

**Code No: C4508, C9305****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD  
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY-2012  
ADVANCED DATA COMMUNICATIONS  
(SYSTEM & SIGNAL PROCESSING)****Time: 3hours****Max.Marks:60****Answer any five questions  
All questions carry equal marks**

- - -

- 1.a) Describe the relationship between bit rate, bandwidth, and baud rate for M-ary PSK and M-ary QAM systems. Derive the suitable expressions.
- b) With suitable block diagram, explain how clock recovery is done from the received signal in digital communication systems.
  
- 2.a) Discuss about different interface standards used in data communications with suitable electrical and mechanical specifications.
- b) With suitable block diagram(s), explain how the information is transferred between Data Terminal Equipment (DTE) and (Data Communication Equipment (DCE).
  
- 3.a) What are the categories of Networks? Discuss about them.
- b) What are the line configurations and transmission modes used in data communications? Describe them briefly.
  
- 4.a) What are the different error detection methods used in data communications?
- b) Describe how vertical redundancy checking accomplishes error detection.
- c) Determine the block check character (BCC) for the following data and cyclic redundancy check (CRC) – generating polynomials:  $G(x) = x^7 + x^4 + x^2 + 1$ ; and  $P(x) = x^5 + x^4 + x + 1$ .
  
- 5.a) Discuss about Synchronous Data Link Communications (SDLC) protocol in detail.
- b) Determine the bit pattern for the control field of a supervisory frame format sent from a secondary station to the primary for the following conditions: the secondary is ready to receive, it is the final frame, and the secondary station is confirming frames 3, 4, and 5.
  
- 6.a) List out the similarities/differences between circuit switching, packet switching, and message switching.
- b) Write the following briefly: (i) PSTN (ii) Synchronous TDM
  
- 7.a) Explain the difference between the multiplexing and multiple access with suitable examples.
- b) Give the important features of Polling and Token passing.
  
8. List out different multiple access techniques and discuss them in detail.

\*\*\*\*\*