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Paper ID [CS206]

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MAY-08

B. Tech (Sem. - 4th)

DATA COMMUNICATION (CS - 206)

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is **Compulsory**.
2) Attempt any **Four** questions from Section - B.
3) Attempt any **Two** questions from Section - C.

Section - A *(10 × 2 = 20)*

Q1) Choose the correct or best alternative in the following.

a) The maximum number of unconfirmed frames that can be outstanding at any one time with SDLC is _____ .

(i) 4 (ii) 7

(iii) 14 (iv) 8

b) CLP field is used in ATM cell header to _____ .

(i) detect and correct single bit errors.

(ii) indicate type of frame.

(iii) provide flow control.

(iv) to discard cell when necessary.

c) In which type of switching do all the datagrams of a message follow the same channels of a path?

(i) circuit switching (ii) data gram packet switching

(iii) virtual circuit packet switching (iv) message switching

d) A null modem is a unit which interconnects _____ .

(i) DTE to DCE (ii) DTE to DTE

(iii) DCE to DCE (iv) DCE to DTE

e) USART performs the following function/s

(i) insert and delete SYN characters

(ii) insert and delete start and stop bits

(iii) perform serial to parallel and vice versa

(iv) both (i) and (iii).

f) To decrease attenuation and distortion of a signal, a line can be_____.
(i) multiplexed (ii) grounded
(iii) amplified (iv) conditioned

g) VLF propagation occurs in _____.
(i) troposphere (ii) ionosphere
(iii) surface (iv) space

h) A maximum cable length of 50 feet is specified in standard_____.
(i) EIA-232 (ii) EIA-449
(iii) EIA-423 (iv) EIA-422

i) What is protocol.

j) Explain about MAN.

Section - B

(4 × 5 = 20)

Q2) With neat diagrams give an account of OSI layering. Discuss in brief functions of each layer with emphasis on the network layer and its services to above layers.

Q3) (a) With a neat flow chart give all digital-to-analog methods and explain their relevance to modems with an example.

(b) Calculate the highest bit rate for a telephone channel given, the bandwidth of the line to be 3000Hz and the signal to noise ratio being 35 dB.

Q4) What is HDLC? Explain its frame format and its various fields with a neat diagram. How is it superior to SDLC frame format?

Q5) What is line encoding? List the factors considered for selecting a line-encoding format. Draw and explain line-encoding formats for AMI and Manchester code.

Q6) Write a note on error detection and correction methods. Construct the Hamming code for the bit sequence 10011101.

Section - C

(2 × 10 = 20)

Q7) (a) What is TDM? With the help of a block diagram, explain how it works. What is statistical TDM? What is its advantage? Discuss its frame format.

(b) With the help of neat diagrams, explain the 802.3 frame format and its working. How does 4B/5B encoding guarantee that there will be no sequences of four or more 0s in the data field?

Q8) (a) Explain any two shortest path routing protocols you have studied. Explain why adaptive routing techniques are superior to non-adaptive routing?

(b) How does ATM differ from frame relay? List and briefly define the ATM service categories. What are the services provided by AAC?

Q9) (a) Draw and discuss the IP Datagram frame format. Discuss in detail the various fields. What is subnetting?

(b) Show by calculation how many hosts per network each IP address class A , B, and C can have.