	COLLEGE OF COMPUTING AND INFORMATION SCIENCES		
	Mid-Term Assessment Summer 2020 Semester		
Class Id	104594, 104595	Course Title	DCN
Program	BSCS	Campus / Shift	Main Campus / Morning
Date	7 <sup>th</sup> – July 2020	Total points	50
Duration	02 hours	Faculty Name	Kashif Bashir, Hira Beenish
Student Id	9827	Student Name	Hasan Noor Soomro

#### Instructions:

- Fill out your Student ID and Student Name in above header.
- Do not remove or change any part question paper.
- Write down your answers with title “Answer for Question# 00”.
- Handwritten text or image should be on A4 size page with clear visibility of contents.
- In case of CHEATING, COPIED material or any unfair means would result in negative marking or ZERO.
- **Caution:** Duration to perform Mid-Term Assessment is **02 hours only**. Extra 3 hours are given to cater all kinds of odds in submission of Answer-sheet. **Therefore, if you failed to upload answer sheet on LMS (in PDF format) within 5 hours limit, you would be considered as ABSENT/FAILED.**
- The answer script is uploaded as "ID\_Name.PDF" file by 4:30 PM on KIET LMS.
- You have to solve all the questions in sequence order. Otherwise there will be negative marking.
- Attempt all questions.

1. Determine if the address/subnet pair is legal or not. If it's legal, determine the network number and the range of the host addresses for that network. Also determine for the mask given, the number of available subnets and available hosts per network. [10]
  - a) 180.32.116.170      255.255.255.224
  - b) 99.63.165.159      255.255.255.240

①

9827 Hassan Nour Sarmar

Q<sub>1</sub>

a) 180.32.116.170  
252.255.255.224

Street

valid

180 . 32 . 116 . 170  
10110100 . 00100000 . 01110100 . 10101010

255 . 255 . 255 . 224  
11111111 . 11111111 . 11111111 . 11100000

180.32.116.10100000

[180.32.116.160] Network address.

[ 180.32.116.161  
⋮  
180.32.116.190 ] Host address.

[180.32.116.190] → Broadcast address

Total ~~no~~ Host ~~no~~ = 30

②

(B)

99.63.165.159  
255.255.255.240

Some  
valid

99	63	165	159
01000011	00111111	10100101	10011111
255	255	255	240

~~99~~      ~~63~~      ~~165~~

99.63.165.1001000

[99.63.165.144] network address.

[99.63.165.145]  
[99.63.165.156] host address.

[99.63.165.159] →

No of  
Host = 14

2. Use a 28-bit mask to derive the available subnets of 192.168.147.0. Derive the available host addresses of each subnet. [10]





9.2

no

142. 168. 147. 62

" " " 63 } nos  
75 }

9 " " " 267 Brazil.

②

28 bit mask 16 host  $2^{14} = 2$

network 1

192.168.147.0 - Network

192.168.147.0 - Network

192.168.147.1 } host add.

192.168.147.14

192.168.147.15 Broadcast

network 2

192.168.147.16 - Net

{ 192.168.147.17 } host

192.168.147.30

{ 192.168.147.31 } Bro.

(9)

N7

192. 168. 147. 92 → network

{ 192. 168. 147. 93 } host  
192. 168. 147. 105

192. 168. 147. 106 Broadcast.

N8

192. 168. 147. 107 net

" " " 108

" " " 109 } ~~host~~ host

" " " 121 broadcast

N9

192. 168. 147. 122

" " " 123

" " " 135 } host

{ " " " 136 } Broadcast

(10)

N10

192. 168. 147. 137 → network

" " " " 138 } host  
" " " " 180 }

" " " " 181 Brod

" " " "

N11

192. 168. 147. 182

" " " " 183 } host

" " " " 168

" " " " 166 Brod.

N12

192. 168. 147. 169

• 168 } host

180

181 Brod cast.



11

N 13

192. 168. 147. 182

183 } hars  
185

1916 Brd.

N14

192. 168. 147. 197 → Net

198 } hars  
210

211 brd.

N 15

192. 168. 147. 212 net

213 } hars  
225

226 Brd.

(52)

N16

192 . 168 . 147 . 227 . net

228 } host  
240 }

241 } brcl.

