

## 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.
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Answer the following questions:

Q1. [10 Marks] What is the need of an I/O interface?

Q2. [10 Marks]

i. A wireless cellular reuse of  $N = 19$  implies a co-channel reuse ratio (Q) of: 1M

- a. 7.54
- b. 4.58
- c. 6
- d. 6.24

ii. A 25 MHz wireless system has a combination of FDMA with 100 KHz bands. Further, each of the bands is distributed sequentially to 16 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)

$$x(t) = \begin{cases} 1-t/2 & \text{for } 0 < t < 2 \\ 0 & \text{for } 2 < t < 4 \\ 3-t/2 & \text{for } 4 < t < 6 \\ 0 & \text{for elsewhere} \end{cases}$$

iv. Explain the role of an antenna in wireless communication with a graphical illustration (2M)

Q3. [10 Marks]

i. How long does it take a packet of length 3000 bytes to propagate over a link of distance 1250km, propagation speed  $2.5 \times 10^8$  m/s, and transmission rate 10Mbps? [2M]

(a) 5ms

(b) 50s

(c) 0.5s

(d) 5s

ii. Which of the below delay depends on buffer size? [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) Network Layer b) Presentation Layer c) Physical Layer

v. Explain your understanding of layered architecture and the importance of headers [2M]

vi. Differentiate Virus and Worms in at least 2 aspects [1M]

Q4. (a) Write the assembly language program to DIVIDE the numbers 26H and 13H stored in the registers R5 and R7, respectively and save the value in register R6. [5M]

(b) Draw the internal block diagram of 8086. [5M]