the cable shown below

(2 marks)



d) Refer to the figure below. With regard to the role of a network administrator

(4 marks)

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Administrator: Command Prompt
Ethernet adapter Ethernet:

Connection-specific DNS Suffix . : dkut.ac.ke
Description . . . . . : Realtek PCIe GBE Family Controller
Physical Address. . . . . : 08-00-2D-46-34-91
DHCP Enabled. . . . . : Yes
Autocconfiguration Enabled . . . . : Yes
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i. What tool is responsible for the information shown above?

(1 mark)

ii. What information is presented and how is it helpful?

(2 marks)

iii. What other tool can be used to gather information about network status

(1 mark)