

**67144**

**M.C.A. 3rd Sem. (with new notes)  
(Current Scheme)**

**Examination–December, 2014**

**Data Communication & Computer  
Networks**

**Paper-MCA-304**

**Time : 3 hours**

**Max. Marks : 80**

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after the examination.

**Note :** Question No. 1 is **compulsory**. Attempt **four** questions by selecting **one** question from each unit. All questions carry equal marks.

**Unit-I**

8×2 = 16

1. (a) Why does impulse noise have more effect on digital signals rather than on analog signals ?
- (b) What problem is encountered in deciding whether a host has become unreachable ?

- (c) Describe the token bucket mechanism for congestion control.
- (d) What do you understand by protocol hierarchies ?
- (e) Distinguish between attenuation distortion and delay distortion.
- (f) Out of the three digital-to-analog modulation techniques, which one requires higher bandwidth ?
- (g) Why is it necessary to limit the band of a signal before performing sampling ?
- (h) What is Nyquist Theorem ? Outline its significance.

**Unit-I**

2. (a) What problem with data transmission in broadband coaxial cable networks is addressed using frequency splitting ? Name two types of frequency splitting strategy and identify how they are different. 6
  - (b) What is multiplexing ? List different types of multiplexing techniques possible for signals and outline the working of each. 6
  - (c) Differentiate between analog and digital signals. 4
3. Explain the following :

- (a) Error-correcting codes 6
- (c) Data encoding 6
- (b) Pulse code modulation 4

### Unit-II

- 4. (a) What do you mean by IEEE standards for LAN ? Discuss their significance and illustrate their usefulness in detail. 8
- (b) What is OSI reference model ? Illustrate the model by detailing out all important features. 8
- 5. (a) What is TCP/IP Reference Model ? Illustrate its working through diagram. <http://www.HaryanaPapers.com> 8
- (b) What is an IP packet ? What is the minimum overhead in sending an IP packet using PPP ? Count only the overhead introduced by PPP itself, not the IP header overhead. 8

### Unit-III

- 6. (a) Explain using an example how bit stung is used to preserve frame boundaries when transmitting binary data at the Data Link level of the protocol stack. 6
- (b) What is HDLC ? Explain HDLC with flow-control and error-control. 6

- (c) What are sliding window protocols? What are the advantages and disadvantages of credits versus sliding window protocols ? Explain. 4

### 7. Explain the following :

- (a) Token ring 6
- (b) CSMA/CD protocol 6
- (c) Satellite networks 4

### Unit-IV

- 8. (a) What is routing ? Discuss one important algorithm of your choice. 5
- (b) What is switching ? Does time division switching necessarily introduce a minimum delay at each switching stage ? If so, what is it ? 6
- (c) Differentiate between circuit switching and packet switching. 5

### 9. Explain the following :

- (a) Cell switching 5
- (b) FTP 5
- (c) Congestion control mechanisms 6