UNIVERSITI TUNKU ABDUL RAHMAN

ACADEMIC YEAR 2020/2021

MAY 2020 TRIMESTER

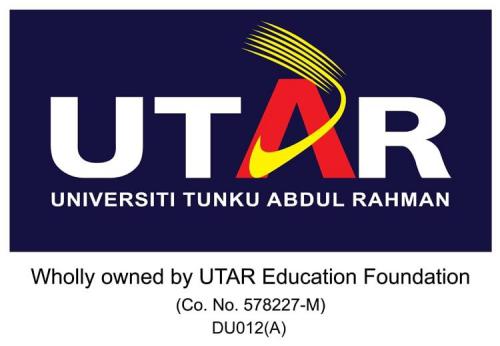
FINAL ASSESSMENT

**ANSWER SCRIPT**

**Candidate is required to fill in ALL the information below:**

|  |  |  |  |
| --- | --- | --- | --- |
| Name : (as stated in Student Identity Card) | TAN YING YAO 1703648 | | |
| Faculty /Institute/ Centre: | LKC FES | Programme : | SOFTWARE ENGINEERING |
| Index No. (in numbers) : | U00463EBSEF | Index No. (in words) : | UZEROZEROFOURSIXTHREEEBSEF |
| Course Code : | UEEN2013 | Course Description : | TCP/IP NETWORK FUNDAMENTALS |
| Submission Date : | 28/9/2020 | Time : | 1330 |

|  |  |  |
| --- | --- | --- |
| **QUESTION NUMBER** | **FOR EXAMINER’S USE ONLY** | |
| **MARKS** | |
| **Internal** | **External** |
| **1** |  |  |
| **2** |  |  |
| **3** |  |  |
| **4** |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| **TOTAL MARKS** |  |  |



**DECLARATION STATEMENT**

I, **TAN YING YAO** (Name), Student ID No. **1703648** hereby solemnly and sincerely declare and confirm that I have read, understood and shall abide and comply with all laws, rules, regulations, guidelines and lawful instruction of the University and its staff in relation to the commencement of any assessment / examination during my programme of study in Universiti Tunku Abdul Rahman.

I hereby declare that my submission for all assessment / examination during my programme of study in the University shall be based on my original work, not plagiarised from any source(s) except for citations and quotations which have been duly acknowledged. I am fully aware that students who are suspected of violating this pledge are liable to be referred to the Examination Disciplinary Committee of the University.

I further certify that I have read and understand the above guidelines and agree to abide by the above declarations.

***TAN YING YAO***

Name: TAN YING YAO

Student’s I.C. / Passport No.: 971210-14-5673

Date: 28/9/2020

Index Number (in figure): U00463EBSEF Course Code UEEN2013 Page: 1

**Q1) A)**

5-Layer TCP/IP Model

|  |
| --- |
| Application |
| Transport |
| Network |
| Data Link |
| Physical |

**B)**

PC0 = Physical Layer

Switch = Data Link Layer

Router = Network Layer

**C)**

Gigabit Ethernet: Used to connect different network segments

Aux Port: Used to connect modem to router to allow remote configuration of the router

Console: A serial configuration port used for command-line access in router configuration

**D)**

**i)**

Ethernet Cable- LAN Port

Telephone Cable- FXS/TEL/VOIP Port

**ii)**

The wireless router provides 2.4GHz and 5Ghz option. 5Ghz is much faster but the range is shorter in comparison with 2.4GHz.

**iii)**

Fiber cable can transmit data much further and quicker. Fiber cable are more flexible as it is thinner and lighter.

