T.Y.B.Sc. (Sem V) Oct. 2014

Computer Science.

I Data communications, Networking and Securit

QP Code : 05074

(2 ½ Hours) **[Total Marks : 75]**

N.B. : (1) All questions are compulsory
(2) Figures to the right indiacte full marks.
(3) Illustration in-depth answers and diagrams willbe appreciated.
(4) Mixing of Subquestions is not allowed.

1. Attempt the following (Any **three**) 15
(a) Write a short note on Bus topology.
(b) Discuss RZ Scheme and encode the data Sequence 1010101100.
(c) Define Period and frequency of Analog signal. Calculate the frequency in megahertz where period is 100 microseconds.
(d) Explain in brief different Components of PCM encoder with proper diagrm.
(e) State and explain five Components of data Communication.
(f) Discuss in brief different digital to analog Conversion techniques.

2. Attempt the following (Any **three**) 15
(a) Write a short note on FHSS.
(b) Discuss different propagation Modes of optical fibre.
(c) Explain wavelength Division Multiplexing.
(d) Discuss the structure of packet Switch.
(e) State and explain characteristics of virtual circuit networks.
(f) Explain the interleaving process in TDM? A multiplexer combines four 200 kbps Channels using time slot of 2 bits. show the output with four arbitrary inputs. Calculate the following.
(i) Frame rate
(ii) Frame duration

3. Attempt the following (Any **three**) 15
(a) Explain two dimensional parity check hence delect the error in transmission of 101010, 11111, 110011 when recieved is 101110, 11111, 000111.
(b) Explain Go Back N ARQ. Discuss the error case of lost Ack Frame.
(c) Write a short note on CRC. List advantages of the same.
(d) What is HDLC? explain S- frame in detail.
(e) State and explain PPP transition states.
(f) Discuss Bit stuffing and unstuffing with example.

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4. Attempt the following (Any **three**)
   (a) Explain the loop problem in learning bridge. 15
   (b) State and explain different backbone networks.
   (c) Discuss the following Concept of Cellular telephony
      (i) Frequency re-use
      (ii) Hand off
   (d) Explain hidden and exposed station problem.
   (e) Discuss the structure of MAC frame.
   (f) Explain CSMA/CD technique in detail.

5. Attempt the following (Any **three**)
   (a) State and explain duties of datalink layer. 15
   (b) Write a short note on Radio waves.
   (c) State and explain different types of bit errors.
   (d) Write a short note on reservation method of Controlled access technique.
   (e) Explain different types of transmission impairments.
   (f) Write a short note on CDMA technology.
