Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Computer Science and Technology
400 level 1st Semester Examination – May /June 2017
CST441-2 Advanced Networking and Applications

Uva Wellassa University

Instructions to candidates
Duration: Two(02) hours
Number of questions: Five(05)
Answer four (04) questions only
Mark allocation:100

1.

a. Briefly describe the necessity of the ISO - OSI reference model. (5 mark)

b. What are the major functionalities of the Transport Layer of the ISO – OSI model? (4 mark)

c. What is the major function of the Physical Layer of the ISO - OSI model? (3 mark)

d. Briefly explain the sub layers of the Data Link Layer. (5 mark)

e. List any three (03) types of information which are added to the packet header. (3 mark)

f. Give any three (03) protocols that work in the Presentation Layer and briefly describe how they work. (5 mark)

2.

a. 192.248.48.9 / 25 IP address was assign to a device in a network.

i. What is the network address (net id)? (1 mark)

ii. Write the subnet mask (net mask) of the above IP address. (1 mark)

iii. How many subnets can be built in the above network? (2 mark)

iv. How many hosts (maximum number) could be connected to the above network? (2 mark)

b. A network address 220.32.6.0 /26 was given to you. Find the following.

i. Class of the network. (1 mark)

ii. Subnet address for each subnet. (4 mark)

iii. Broadcast address for each subnet. (4 mark)

iv. Valid host address for each subnet. (6 mark)

c.

i. What is the purpose of using private IP addresses in networking? (2 mark)

ii. Give the private IP address range of the class B. (2 mark)

04

3.

a. State two (02) major protocols in the Transport Layer. (2 mark)

b. Compare and contrast the protocols written for the question a. (5 mark)

c. Briefly explain the need of an acknowledgement in data trnasmission. (2 mark)

d. List four (04) routing algorithms used in networking and describe any two (02). (6 mark)

e. Briefly describe the functionalities of the following servers.

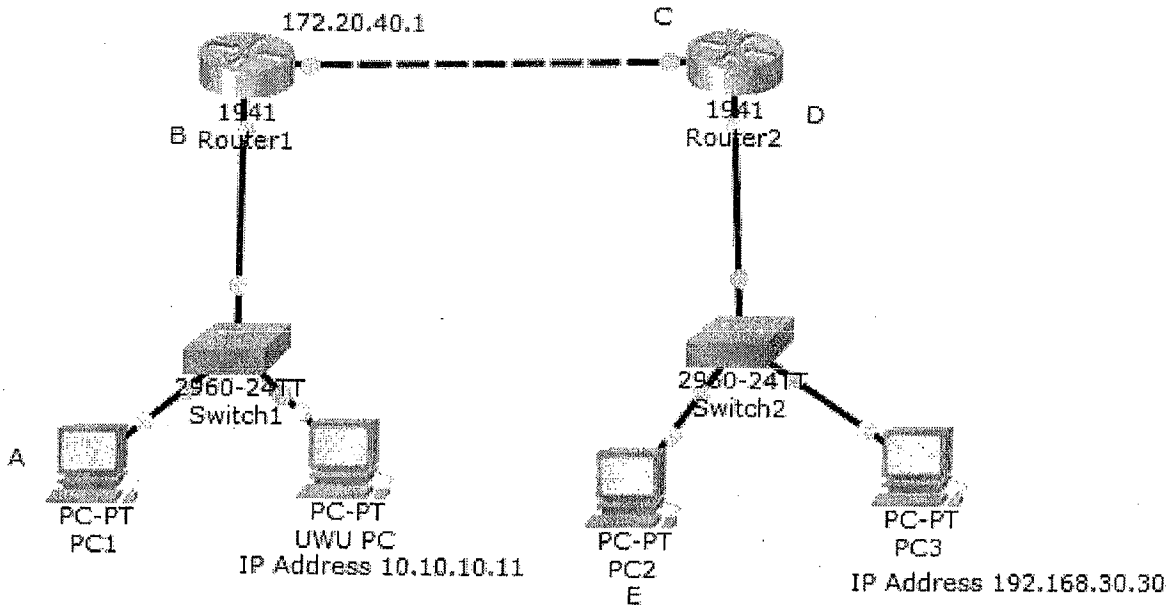
i. DHCP. (5 mark)

ii. DNS. (5 mark)

4.

a. Write three (03) important factors of CISCO packet tracer. (3 mark)

b. Following diagram was designed using CISCO packet tracer. Give suitable IP addresses for A, B, C, D and E. (5 mark)



c. Briefly explain the life time of a TCP connection using a diagram (9 mark)

d. Consider the following routing table,

Network Address	Mask	Next Hop	Interface
192.248.48.0	255.255.255.0	Ignore	M1
200.23.32.0	255.255.224.0	Ignore	M2
200.23.64.0	255.255.224.0	Ignore	M3
200.23.128.0	255.255.224.0	Ignore	M4
0.0.0.0	0.0.0.0	Ignore	M5

Determine the outgoing interface for the packets with the following destination addresses and justify your answer.

i. 200.23.94.110 (2 mark)

ii. 192.248.48.52 (2 mark)

iii. 200.23.135.12 (2 mark)

iv. 200.24.160.55 (2 mark)

5. R1, R2, R3 and R4 routers are connected as in the following diagram by leased lines. Four (04) Local Area Networks with 72, 27, 10 and 13 computers are connected to R1, R2, R3 and R4 routers accordingly. Prepare a list of IP addresses which can be assigned for the following set up using the block of IP addresses 10.10.20.0/24. (25 mark)