**iv)**

Data Link Layer

Index Number (in figure): U00463EBSEF Course Code UEEN2013 Page: 2

**Q2) A)**

**i)**

Default Network Address: 255.0.0.0

Binary= 11111111.00000000.00000000.00000000

CIDR Notation= /8

**ii)**

Class A network is too big because the number of address is too large for the organization to handle

**iii)**

IP Address: 88.0.0.0

Default Subnet Mask: 255.0.0.0

Subnet Mask: 255.255.255.0

IP Address: 01011000.00000000.00000000.00000000

Default Subnet Mask: 11111111#.00000000.00000000#.00000000

Subnet Mask: 11111111#.11111111.11111111#.00000000

**====================================================== AND OPERATION**

01011000#.00000000.00000000.00000000 88.0.0.0

…

01011000#.00000000.00000000.11111111 88.0.0.255

Host = 88.0.0.0 – 88.0.0.255

Subnet Bits (n) = 8

Usable host = (2^n-2) = 2^8 -2 = 256-2 = 254

=88.0.0.1 – 88.0.0.254

Index Number (in figure): U00463EBSEF Course Code UEEN2013 Page: 3

**Q2)**

**B)**

IP Address: 168.8.8.0

Default Subnet Mask: 255.255.255.0

Subnet Mask: 255.255.255.240

IP Address: 10101000.00001000.00001000.#0000#0000

Default Subnet Mask: 11111111.11111111. 11111111.#0000#0000

Subnet Mask: 11111111.11111111.11111111.#1111#0000

**======================================================= AND OPERATION**

10101000.00001000.00010000.#0000#0000 168.8.8.0

…

10101000.00001000.00010000.#0000#1111 168.8.8.15

Subnet Bits = 4

Host = 168.8.8.0 – 168.8.8.15

Usable Host = 2^n -2 = 2^4 -2 = 16-2 = 14

= 168.8.8.1 – 168.8.8.14

**C)** Subnetting can improve network performance and speed and reduce network congestion. The data are placed in the subnetted network which allow other subnets to maximise their speed and reduce congestion.

**D)** Maximum Length of subnet mask: 255.255.255.252. This is the maximum length of subnet mask available due to the smallest subnet available only has 2 ip address excluding broadcast and networking address.

Index Number (in figure): U00463EBSEF Course Code UEEN2013 Page: 4

**Q3)**

**A)**

**i)**

The client requests passive open which informs the TCP that it is ready for a connection. The server requests active open which informs the TCP that it needs to be connected to a server.

**ii)**

Acknowledgement is necessary in the process as it allows both the client and server to detect missing or wrong segments.

**iii)**

The client will send a segment with SEQ and inform the server about the client to open communication with its sequence number. The server responds to the client with SEQ-ACK signal set, ACK then replies the response of segment received. SEQ then signifies what sequence number it should start with. Finally, the client acknowledges the response of the server. The connection will begin and the data transfer will be established.

**iv)**

A is 200, B is 101, C is 101

**B)**

**i)**

The procedure handles collision by checking the persistence strategies, After the idle line, the station waits an IFG amount of time. Although the channel may be idle, a distant station is already transmitting. It then waits for a period of IFG time and appears to be idle, it waits another random amount of time before sending.

**ii)** The 3 choices of persistent strategies are Non-persistent, 1-persistent and p-persistent.

**iii)** Function of K in the figure is to reduce or prevent congestion of the channel and prevent the number of retransmission from exceeding the limit.

Index Number (in figure): U00463EBSEF Course Code UEEN2013 Page: 5

**Q4)**

**A)**

1. Standard Access List
2. Standard access list has Weak Security and can’t distinguish between many types of IP traffic. It also cannot permit or deny specific protocols. Standard access list can only permit or deny entire protocol suite.
3. Common Subnet mask: 255.255.255.0
4. The command specifies to allow access for devices with IP from the range of 10.10.31.0 to 10.10.31.254
5. 10.10.16.0 – 10.10.31.255

10.10.16.0 = 00001010.00001010.0001#0000.00000000

10.10.31.255 = 00001010.00001010.0001#1111.11111111

Wildcard mask = 00000000.00000000.0000#1111.11111111

ACL Command= Router(config)#access-list 20 permit 10.10.16.0 0.0.15.255

**B)**

**i)**

|  |  |  |
| --- | --- | --- |
| **C or O** | **Network Address** | **Interface** |
| **C** | **192.168.23.0** | **Fa0/0** |
| **C** | **3.3.3.0** | **Fa1/0** |
| **O** | **192.168.12.0** | **Fa0/0** |

**ii)** When both RIP and OSPF are enabled in router, OSPF will be used first in the routing protocol as it does not have any restriction while RIP only allows up to 15hops.