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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Fifth Semester, B.E. - Information Science and Engineering

Semester End Examination; Dec - 2016/Jan - 2017

Communication Networks

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. With diagrams and examples, explain various ways of data flow between two devices. 6
- b. Discuss about five layers of TCP/IP protocol suite, with protocols of each layer with figure. 10
- c. We have a channel with 1-MHz bandwidth. The SNR for this channel is 63. What are the appropriate bit rate and signal level? 4
- 2 a. Write the responsibilities of each layer of OSI model by specifying relevant diagrams. 10
- b. Write about ring topology and hybrid topology of network. 4
- c. A signal travels through an amplifier and its power is increased 10 times. This means that $P_2 = 10P_1$. In this case, the amplification (gain of power) calculation can be done. Show that. 3
- d. We need to send 265 kbps over a noise less channel with a bandwidth of 20 kHz. How many signal levels we need? 3

UNIT - II

- 3 a. Explain five line coding schemes with neat sketch. 10
- b. We have a bandwidth of 100 kHz which spans from 200 to 300 kHz. What should be the carrier frequency and the bit rate, if we modulated our data by using FSK with $d = 1$? 4
- c. Name the advantages of optical fiber over twisted pair and coaxial cable. 6
- 4 a. What is meant by synchronous, asynchronous and isochronous transmission? Explain with neat figure. 8
- b. Describe three ways of Analog to Analog conversion. 8
- c. Write any two differences between radio and micro waves. 4

UNIT - III

- 5 a. Write short notes on : i) Single bit error ii) Burst errors. 6
- b. Distinguish between forward error correction versus error correction by retransmission. 6
- c. Describe simplest protocol. 8
- 6 a. Explain structure of encoder and decoder for a hamming code. 8
- b. What kind of error is undetectable by the checksum? 4
- c. Define piggybacking and its usefulness. 8

UNIT - IV

- 7 a. Explain point-to-point protocol. 10
- b. Describe controlled access and list three protocols in this category. 7
- c. Define the type of the following destination addresses:
- (i) 4A:30:10:21:10:1A 3
- (ii) 47:20:1B:2E:08:EE
- (iii) FF:FF:FF:FF:FF:FF
- 8 a. Discuss the HDLC protocol. 10
- b. Compare and contrast random access protocol with a channelizing protocol. 6
- c. What are the goals of Gigabit Ethernet design? 4

UNIT - V

- 9 a. Explain the architecture of IEEE 802.11. 10
- b. Write short notes on :
- (i) Virtual LANS 10
- (ii) Connecting devices.
- 10 a. Describe Bluetooth architecture. 10
- b. What is the difference between a bus backbone and a star backbone? 5
- c. How does a VLAN provide extra security for a network? 5

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