No. of Printed Pages : 05

Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 21202   Roll No. | | | | | | | | | |

MCA Examination 2018-19

(Third Semester)

DATA COMMUNICATION AND COMPUTER NETWORKS

Time : Three Hours]   *[Maximum Marks : 60*

Note :– (i)   Attempt all questions.

(ii)   Read the instructions given in each sections.

SECTION–A

1. Attempt all parts of the following :   8×1=8

    (a)   What is the difference between parallel and serial transmission mode?

    (b)   How many types of transmission media are there?

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(c)   Define bit rate and band rate.

(d)   What do you understand by computer network topology?

(e)   Define DNS.

(f)   Name some application layer protocols.

(g)   Whatis IEEE 802.3?

(h)   Differentiate between lossy and lossless compression.

SECTION – B

2.   Attempt any two parts of the following :   2×6=12

(a)   What is ISDN? Describe in brief the ISDN technology (working) to provide various services.

(b)   What is OSI reference model? Why layered approach is followed in this model?

(c)   Explain design issues of Network Layer. Explain distance vector routing algorithm. Also discuss count to infinity problem with example.

(d)   What are the duties of transport layer? Discuss how transport protocol establish and release connection in connected oriented serivce.

SECTION – C

Note :– Attempt all questions. Attempt any two part from each questions.   5×8=40

3. (a) State Nyquist's theorem for a noiseless channel. Evaluate the maximum bit rate for a channel having bandwidth 3100 Hz and S/N ratio of 20dB.

(b) What do you understand by multiplexing? Explain different multiplexing techniques in detail.

(c) What do you understand by computer network? Classify it on the basis of size technology and explain it in detail.

4. (a) What are the design issues of physical layer? Discuss different methods of framming.

(b) What do you understand by error detecting and correcting codes? If the 7-bit hamming code words received by receiver is 1011011. Assuming even parity, state whether the received code word is correct or wrong. If wrong, locate the bit in error and correct it.

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(c) What do you understand by sliding window protocol? Calculate the throughput of stop and wait flow control mechanism if the frame size is 4800 bits, bit rate is 9600 bps and distance between device is 200 km speed of propogation over the transmission is 2,00,000 km/s.

5. (a) How do you compare pure ALOHA and slotted ALOHA? Measurement of slotted ALOHA channel with an infinite number of users, 20% slot is idle.

    (i) Whati s the channel load?

    (ii) What is throughput?

(b) Define congestion. Discuss the main causes of congestion in .network. Explain any two techniques for congestion control.

(c) (i) A class B network on internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts per subnet?

    (ii) Perform subnetting of the following IP address 160.111.X.X. Original subnet mask is 255.255.0.0. Number of subnets = 6.

6. (a) Differentiate between TCP and UDP protocols.

    (b) Explain various quality of services parameters.

    (c) Define cryptography. Explain RSA algorithm. Solve for 'd' given e = 5, n = 35.

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