NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF INDUSTRIAL TECHNOLOGY
BACHELOR OF ENGINEERING (HONS) DEGREE

Final examination May 2013 TEE 5224　　　　　　**High Speed Networks**

Duration of Examination 3 Hours

Instructions to Candidates:

1. Answer any **five** questions only.
2. Each question carries equal marks.
3. Show all your steps clearly in any calculation.
4. Start the answers for each question on a fresh page.

Question 1

(a)　Draw and explain the Transmission control protocol header format .Give the size and

function of each field.　　　　　　　　　　　　　　　　　　　　　(17 marks)

(b)　Define Asymmetrical Digital Subscriber Line. State the main advantage it offers at global
scale　　　　　　　　　　　　　　　　　　　　　　　　　　　　(5 marks)

Question 2

(a)　Give the three main areas that are covered by the IV series recommendations ..For each

give at least three examples with their application .　　　　　　　　(9 marks)

(b)　Describe the principle of the X25.　　　　　　　　　　　　　　　　(9 marks)

(c)　Explain the application of Redundancy Check Codes.　　　　　　　　(2 marks)

Question 3

    (a)   Give the Five principles that were applied to arrive at the seven OSI layers. (5 marks)

    (b)   What is the purpose of the OSI reference model .Show the arrangement of the OSI.

                                          (11 marks)

    (c)   Give FOUR functions of a Data Link Layer in an OSI reference model.   (4 marks)

Question 4

    (a)   Explain the IP protocol version 4.Show the classes of IP Address formats. Give the four

            types of IP routing methods .   (10 marks)

    (b)   Give reasons to justify the use of IP version 6. State the six main features of the

            IP version 6.   (10 marks)

Question 5

    (a)   State Five characteristics of a LAN.   (5 marks)

    (b)   Show the architecture of the DQDB MAN .Explain how it works.   (4 marks)

    (c)   State the function of IEE 802.3 (Ethernet) CSMA/CD. Explain its implementation.

                                                 (5 marks)

    (d)   Describe a high speed LAN with FDDI and Fast Ethernet in terms of speed ,distance types of cables ,bandwidth and advantages.   (6 marks)

Question 6

    (a)   In the formulation of the Queueing theory state at least SEVEN factors that are considered .   (7 marks)

    (b)   Give three basic statements that are used to define the Poisson arrival process. (3 marks)

(c)   Show the set up of the Asynchronous Transfer Mode packets. State the reason for choice and length of the packets.   (4 marks)

(d)   Describe the functions and application of the ATM header format for the subnet interface and for the internal subnet.   (6 marks)

Question 7

(a)   Give Four factors that are considered in the choice of a suitable net work topology.

(4 marks)

(b)   Describe four topologies found in networks ,for each state the advantage and drawback

for its application.   . (10 marks)

(c)   Show a block diagram of an ISDN system with PBX for use in large businesses. (6 marks)

Question 8

(a)   Show the physical connection of two computers that are connected for remote serial transmission.   (6 marks)

(b)   State the interfaces that are found in Data terminal equipment (DTE)and Data terminating circuits equipment (DCE)   (5 marks)

(c)   Describe the functions of the eight registers in the 8250 Universal Asynchronous Receiver and Transmitter (UART)   (9 marks)