

MCA 3rd Semester (Non CBCS)  
Examination, November/December-2019  
DATA COMMUNICATION & COMPUTER  
NETWORK  
Paper-MCA-304

*Time allowed : 3 hours]*

*[Maximum marks : 80*

**1. Compulsory Question:**

- (a) Why is frequency modulation superior to amplitude modulation?
- (b) Define protocol? Name the key elements of protocols.
- (c) Name any two data communication services provided by computer network.
- (d) What is internet working?
- (e) How can the parity bit detect a damaged data unit?
- (f) What is the advantage of token passing protocol over CSMA/CD protocol?
- (g) What is classless addressing? Give example also.
- (h) What is implicit congestion signaling?

**Unit-I**

2. (a) Define line coding. Discuss various line coding schemes.

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- (b) What is multiplexing? In what situations, it can be used? Explain different multiplexing techniques.
3. (a) What is the purpose of pulse code modulation? Discuss various steps of PCM technique.
- (b) Why multiplexing is needed in communication channel? Explain various schemes of time division multiplexing.

#### Unit-II

4. What are the principles used in defining the OSI layers? Explain how data flows between the layers in OSI model. Explain the duties of each layer in OSI model.
5. What are the services provided by ISDN? Explain its various types with appropriate applications.

#### Unit-III

6. (a) What is framing? Discuss various framing methods.
- (b) Explain the mechanism of sliding window control. Discuss link utilization for this mechanism also.
7. (a) Differentiate between switched and fast Ethernet. Discuss Ethernet cabling concept in both of them.
- (b) Discuss various modes of data transfer defined by HDLC. Also discuss different types of frames defined by HDLC.

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#### Unit-IV

8. (a) Differentiate between circuit switching and message switching. Explain various types of switch technologies used in circuit switching.
- (b) Explain the concept of subnetting in IP. What is subnet mask?
9. (a) Explain the segment format of TCP.
- (b) What is e-mail? Discuss the architecture of e-mail. What are the services offered by user agent?