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Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Computer Networks – I

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. With a neat diagram, explain the functionalities of each layers of OSI – reference model. (10 Marks)
- b. Define networks what are the three criteria necessary for an effective and efficient network. (04 Marks)
- c. Differentiate between:
 - i) TCP and UDP
 - ii) Half duplex and full duplex
 - iii) ICMP and IGMP. (06 Marks)
- 2 a. Discuss the three causes of transmission impairments. (06 Marks)
- b. Define line coding. Explain the characteristics of line coding. (10 Marks)
- c. Consider a channel with 1MHz bandwidth, the SNR for this channel is 63. What is appropriate bit rate and signal level? (04 Marks)
- 3 a. Explain how statistical TDM overcomes the disadvantages of synchronous TDM. (04 Marks)
- b. Discuss the three phases in virtual circuit network with suitable illustration. (10 Marks)
- c. Four sources create 250 characters per sec. The frame contains one-character from each source and one extra bit for synchronization find :
 - i) Data rate of each sources
 - ii) Duration of each character in each source
 - iii) The frame rate
 - iv) Duration of output frame
 - v) Frame size in bits
 - vi) Data rate of link. (06 Marks)
- 4 a. What are the different types of errors? Explain in brief. (04 Marks)
- b. What is block coding? Explain error detection, and error correction. (09 Marks)
- c. Find the codeword $c(x)$ for the transformation $d(x) = x^3 + 1$, with the generator polynomial $t(x) = x^3 + x + 1$. (07 Marks)

PART – B

- 5 a. Compare and contrast byte-oriented and bit-oriented protocols. (06 Marks)
- b. Explain briefly with a neat figures :
 - i) Stop and wait protocol
 - ii) Stop and wait ARQ protocol. (08 Marks)
- c. Describe the different transition phases in Point-to-Point Protocol(PPP). (06 Marks)

- 6 a. Write a note on :
- Slotted ALOHA
 - 802.3 MAC frame format.
- (10 Marks)
- b. What is channelization? Explain FDMA and TDMA protocols used for channelization. (07 Marks)
- c. A pure ALOHA network transmits 200 bits frames on a shared channel of 200 kbps. What is the requirements to make this frame collision free. (03 Marks)
- 7 a. Explain the hidden and exposed station problem in IEEE 802.11 MAC layer. (10 Marks)
- b. Explain two different types of networks used in Bluetooth. (06 Marks)
- c. Calculate the maximum number of simultaneous calls in each cell in IS-136(D-AMPS) system. Assume there are no analog control channels. (04 Marks)
- 8 a. Find the class of each address :
- 00000001 00001011 00001011 11101111
 - 11000001 10000011 00011011 11111111
 - 14.23.120.8
 - 252.5.15.111.
- (04 Marks)
- b. Discuss the IPV₄ header format, with a neat diagram. (10 Marks)
- c. What are the advantages of IPV₆ over IPV₄? (06 Marks)
