



SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology

First Year, Second Semester Examination – 2022

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.) Write two differences between Intranet and Extranet . (4 Marks)
- ii.) Write three main layers/tiers in "3-tier architecture"? (3 Marks)
- iii.) Explain two benefits of 3-tier over 2-tier Client/Server model . (4 Marks)
- iv.) What are the uses of cross over cable and straight through cable? (4 Marks)
- vi.) What are the equipment and tools need to prepare cross over cable. (3 Marks)
- vii.) Write Two Advantages of ISDN (2 Marks)

Question 02

[Total 20 Marks]

- 2.) i.) Write three Type of Guided Media (3 Marks)
- ii.) Write four applications of Wireless media (4 Marks)
- iii.) Academic Institute needs to Provide Internet access to Students. What solution you are proposing? Justify your answer. (4 Marks)
- iv.) Why IoT technology is important. Write down two reasons (4 Marks)
- v.) Write down Two benefits of Platform as a Service (PaaS) (2 Marks)
- vi.) What is Mean by API. API is an example for software as a Service Application. Are you agree with this statement? (3 Marks)

Question 03**[Total 20Marks]**

- 3.) i.) Write Down 7 Layers in OSI Reference Model (6 Marks)
ii.) Write down two functions of Layer 2 and Layer 3 (4 Marks)
iii.) Provide suitable protocols for the following cases
a.) Network Administrator need to connect company server using remotely.
b.) Mr.Saman trying to access SLIATE.ac.lk web site using Internet.
c.) Update MAC address Table in Network SWITCH in the LAN (3 Marks)
iv.) What is FTP? Describe two Advantages of FTP. (3 Marks)
v.) Explain why https is better than http? (4 Marks)

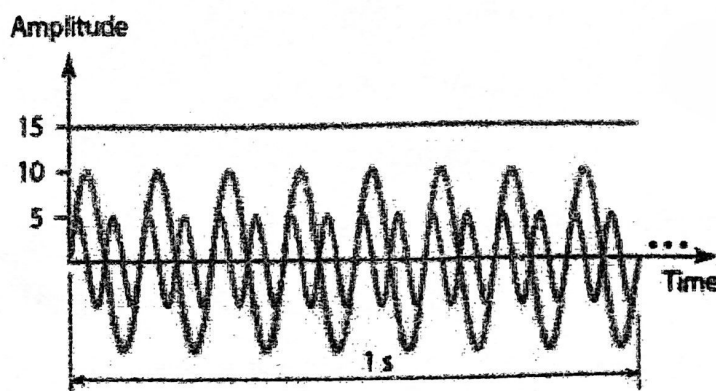
Question 04**[Total 20 Marks]**

Assume the IP address 192.168.1.0/24 has been allocated for the LAN of your ATI. The director requested you to create 5 subnets for the available 5 departments. By considering the given scenario, answer the following questions. (4 x 5=20 Marks)

- What is the Minimum number of bits needed for subnetting?
- How many subnets can be created using the bits?
- Write the addresses of any 3 subnets?
- Write the subnet mask for each subnets?
- Give the maximum available addresses in a subnet?

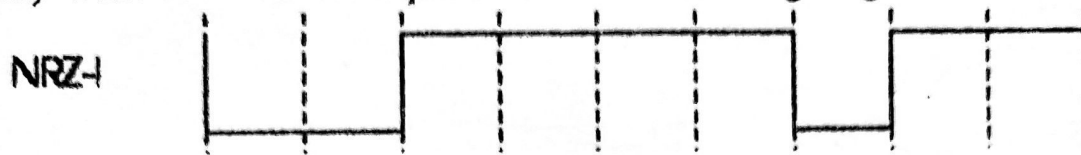
Question 05**[Total 20 Marks]**

- i.) Consider the following time domain plot of 3 signals.



- Find the frequencies, amplitudes and periods of above 3 signals (9 Marks)
- Draw the Frequency Domain Plot for the above signals (3 Marks)

ii.) Write down the bit sequence of the encoded signal given below (3 Marks)



iii.) Draw the Differential Manchester encoded signal for the following bit sequence (3 Marks)

1 0 1 0 0 0 1 1 0

iv.) State the difference between Full backup and incremental backup (2 Marks)

Question 06

[Total 20 Marks]

- i.) Write four Names of Access Control Models (4 Marks)
- ii.) Explain two ways How to Measure Bandwidth (4 Marks)
- iii.) What is CIA in Computer Security (3 Marks)
- iv.) Name three traits that a good password should have (3 Marks)
- v.) Write two qualities that a good network administrator should possess. (2 Marks)
- vi.) Today, the creative abilities of many children are decreasing. Rather than thinking of something new and doing something creative, many people are tempted to find answers easily by using AI application. Explain your opinion about this idea with an example. (4Marks)