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TCS–405/TIT–405

B. Tech. (CS & IT) (Fourth Semester)
Mid Semester EXAMINATION, 2014
DATA COMMUNICATION & NETWORKS

Time : Two Hours] [*Maximum Marks : 60*

Note : (i) This question paper contains two Sections : Section A and Section B.

(ii) Answer all questions in Section A by choosing the correct option from multiple choices. Each question carries 2 marks.

(iii) Answer any *four* questions from Section B. Each question carries 12 marks.

Section—A **2 each**

1. Attempt all multiple choice questions, choosing the correct option.

(i) Protocols are :

(a) Agreements on how communication components are to communicate

(b) Logical communication channels used for transferring data

(c) Physical communication channels used for transferring data

(d) None of these

(ii) The highest data rate is provided by the transmission medium :

(a) Coaxial cable

(b) Microwave

(c) Optical fiber

(d) Twisted Pair

(iii) The layer responsible for end to end delivery of the entire message is :

(a) Network layer

(b) Transport Layer

(c) Session Layer

(d) Datalink Layer

(iv) An effective way to prevent attenuation is :

(a) Adding Repeaters or amplifiers to a circuit

(b) Shorting a circuit

(c) Shielding wires

(d) None of these

(v) Which of the following indicate an error if an ODD parity approach is used ?

(a) 101010110

(b) 101000110

(c) 111000000

(d) 101011010

(vi) Which of the following ISO levels is more closely related to the physical communications facilities ?

(a) Application

(b) Session

(c) Network

(d) Data link

Section—B 12 (6+6) each

Note : Attempt any *four* questions.

2. (a) Compare and contrast the delivery mechanism and addressing schemes in Data Link, Network and Transport Layers of OSI ref. model.

   (b) If a periodic signal is decomposed into five sine waves with frequencies of 100, 300, 500, 700 and 900 Hz. What is the bandwidth ? Draw the spectrum, assuming all components have maximum amplitude of 10 volts.

3. (a) Explain *five* data communication components ?

   (b) What do you mean by topology ? Explain Star topology and Mesh topology.

4. (a) Explain the various layers in OSI model in brief.

   (b) Match the following to one or more layers of OSI model :

   (i) Defines frames

   (ii) Provides user services

   (iii) Flow control

   (iv) Route determination

5. (a) What are some of the factors that determine whether a communication system is a LAN, MAN or WAN ? Give suitable examples.

   (b) Explain the following :

   (i) Wavelength

   (ii) Period and frequency

   What is the relationship between Period and Frequency?

6. (a) Explain guided media in brief.

   (b) What is the difference between Half Duplex and Simplex Transmission modes ?

7. (a) The period of a signal is 100 ms what is its frequency in kHz ?

   (b) Given the following periods. Calculate the corresponding frequency :

   (i) 8 sec

   (ii) 10 microsec