

8/10/13

(16)

Registration Number :

B.E. / B.Tech. (FULL TIME) ARREAR EXAMINATION – NOV. /DEC.2013  
ELECTRONICS AND COMMUNICATION ENGINEERING BRANCH  
SIXTH SEMESTER – (REGULATIONS R 2004/2008)  
EC381/EC9032 – DIGITAL SWITCHING AND TRANSMISSION

Duration : 3 Hours

Max. Marks = 100

Answer ALL the questions.

PART- A (10 x 2 = 20 marks )

1. Discuss the necessity to modulate a signal.
2. Draw the Manchester and Bipolar coded signal waveforms for the data pattern {1 0 0 1 1 0 1 1 }.
3. What do you understand by a Trunked system. Highlight merits and demerits.
4. Bring out the special features of GEO based satellite systems.
5. With a suitable figure depict the local loop in a telecommunication network.
6. How is simultaneous transmission of voice and high speed data possible in an ADSL system.
7. Differentiate Virtual Circuit Switching used in ATM from the conventional packet switching.
8. Explain Byte Interleaving Optical TDM with a suitable figure.
9. Define Grade of Service and the unit of traffic intensity.
10. How do you define Blocking probability for a Blocked Calls Delayed System.

PART – B ( 5 x 16 = 80 marks )

11. (i) Discuss the quality of service requirements for voice and data services and explain the switching technique suitable for each of the above services with proper justification. (6)  
(ii) Compare the merits and demerits of Synchronous and Asynchronous transmission. Explain the possible methods for realizing Synchronous transmission. (10)

- 12a. (i) Highlight the similarities and differences between the European PCM and the North American PCM systems in terms of the data rate, framing and synchronization. (8)  
(ii) Draw the protocol stack of ATM and explain the functions of each layer. Also draw the format of an ATM cell and label the different fields.  
(8)

'OR'

- 12b. Explain with suitable diagrams the multiplexing format used in SONET and highlight the ways in which it differs from the conventional TDM multiplexing used in PSTN networks.
- 13a. Discuss in detail the concepts of frequency reuse and the handoff process in association with the Cellular architecture used for mobile communication.

'OR'

- 13b. Discuss the merits of using fiber in the local loop and explain the different architectures for the same.
- 14a. What do you understand by Time Switching. Explain with suitable figures how time-slot interchange could be carried out between PCM junctions. List out the merits and demerits of Time switching of PCM slots in comparison to Space switching of PCM slots.

'OR'

- 14b. Draw the architecture of a Shared memory fast packet switch. Highlight its merits and limitations with suitable justification.
- 15a. Explain the significance of Grade of Service in a telecommunication network.  
Given Pure chance traffic, Poisson call arrivals with call durations being negative exponentially distributed, derive an expression for the blocking probability in a blocked calls cleared system.

'OR'

- 15b. A T-S-T network has ten incoming highways and ten outgoing highways, each carrying an E1 carrier signal at 2.048 Mbps. The average occupancy of the incoming channels is 0.6 Erlangs. Derive an equivalent space-division network. Estimate the Grade of Service when an incoming call must be connected to a selected outgoing highway but may use any free channel on it. How much is the GOS improved if one extra trunk is added to the group.