

KABARAK



UNIVERSITY

UNIVERSITY EXAMINATIONS

2010/2011 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE

COURSE CODE: COMP 461

COURSE TITLE: INTERNETWORKING WITH TCP/IP

STREAM: Y4S2

DAY: WEDNESDAY

TIME: 9.00 – 11.00 A.M.

DATE: 16/03/2011

INSTRUCTIONS:

- 1. This question paper has FIVE questions**
- 2. Answer question one and any other two questions**

PLEASE TURN OVER

QUESTION ONE (30 MARKS)

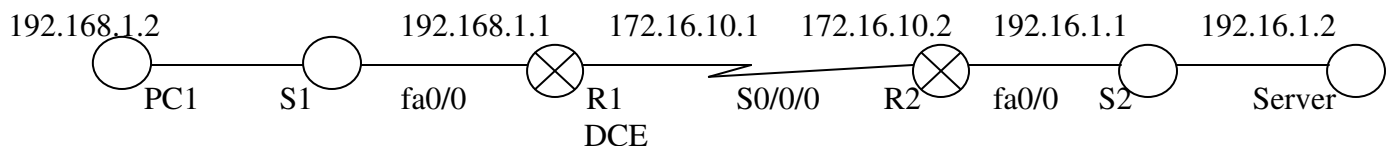
- (a) Explain the meaning of following terms
- DNS
 - DHCP
- (4mks)
- (b) Distinguish between
- Static routing and dynamic routing protocols
 - Interface configuration and router configuration modes
- (4mks)
- (c) Give four examples RFC standards
- (2mks)
- (d) Express the IPv6 address E3D7:0000:0000:0000:51F4:00C8:C0A8:6420 in a short form
- (1mk)
- (e) What is the difference between TCP and UDP protocols
- (5mks)
- (f) The key device in routing of packets is a router. Identify and explain three key components that make a router to be described as a computer.
- (6mks)
- (g) For each of the following protocols, RIP, OSPF, IGRP and ICMP
- Give their names in full
 - Explain their functions in routing
 - State whether they are dynamic or static routing protocols
- (2mks)
(4mks)
(2mks)

QUESTION TWO (20 MARKS)

- (a) Explain the meaning of the following terms
- NextHop
 - Packet routing
- (4mks)
- (b) Distinguish between
- Running-config and startup-config files
 - Encapsulation and decapsulation
- (4mks)
- (c) Briefly, describe the historical background of RFCs
- (6mks)
- (d) TCP/IP protocol is a fundamental protocol in packet routing and forwarding. Identify and explain three main characteristics of TCP/IP protocol
- (6mks)

QUESTION THREE (20 MARKS)

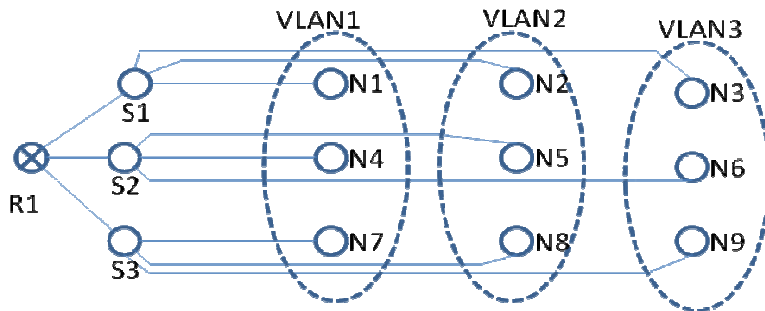
The network topology setup below shows specifications for a certain network. Use it to answer the following questions. The password and secret word for both routers are kabu and trial respectively. The server domain name is class.com



- (a) Explain the meaning of the terms *global configuration* mode and *Privileged EXEC* mode (4mks)
- (b) Identify and explain the type of cabling (straight-through or crossover) between R1 and S1 (2mks)
- (c) State the configurations that have to be made at PC1 (4mks)
- (d) Write CLI for R2 interface configurations (8mks)
- (e) Write a CLI loop back test at the server to fa0/0 R2 interface (2mks)

QUESTION FOUR (20 MARKS)

The figure below shows three segments of LAN defined by switches S1, S2 and S3. The LAN can be transformed into logical virtual networks VLAN1, VLAN2 and VLAN3 as shown. Use the diagram to answer the following questions



- (a) Explain the meaning of the term VLAN (2mks)
- (b) Explain the distinction between ISL and ATM LANE VLAN protocols (2mks)
- (c) Identify and explain any three problems of traditional networks that can be solved by VLANs (6mks)
- (d) Describe any three types of VLANs (6mks)
- (e) The name of VLAN3 is Staff. Write down CLI commands for adding the staff VLAN to existing VLANs (4mks)

QUESTION FIVE (20 MARKS)

- (a) Explain *anycast* IPv6 transmission (2mks)
- (b) Differentiate between IPv6 and IPv4 (5mks)
- (c) With the aid of a diagram, describe IPv6 frame format (4mks)
- (d) Briefly, discuss IPv6 features *Expanded Addressing Capabilities*, *Header Format Simplification* and *auto configuration* (9mks)