National Exams

98-Comp-B5 Computer Communications

3 hours duration

Note

- If doubt exists as to the interpretation of any question, the candidate is urged to submit with the answer paper, a clear statement of any assumptions made.

- Candidates may use one of two calculators, the Casio or Sharp approved models. This is a <u>Closed</u> Book exam.

- Any five questions constitute a complete paper. Only the first five questions as they appear in your answer book will be marked.

- All questions are of equal value (20% each).

Question 1 (20 marks)

How are OSI and ISO related to each other? List the seven layers of OSI model in sequence.

Question 2 (20 marks)

Assume that a document contains many pages. A typical page consists of 24 line of text and each line is 80 characters long. Determine the required bit rate for the communication channel, if 100 pages of this document are to be downloaded over the channel.

Question 3 (20 marks)

Assume that a voice channel occupies a bandwidth of 5 kHz. We need to multiplex 10 voice channels with guard bands of 500 Hz using FDM (Frequency-Division-Multiplexing). (a) Draw the spectrum allocation diagram; and (b) Calculate the required bandwidth.

Question 4 (20 marks)

In a Cyclic Redundancy Check (CRC) scheme, if P= 110011 and M=11100011, determine the corresponding CRC.

Question 5 (20 marks)

What HTTP stands for? What is WWW? How is HTTP related to WWW? What is URL? Describe the process of locating information in WWW.

Question 6 (20 marks)

Please answer the following questions:
  (1) Explain the concept of and reasons for 'spread spectrum';
  (2) Draw illustrative diagrams for the transmitter and receiver pair of 'frequency hopping spread spectrum'; and
  (3) Draw illustrative diagrams for the transmitter and receiver pair of 'direct sequence spread spectrum'.

Question 7 (20 marks)

Explain the following technical terms: (1) IEEE; (2) Bit Error Rate; (3) piconet/scatternet (Bluetooth); (4) Codec; (5) Crosstalk; (6) CSMA/CD; (7) CDMA; (8) B-ISDN; (9) TCP/IP; and (10) Packet.