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**B.C.A.****FIFTH SEMESTER EXAMINATION, 2017-18****DATA COMMUNICATIONA & COMPUTER NETWORKS**Time : **3 Hours**Max. Marks : **100**

**Note :** (i) Attempt **ALL** questions.  
(ii) Choices are given in each question set.

1. Attempt any **Four** of the following questions: **5 x 4 = 20**
  - (a) What are the three fundamental characteristics for the effectiveness of the data communication system? Explain each.
  - (b) A sine wave is offset  $1/6$  of cycle with respect to time zero. What is its phase?
  - (c) Distinguish between Analog and Digital signals.
  - (d) A signal is sampled. Each sample requires at least 12 levels of precision (+0 to +5 and -0 to -5). How many bits should be sent for each sample?
  - (e) How is band rate related to transmission bandwidth in ASK, FSK and PSK?
  - (f) What is Electromagnetic spectrum? Which parts of it are used for communication and How?
2. Attempt any **Four** of the following questions: **5 x 4 = 20**
  - (a) Distinguish between synchronous and Asynchronous transmission with suitable diagram.
  - (b) Why multiplexing is used? Describe Frequency Division multiplexing.

- (c) What is switching and its type? Explain packet switching with example.
- (d) Write names of digital to digital conversion for data communication? Explain any one of those.
- (e) An analog signal carries four bits in each signal element. If 1000 Signal elements are sent per second. Find the band rate and bit rate.
- (f) Suppose you add two new Devices to an existing five-device network. If you have a fully connected mesh topology, how many new cable lines are needed?
3. Attempt any **Two** of the following questions: **10 x 2 = 20**
- (a) What are functions of layers of the OSI model? Write and explain.
- (b) Distinguish between connectionless and connection oriented communication with example.
- (c) What is flow control? Which layer of OSI model implement it and how?
4. Attempt any **Two** of the following questions: **10 x 2 = 20**
- (a) TCP/IP model is having less number of layers in comparison with OSI model, how the functionality performed by 7-layers of OSI is implemented in TCP/IP model? Describe.
- (b) Distinguish between FTP and TFTP with suitable example and diagram.
- (c) Describe selective Repeater flow control for a channel with suitable example.

5. Attempt any **Two** of the following questions: **10 x 2 = 20**
- (a) Differentiate between guided and unguided media. Describe various communication mediums under the unguided category.
- (b) (i) Describe token Bus LAN (IEEE 802.4 Std).  
(ii) Distinguish between FDDI and IEEE 802.5.
- (c) Write short notes on:
- (i) Bridge
- (ii) SNMP
- (iii) Go-Back-N-Sliding Window Protocol.
- (iv) Local Area Network Operating System.

