

**III B.Tech. I Semester Regular Examinations, November -2005**  
**BASICS OF TELEMATICS**  
**(Electronics & Telematics)**

**Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) Explain the problems encountered if the NRZ (Non Return Zero) waveform is directly applied to the transmission medium? Explain the techniques to overcome them?  
(b) Explain about calling mode and automatic calling units used with a modem?  
[8+8]
2. (a) What are the techniques to connect a computer directly to another terminal without a mode? Which is more preferred and why?  
(b) Explain about X . 20 and X . 21 bis interface standards? [8+8]
3. Discuss about supervisory and metering circuits in an auto exchange. [16]
4. (a) Discuss the principle of synchronous Gulstand Reception in five-unit Multiplex system.  
(b) Explain the principle of Regenerative Repeater for five-unit Multiplex system.  
[8+8]
5. What are the functions carried out by a router? Distinguish between hierarchical and non -dynamic hierarchical routing techniques? [16]
6. Mention the various protocols used in Transport layer design. Explain how Transport layer carries out flow control. [16]
7. (a) What are the base technologies for multiple-access? Discuss the merits and demerits of FDMA.  
(b) A voice sample takes 30KHz ,including guard band that provides protection against small drifts in transmission frequency. How many one-way channels can fit in 25-MHz band? If the listening area is divided in square cells, so that no two adjacent cells that share a side use the same frequency bands, how many calls can the 25-MHz spectrum support in a city of 250 cells? [10+6]
8. Distinguish the following terms:  
(a) Topology dissemination  
(b) sequence numbers- wrapped sequence number  
(c) lollipop sequence to the link state routing. [6+5+5]

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1. Write in detail about baseband coding? [16]
2. (a) Explain the five general interface management lines in IEEE 488?  
 (b) Discuss about the functional specifications of IEEE 488? [8+8]
3. What is a Transmission bridge? Explain in detail about stone transmission bridge and Hayes Transmission Bridge with neat sketches. [16]
4. Explain the transmission of signals in submarine cables. [16]
5. (a) What are the basic elements of telephone system? Briefly mention the function of each element .  
 (b) Define the terms **Local loop**, **long-haul**, **back bone** with respect to the telephone system. [8+8]
6. Mention the services offered by Session layer, presentation layer & Application layer. [16]
7. What are the advantages of CDMA compared to FDMA and TDMA? How the power management problem affects the performance of CDMA? [16]
8. Explain Dijkstra Algorithm while computing shortest path. Use the same to find the shortest path (A to F). as shown in the figure1 [16]

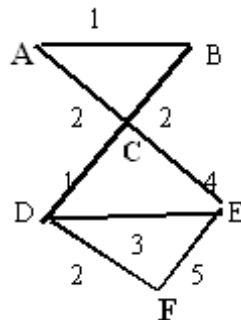


Figure 1:

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(b) Explain about calling mode and automatic calling units used with a modem?  
[8+8]
2. Write about X . 21 standard and discuss in detail about X . 21 operations? [16]
3. Discuss about supervisory and metering circuits in an auto exchange. [16]
4. Discuss about Frequency Modulation Plan CP - 4 and CP - 5 in underground symmetrical cable carrier system? [16]
5. What are the features of stored program control? What are the performance issues in time division switching? [16]
6. “ Peer to Peer communication” is supported by Transport layer - explain the above statement . What are the services offered by Transport layer? [16]
7. (a) Discuss various schemes to deal with hidden terminals in multiple access?  
(b) What are the different token passing techniques? Explain FDD working.[8+8]
8. (a) Compare Link state versus distance vector Routing  
(b) What Dijkstra’s algorithm and how it is useful in Link-state routing?. Explain with illustration. [6+10]

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1. What is Modulation? What is the function of a MODEM in case of long distance data communication over analog telephone lines? Discuss about the different modulation (keying) techniques employed? [16]
2. Explain in detail, operation with modems on leased lines and on dialed connections? [16]
3. Explain about trunk automatic exchange (TAX) with a neat working junction diagram. [16]
4. Discuss in detail about (1+8) open wire carrier system with a neat diagram? [16]
5. What are the challenges associated with Internet? How to integrate the quality of service parameters in the Internet architecture? [16]
6. Give the underlying concepts for ATM Networks. Explain Virtual circuits, Statistical multiplexing and Integrated services. [16]
7. What is the difference between S-ALOHA and ALOHA? What overhead does S-ALOHA incur? What are the disadvantages of R-ALOHA? [16]
8. What are the metrics used while calculating Link costs. [16]

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