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## TCS/TIT-405

### B. Tech. (CS/IT) (Fourth Semester) End Semester EXAMINATION, 2014

#### DATA COMMUNICATION NETWORK

Time : Three Hours ]

[ Maximum Marks : 100

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

(ii) Answer all questions in Section A (Part I) briefly in not more than 50 words. Each question carries 2 marks.

(iii) Answer any *four* questions from Section A (Part II). Each question carries 6 marks.

(iv) Answer any *four* questions from Section B. Each question carries 14 marks.

#### Section—A

##### Part—I

2 each

1. Attempt all questions briefly in not more than 50 words :

(i) Define Simplex method.

(ii) Define Network.

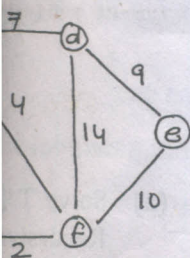
(iii) Explain Physical Topology.

(iv) Name User support layers in OSI model.

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- (v) What is the use of IP address ?
- (vi) Define Phase.
- (vii) Define Noise.
- (viii) How is frequency and Period related to each other ?
- (ix) Distinguish between Signal Element and Data Element.
- (x) What is the use of Twisted pair cable ?

**Part—II**

6 each

2. Write short notes on any *four* of the following :

- (a) Explain MODEM capabilities.
- (b) Define baseline wandering and its effect on digital transmission.
- (c) What is the difference between Physical address and Logical address ?
- (d) Explain in brief Amplitude Modulation.
- (e) How do Guided Media differ from Unguided Media ?
- (f) Explain Mesh Topology.

**Section—B**

14 (7+7) each

**Note :** Attempt any *four* questions.

- 3. (a) "Effectiveness of a data communication system depends on *four* fundamental characteristics." Explain the *four* characteristics.
- (b) Compare the Telephone Network and Internet. What are the similarities and what are the differences ?



4. (a) State and explain the responsibilities of Data Link Layer.  
(b) Define various Line Coding Schemes.
5. (a) Explain Shannon Capacity and Nyquist theorems.  
(b) Given 01001110 string. Draw wave forms using NRZ-L and NRZ-I schemes.
6. (a) Explain Pulse Code Modulation in detail.  
(b) Explain Amplitude Shift Keying and Phase Shift Keying.
7. (a) What is Multiplexing ? Explain Frequency division Multiplexing.  
(b) Explain Hamming code and how it detects 1-bit error and correct it ?
8. (a) (i) Name the advantages of Optical fiber over twisted pair and Coaxial cable.  
(ii) Distinguish between forward error correction vs. error correction by retransmission.  
(b) With respect to TDM explain :
  - (i) Multilevel Multiplexing
  - (ii) Multiple slot allocation
  - (iii) Pulse Stuffing