Roll No. .....

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. 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