N17

192 . 168 . 147 . 242 . net

243 } host  
254 }

255 Brcl .

9

N3

192.168.147.32 net

(192.168.147.33  
192.168.147.45) host

192.168.147.45 Broadcast

N4

192.168.147.47 → network

192.168.147.48  
192.168.147.60) host

192.168.147.61 Broadcast

N6

192.168.147.77 → net  
" " " 78  
" " " 90) host

" " " 91 Broadcast

3. In the figure 1, Draw a routing table of router C by using Dijkstra's algorithm.

[5]

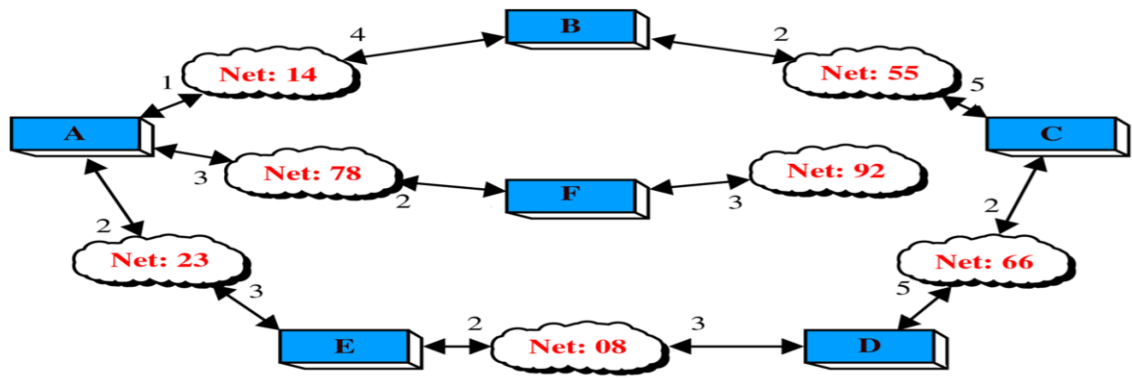


Figure 1



Q3

Dijkstra's algo

net	cost	next number.
66	2	-
55	5	-
14	9	B
8	5	D
23	8	D
78	11	D
912	14	D

4. Discuss in detail, the concept of standards in data Communications and Network.

[5]

5

Q4

- Data Communication is a process to transfer or send data (information) to one end to another end.
- In Computer Networking this data travelling or ~~sending~~ sending information to one PC to other PC through a medium. It would be wired or wireless.
- The process of sending data or communication it is based on hardware and software. The hardware part is used to send information to the secondary device. Through which data travel and the software part would follow certain rule to communicate the way to exchange data it is known as protocol.

5. What are the advantages and disadvantages of combining a session, presentation, and application

(18)

Q5

adding of 3 layers are need  
effective working capability  
as application layer is use  
to interaction with the  
person's request. Presentation  
layer are used to encapsulation  
of sending data to the receiver  
side and ~~its~~ session layer  
are handling on the arrival  
of sending time of send  
information or data

6. layer in the OSI model into one application layer in an Internet model.



(6)

Encryption is done in all 7  
layers but in practice the  
encryption is ~~to~~ used or  
starts in the Physical layer  
transport layer, and presentation  
layer.

when encryption is in Physical  
layer - The encryption is made  
between computer and  
physical layer. every bit  
leave the computer in the  
form of encrypted

~~when encryption is in transport~~  
~~layer~~

and every bit enter in a  
PC in form of ~~data~~  
decryption it is called  
encryption.



Q87

presentation layer is responsible  
for translation encryption, ~~dec~~  
decryption,

7. Given a 10 bits sequence 1111010001 and a divisor of 1011, find the CRC. check your answer. [10]

(13)

Q7

$$\begin{array}{r} 1101100100 \\ 1011 \overline{) 111010001000} \end{array}$$

$$\begin{array}{r} 1011 \\ \times 1000 \\ \hline \end{array}$$

$$\begin{array}{r} 1011 \\ \times 0111 \\ \hline \end{array}$$

$$\begin{array}{r} 0000 \\ \times 1110 \\ \hline \end{array}$$

$$\begin{array}{r} 1011 \\ \times 1010 \\ \hline \end{array}$$

$$\begin{array}{r} 1011 \\ \times 0010 \\ \hline \end{array}$$

$$\begin{array}{r} 0000 \\ \times 0101 \\ \hline \end{array}$$

$$\begin{array}{r} 0000 \\ 1010 \\ \hline \end{array}$$

$$\begin{array}{r} 1011 \\ \hline \end{array}$$

$$\begin{array}{r} \cancel{0000} \\ \times 1010 \\ \hline \end{array}$$

$$\begin{array}{r} 1011 \\ \hline \end{array}$$

$$\begin{array}{r} 0010 \\ \hline \end{array}$$

$$\begin{array}{r} 0000 \\ \hline \end{array}$$

$$\begin{array}{r} \times 0100 \\ \hline \end{array}$$

$$\begin{array}{r} 0000 \\ \hline \end{array}$$

$$\boxed{100}$$

CRC

14

$$\begin{array}{r} 101100100101 \\ 1011 \overline{) 11101000100100} \\ \underline{1011} \end{array}$$

1000

1011

0111

0000

1110

1011

10100

1011

0010

0000

0101

1010

1011

0010

0000

0100

0000

1001

1011

0100

0000

1000

1011

11