NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOMKAMPUS

Benodigdhede vir hierdie vraestel/Requirements for this paper:			
Multikeusekaarte/ Multi choice cards:		Nie-programmeerbare sakrekenaar/ Non-programmable calculator:	
Grafiekpapier/ Graphic paper:		Draagbare rekenaar/ Laptop:	

Oopboek-eksamen/ Open book examination:	

EKSAMEN/ EXAMINATION:	Klastoets 2 Memo	KWALIFIKASIE/ QUALIFICATION:	**B.Sc.; B.Sc. in IT;**
MODULEKODE/ MODULE CODE:	**ITRW322**	DUUR/ DURATION:	30 minute
MODULE BESKRYWING/ SUBJECT:	**Bedryfstelsels** / *Operating systems*	MAKS / MAX:	23
EKSAMINATOR(E)/ EXAMINER(S):	Mnr. H. Foulds	DATUM / DATE:	**2018/09/05**
MODERATOR:		TYD / TIME:	**9:30**

Vraag 1 / Question 1

'n Organisasie wil 'n netwerk by hul nuwe kantore laat opstel. Hulle wil 'n toegewyde verbinding tussen hul nuwe kantore en hul bedieners in die hoofgebou, 12km van daar af, hê. Een van die vloere in die nuwe gebou bevat laboratoriums wat eksperimente doen met supergeleiers, magnetisme en lasers. Maak aanbevelings (met motiverings) vir hul Ethernet netwerk medium.

An organization wants to install a network at their new offices. They want a dedicated connection between their new offices and their servers in the main building, 12km away. One of the floors in the new building contains laboratories that do experiments with superconductors, magnetism and lasers. Make recommendations (with motivations) for their Ethernet network medium. (9)

Fibre between buildings

10GBase-ER (40km) or 10GBase-LR with repeaters (1 mark)

Motivation is distance and data rate. (2 marks)

Fibre in and around lab

1000Base-SX or 10GBase-SR (1 mark)

Motivation is fibre is immune to EMI and SX/SR can reach 550m/300m per segment (2 marks)

Twisted Pair for rest of network

1000Base-T (1 mark)

Motivation is cost and a reach of 100m per segment (2 marks)

Vraag 2 / *Question 2*

2.1) Vergelyk, in detail, die rame wat gebruik word in 802.3 en 802.11 in terme van adresse.

Compare, in detail, the frames used in 802.3 and 802.11 in terms in addresses. (6)

802.3 uses two addresses. One for sender and one for receiver. Both are 6 bytes long. First bit of destination address is 0 for ordinary address and 1 for group address (multicasting). All 1's is used for broadcasting. Sender addresses are globally unique. Sender and receiver are neighbouring devices functioning at least on the data link layer.

802.11 uses three addresses. One for sender and one for receiver, and a third for a distant endpoint. Addresses are all standard 802 format (as discussed earlier). Sender and Receiver addresses are used for communication between client and AP. 3rd address is used to identify final destination of frame in this network.

2.2) Waarom is "spanning tree bridges" nodig?

Why are "spanning tree bridges" necessary? (2)

Spanning trees are used to solve the problem of infinite loops caused by redundant connections.

Vraag 3 / *Question 3*

Vergelyk datagram- en virtuelestroombaan-netwerke in terme van adressering, roetering en rol van roeteerders.

Compare datagram- and virtual-circuit networks in terms of addressing, routing and the role of routers. (6)

Addressing: Datagram contains full address in each packet. VC uses only a circuit number in each packet after connection setup.

Routing: Datagram packets are routed individually and can follow different paths. VC packets all follow the same path. Routing done during circuit setup.

Role of router: VC packets require each router to save route information for circuit setup. Router failure require circuit to be initialised again using a new route. State information not deeded for Datagram, router failure has minimal to no influence.

Totaal / Total: **[23]**