***U.S.N*** | | | | | | | | | | |

# 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

Contd.....2

**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:<br>(i) 4A:30:10:21:10:1A<br>(ii) 47:20:1B:2E:08:EE<br>(iii) FF:FF:FF:FF:FF:FF | 3 |
| 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**

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|---|---|---|---|
| 9 | a. | Explain the architecture of IEEE 802.11. | 10 |
| | b. | Write short notes on :<br>(i) Virtual LANS<br>(ii) Connecting devices. | 10 |
| 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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