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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.