



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

PAPER ID : 110601

Roll No.

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B. Tech.

(SEM. VI) THEORY EXAMINATION, 2014-15 COMPUTER NETWORK

Time : 3 Hours]

[Total Marks : 100

NOTE: ATTEMPT ALL QUESTIONS.

1 ATTEMPT ANY FOUR : (5×4=20)

- (a) Differentiate between Bit rate and baud rate. A modem constellation diagram has data point at coordinates: (1,1), (1,-1), (-1,1) and (-1,-1). How many bps can a modem with these parameters achieve at 1200 baud? State two reason for using layered protocols.
- (b) What are the number of cable links required for n devices connected in mesh, ring, bus and star topology?
- (c) Calculate the required Bandwidth, if in a communication channel the signal power is 10 W, and the information transmission rate is 10kbps.
- (d) It is required to transmit a data at a rate of 64 kbps over a 3 kHz telephone channel. What is the minimum SNR required to accomplish this?
- (e) What do you mean by service primitives?
- (f) Discuss the services of each layer of OSI reference model.

2 ATTEMPT ANY FOUR : (5×4=20)

- (a) Given a 10-bit sequence 1010011110 and a divisor of 1011. Find the CRC. Check your answer.
- (b) Answer the following :
- A pure Aloha network transmits 200 bit frames on shared channel of 200 kbps. What is the through put if the system (all station together) produces 250 frames per second?
 - How can you compare pure Aloha and slotted Aloha?
- (c) Discriminate between the send window and receive window for link and how are they related with-
- A selective repeat retransmission scheme
 - A go-back-N control scheme
- (d) Discuss different carrier sense protocols. How are they different than collision protocols?
- (e) Sketch the Manchester and differential Manchester encoding for the bit stream: 0001110101
- (f) Discuss the different physical layer transmission media.

3 ATTEMPT ANY TWO : (10×2=20)

- (a) Write short notes on following:
- Stop and wait ARQ
 - Sliding Window Protocol
 - Go-Back N ARQ
 - Collision Avoidance



- (b) Perform the subnetting of the following IP address 160.11.X.X. Original subnet mask 255.255.0.0 and Number of subnet 6 (six)
- (c) What is the transmission time of a packet sent by a station if the length of the packet is 2 million bytes and the bandwidth of the channel is 300 kbps?

4 ATTEMPT ANY TWO : (10×2=20)

- (a) Draw the diagram of TCP header and explain the use of the following:
- Source and destination port addresses
 - Sequence and acknowledgement numbers
 - Code bits
 - Window size
 - Urgent pointer
- Describe the role of checksum field and option pad bytes.
- (b) Answer the following:

- Differentiate between the block cipher with transposition cipher.
- Using the RSA public key cryptosystem with $a=1$, $b=2$ etc.
 - If $p=7$ and $q=11$, list five legal values for d .
 - If $p=13$ and $q=31$ and $d=7$, find e .



(c) Discuss:

- (i) Different steps of JPEG compression standard.
- (ii) The RPC design and implementation issues.

5 ATTEMPT ANY TWO :

(10×2=20)

- (a) Explain the SMTP can handle transfer of videos and images? Also explain the advantages of IMAP 4 over POP 3 mail access protocols.
- (b) What is the difference between an active web document and dynamic web page? Also explain the role of CGI.
- (c)
 - (i) Compare and contrast TCP with RTP. Are both doing the same things?
 - (ii) What are the problems for full implementation of voice over IP? Did you think we will stop using the telephone network very soon?

