

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] Convert decimal number 1553 into binary, hexadecimal and octal numbers.(step by step procedure)

Q2. [10 Marks]

i. A wireless cellular reuse of $N = 7$ implies a co-channel reuse ratio (Q) of: 1M

- a. 3
- b. 4.58
- c. 6
- d. 6.24

ii.. A 25 MHz wireless system has a combination of FDMA with 400 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)

$$x(t) = \begin{cases} 0 & \text{for } 0 < t < 0.5 \\ 2t - 1 & \text{for } 0.5 < t < 1 \\ 0 & \text{for } 1 < t < 1.5 \\ 2t - 3 & \text{for } 1.5 < t < 2 \\ 0 & \text{for elsewhere} \end{cases}$$

iv. What are the advantages of wireless LAN over wired LAN ? (2M)

Q3. [10 Marks]

i. How long does it take a packet of length 1000 bytes to propagate over a link of distance 2000km, propagation speed 2.5×10^8 m/s, and transmission rate 10Mbps? [2M]

- (a) 8ms
- (b) 80s
- (c) 0.8s
- (d) 8s

ii. Which of the below delay depends on the type of the medium? [1M]

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

iii. Transmission 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) Physical Layer b) Application Layer c) Session Layer

v. Differentiate TCP and UDP in at least 2 aspects [2M]

vi. Write your understanding why IP address is important in a line or two [1M]

Q4. (a) Write the assembly language program to SUBTRACT the numbers 51H and 9H 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 8086 microprocessors. Write the Instruction format (2 bytes) of the 8086 microprocessor. [5M]