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] Explain the booting process of a computer system?

Q2. [10 Marks]

i. The co-channel reuse ratio formula (Q) for cell edge length R and Distance between co-channel cells is given by (1M)

a. Q = D/R
b. Q = 3*(D/R)
c. Q = 5 * (D/R)
d. Q = 7 * (D/R)

ii. In FDMA, which of the following resource is divided among multiple users (1M)

a. Time
b. Frequency
c. Code
d. Space

iii. Write the Walsh Hadamard Code matrix for 4 x 4 System; starting with 2 x 2 (3M)

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

x(t) = 2t for 0 < t < 0.5
0 for 0.5 < t < 1
2(t-1) for 1 < t < 1.5
0 for elsewhere

v. What is the key reason for superior performance of 3G technology compared to 2G technology (2M)

Q3. [10 Marks]

i.How long does it take a packet of length 1000 bytes to propagate over a link of distance 2500km, propagation speed 2.5×10^8 m/s, and transmission rate 10Mbps? [2M]

(a) 10ms

(b) 100s

(c) 0.10s

(d) 10s

ii.Which of the below delay is random? [1M]

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

iii. Propagation delay is the time taken to transmit all the bits of the packet into the link and Processing delay is fixed. [1M]

a) True b) False

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

a) Application Layer b) Session Layer c) Data link Layer

v. Explain at least two unique features of TCP [2M]

6. Write your understanding of VIRUS in a line or two [1M]

Q4. (a) Write briefly the 8086 microprocessor in terms of number of pins, power supply, clock frequency and the technology used for the fabrication of the IC. Status flags in 8085 microprocessor. [5M]

(b) Analyze the following pseudocode and determine the content of registers A, R3 and R2. Assume that AFH and BBH are stored in RAM locations (of 8051) 31 and 32, respectively. *Justify your answer with details.* [5M]

```
        ORG 0000H
        MOV R0, #31
        MOV R1, #01H
        MOV A,  #00
        MOV R2, A
        MOV A, @R0
Back:   INC R0
        ADD A, @R0
        JNC  Level1
        INC  R2
Level1: DJNZ R1, Back
        MOV  R3, A
        INC A
IIITS:  SJMP   IIITS
        END
```