Personal name Include (handwritten)

SLIATE
SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION
(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Jumail-0035 (handwritten)

Higher National Diploma in Information Technology
First Year, Second Semester Examination – 2021
HNDIT2042-Data Communication and Computer Networks

Instructions for Candidates:
Answer five (5) questions only
Non programmable calculators are allowed

No. of questions : 6
No. of pages   : 3
Time   : Three (3) hours

Question 01 [Total 20 Marks]

1.) i.) Briefly explain Internet, Intranet and Extranet (3 Marks)
   ii) Explain 2-tier Client/Server model (4 Marks)
   iii) Explain benefits of 3-tier over 2-tier Client/Server model (4 Marks)
   iv) Write down four advantages of Leased Line (4 Marks)
   v)   Compare and Contrast Fiber cable and Cat 6 Cable (5 Marks)

Fiber cable – Fiber obtical cable (handwritten)

Question 02 [Total 20 Marks]

radio wave, micro wave, Infrared (handwritten)

2.) i.) Briefly explain three type of wireless media (3 Marks)
   ii.) Write four advantages of the Wireless Network (4 Marks)
   iii.) ABC company need to block facebook in the LAN. What solution you are going to propose? (2 Marks)
   iv) What is IoT (2 Marks)
   v)   Write five IoT Technologies and Trends (5 Marks)
   vi) Write down Two Cloud Business Applications (2 Marks)
   vii) Write down two Cloud Database Systems (2 Marks)

internet is a global network computers and Telecomm with each other.

In

Iot is the ~~directed~~ System internet computing device. machine, obility of object animal of people provided.

Question 03 [Total 20Marks]

3.) i.) List the Layers in TCP/IP reference Model   (4 Marks)

   ii.) Write down the functions of any 2 Layers given in part (i) above.   (4 Marks)

   iii.) Briefly explain the following protocols

      a.) HTTPS

      b.) ICMP

      c.) SSH

      d.) IMAP   (4 Marks)

   iv.) Write Down suitable protocols for the following cases

      a.) Hosts in a LAN are configured as automatically assign IP.

      b.) Saman Download YouTube video using Internet

      c.) A Lecturer conducting lectures using zoom   (3 Marks)

   v.) Explain the functions of a Router   (3 Marks)

   vi.) Explain the functions of a Switch   (2 Marks)

Question 04 [Total 20 Marks]

4.) i.) Write down three classes of IPV4 and Private IP ranges of each classes

(3 Marks)

   ii.) ABC company has three departments IT, HR and Accounts. IT Department has 14 hosts, HR Department has 28 hosts and Accounts Department has 90 hosts. ABC Company need to divided three subnets -Fill in the blanks following tables. IP address gives as 192.168.1.1/24.

(12 Marks)

	IT Department	HR Department	Accounts Department
Subnet Marks	(a).............	255.255.255.224	.........127.(c)
Uncast IP	192.168.1.0	(b).............	..............(d)
Start IP	192.168.1.1	192.168.1.33	192.168.1.129
Last IP	192.168.1.30	192.168.1.62	...............(e)
Broad Cast IP	192.168.1.31	192.168.1.63	192.168.1.255
Number of Host	.........(f)	............(j)	.......90..(g)
Number of IPs	32	.............(k)	............(h)
CIDR	............(m)	...............(l)	25

   iii.) Write a command to view computer logical address and physical address

(2 Marks)

   iv.) How to check whether Computers A and B are properly connected in the Network?

    Assume IP address of A and B are 192.168.0.1 and 192.168.0.2   (3 Marks)

Question 05

i.) Consider the following periodic composite signal.
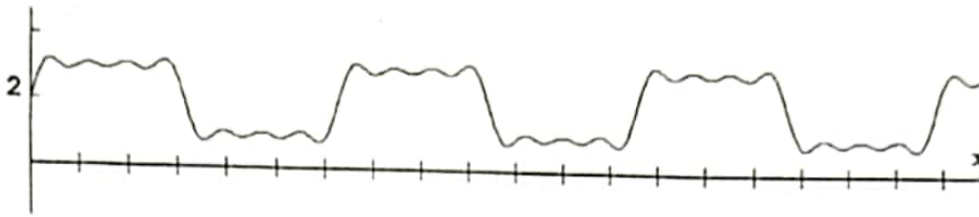
It can be mathematically represented as follows.

$S(t) = 2 + 4/\pi[\sin x + 1/3\sin3x + 1/5 \sin 5x + 1/7 \sin 7x]$

a.) Draw the four frequency signal and one DC signal, (Hint-it can be decomposed using S (t) equations). (10 Marks)

b.) Draw the Frequency Domain Plot for the above signals (4 Marks)

ii.) Write down three computer security objectives (3 Marks)

iii.)Explain Threats, Vulnerabilities, and Impact on computer security (3 Marks)

Question 06

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[Total 20 Marks]

i.) Write down The Three Elements of Access Control (3 Marks)

ii.) Explain User Account Control (UAC) (3 Marks)

iii.) Write down three Logical access controls (3 Marks)

iv.) Name three qualities that a good password should have (3 Marks)

v.) Imagine you are a computer network administrator of an international company.

What practice should be followed for the security of his computer network?
Write at least four. (4 Marks)

vi.) Cyber-attacks are a persistent challenge that the world has yet to effectively prevent. The only solution is for everyone to adopt good cyber behavior, but unfortunately, this ideal is not easily achieved. What is your opinion on this matter? (4 Marks)