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13011

Third Semester MCA Degree Examination, Dec.2014/Jan.2015
Computer Networks

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1** a. What is computer network? List and explain the different types of network based on scale with suitable examples. (10 Marks)
- b. With a neat diagram, describe the functionalities of each layer in the OSI model. (10 Marks)
- 2** a. An image with 1024×768 pixels with 3 bytes / pixel. Assume image is uncompressed. How long it takes to transmit it over 56 kbps modem channel? Over 1 Mbps cable modem? Over 10 Mbps ethernet? (06 Marks)
- b. Explain the co-axial cable and optical fiber with their applications. (10 Marks)
- c. If the spectrum of a channel is between 3 MHz – 4 MHz and SNR is 251. Find the Shannon channel capacity. (04 Marks)
- 3** a. Define baseband and passband transmission. Describe NRZ, NRZ1, Bipolar AMI and Manchester encoding technique by applying on the information sequence – 1 0 1 0 1 1 1 0 0. (10 Marks)
- b. What is switching? List and explain the types of switching with suitable example. (10 Marks)
- 4** a. Explain how CRC is used in detecting errors for the following polynomial,
 $G(x) = x^4 + x + 1$. Consider the information sequence 1 1 0 1 0 1 1 0 1 1.
- i) Find the codeword corresponding to the above sequence.
- ii) If codeword has error in third bit, what does receiver obtain when it does its error checking? (10 Marks)
- b. With a neat diagram, explain the stop and wait ARO and mention its merits and demerits. (10 Marks)
- 5** a. Explain the following Random Access Protocols:
i) CSMA ii) CSMA / CD (10 Marks)
- b. With a neat diagram, explain the frame format of IPv4 header. (10 Marks)
- 6** a. Explain the token-bucket algorithm in detail. List its differences with Leaky – Bucket algorithm. (10 Marks)
- b. With an example, explain distance vector routing algorithm. (10 Marks)
- 7** a. Diagrammatically describe the process for connection establishment and connection release using 3-way handshake protocol. (10 Marks)
- b. Explain the packet format of UDP. (05 Marks)
- c. Explain DNS with example. (05 Marks)
- 8** Write short notes on:
- a. ARPANET
- b. WWW
- c. NAT
- d. ARP (20 Marks)