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13MCA31

Third Semester MCA Degree Examination, June/July 2018
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 networks 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. With a neat diagram, explain the co-axial cable and optical fiber. (10 Marks)
b. Explain the Nyquist bandwidth and Shannon capacity formula. (06 Marks)
c. Explain Time Division multiplexing. (04 Marks)
- 3 a. Explain Transmission Impairments. (10 Marks)
b. What is digital modulation? With example explain how digital modulation is accomplished with baseband transmission. (10 Marks)
- 4 a. Explain how CRC is used in detecting errors for the following polynomial, $G(x) = x^4 + x + 1$. Consider information sequence 1101011011.
(i) Find the codeword corresponding to the above sequence.
(ii) If codeword has error in third bit (left), what does receiver obtain when it does its error Checking? (10 Marks)
b. What is ARQ? With a neat diagram, explain the stop and wait ARQ. (10 Marks)
- 5 a. Explain the following protocol:
(i) CSMA (ii) CSMA/CD (10 Marks)
b. With neat diagram explain Bluetooth protocol architecture. (10 Marks)
- 6 a. With a neat diagram, explain the frame format of IPv4 header. (10 Marks)
b. Explain the token-bucket algorithm in detail. List its difference with leaky-bucket 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 and TCP segment header. (10 Marks)
- 8 a. Explain the working procedure of E-mail system and specify the architecture of SMTP. (10 Marks)
b. Write a short note on :
(i) DNS
(ii) WWW (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.