TYCS (Sem V) / Data communication & networks / 15

Q. P. Code: 20233

[Time: 2:30 Hours] **[Marks:75]**

Please check whether you have got the right question paper.

N.B:
1. All questions are compulsory.
2. Figures to the right indicate marks.
3. Illustrations, in-depth answers and diagrams will be appreciated.
4. Mixing of sub-questions is not allowed.

Q1. **Attempt the following (any THREE):** **(15)**

(A) Define data communication? List and explain five components of digital data communication?

(B) Describe Bus topology.

(C) Explain the Physical, Logical, Port and Specific address used in TCP/IP Protocol.

(D) Name the following to one or more layers of the OSI model:
The layer where transmission of bit stream is done across physical medium.
The layer defines the network frames.
The layer responsible for reliable process-to-process message delivery.
The layer at which route selection is done,
The layer that provides user services such as e-mail and file transfer.

(E) Write short note on Signal-to-Noise Ratio (SNR),
Solve : The power of a signal is 10 W and the power of the noise is 1 W; what will be the value of SNR?

(E) What is NRZ? Draw the graph of the NRZ-L and NRZ-I scheme using each of the following data streams :
01010101
00110011

Q2. **Attempt the following (any THREE):** **(15)**

(A) Define spread spectrum and its goal. Discuss the frequency hopping spread spectrum (FHSS) technique in detail.

(B) Give one line description of Characteristics, Types, Advantages, Disadvantages and Applications of Twisted Pair cable,

(C) Describe the setup, data transfer and teardown phases of circuit switching.

(D) Write short note on synchronous time division multiplexing.

(E) Explain the structure and characteristics of cross bar switch.
Draw a crossbar switch for 3 inputs and 4 outputs.

(E) Give number of crossbars required at each stage of three-stage switch where N=200, k=4 and n=20. Also calculate the total number of crosspoints required.

Q3. **Attempt the following (any THREE):** **(15)**

(A) Explain the process of error detection in block coding with the help of block diagram.

(B) Short note on Simple Parity-Check code.

(C) Sender sends dataword 1001 with remainder attached, using CRC technique with divisor 1011; the receiver receives the dataword 1000 with the same attached remainder, find the remainder to be attached

and whether the data word will be accepted or rejected.

(D) Briefly explain the transition phase in Point-to-Point Protocol (PPP).

(E) Explain the Asynchronus Balance Transfer mode and Normal Response Transfer mode in HDLC protocol

(F) Describe Selective-Repeat ARQ flow control technique in detail.

Q4. Attempt the following (any THREE): **(15)**

(A) Write short note on Carrier Sensed Multiple Access (CSMA).

(B) Distinguish between FDMA and CDMA.

(C) Explain 10Base5-Thick Ethernet.

(D) Explain hidden and expose terminal problem.

(E) Describe the Basie Service Set (BSS) and Extended Service Set (ESS) architectures of wireless LAN 802.11

(F) Write the Spanning Tree algorithm.

Q5. Attempt the following (any THREE): **(15)**

(A) Distinguish between LAN and WAN?

(B) Explain BNC Connector.

(C) Define Error. Explain Single bit and Burst error.

(D) Write short note on Repeaters.

(E) Define Analog Transmission.
Which characteristics of an analog signal are changed to represent the digital signal in each of the following digital-to-analog conversion? a) ASK b) FSK c) PSK d) QAM

(F) Describe the frequency reuse principle in cellular telephony.

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