Indian Institute of Information Technology Sri City, Chittoor

Name of the Exam: Overview of Computers Workshop

Duration: 90 mins   Max. Marks: 40

Instructions:

1. Closed book exam, no notebooks, no formula sheets, no electronic gadgets.
2. Calculator is allowed.

Answer the following questions:

Q1. [10 Marks] Draw a functional diagram of system bus architecture.

Q2. [10 Marks]
i. Walsh Hadamard code separates users based on: 1M
      a. Code orthogonality
      b. Codes in parallel
      c. Codes in serial
      d. Non trivial codes

ii. A 25 MHz wireless system has a combination of FDMA with 200 KHz bands. Further, each of the bands is distributed sequentially to 8 users.
   (a) How many unique FDMA bands exist?   1M
   (b) How many unique users can be served using a combination of TDMA and FDMA?
                                                    3M

iii. Write a matlab program for generating the following function   (3M)

$$x(t) = \begin{cases} 0 & \text{for } 0 < t < 2 \\ (t-2)/2 & \text{for } 2 < t < 4 \\ 0 & \text{for } 4 < t < 6 \\ (t-6)/2 & \text{for } 6 < t < 8 \\ 0 & \text{for elsewhere} \end{cases}$$

iv. What is the relation between mobile computing and wireless communication technology?
                                                                           (1M)

v.. Does Bluetooth technology require an infrastructure, justify?   (1M)

Q3. [10 Marks]

i. How long does it take a packet of length 2000 bytes to propagate over a link of distance 3600km, propagation speed 2.5×10^8 m/s, and transmission rate 10Mbps? [2M]

        (a) 14ms

        (b) 140s

        (c) 0.14s

        (d) 14s

ii. Which of the below delay depends on Rate of transmission on a link? [1M]

    a) Propagation b) Queuing c) Transmission d) Processing

iii. Queuing delay is the time taken to transmit all the packets and the delay is random in nature. [1M]

    a) True   b) False

iv. Explain the below layer functionalities [3 *1 = 3M]

   a) Transport Layer b) Physical Layer c) Data link Layer

v. Explain how TCP is better than UDP in 2 aspects [2M]

vi. Differentiate Virus and worm in at least one aspect [1M]

Q4. (a) Write the assembly language program to ADD the numbers 51H and 69H stored in the registers R5 and R7, respectively and save the value in register R6. [5M]

(b) List the types of addressing modes used in 8085 microprocessors. Write the Instruction format (2 bytes) of the 8085 microprocessor. [5M]