

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] Explain the different layers of computer system operations?

Q2.[10 Marks]

i. In wireless cellular reuse, the relation between reuse ratio (N) and cell edge length R, Distance between co-channel cells (D) is given by (1M):

- a. $D/R = \sqrt{N}$
- b. $D/R = \sqrt{3N}$
- c. $D/R = \sqrt{5N}$
- d. $D/R = \sqrt{7N}$

ii. Write the Walsh Hadamard Code matrix for 16 x 16 System; starting with 2 x 2 (4M)

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

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

iv. Give two practical applications of Bluetooth technology? (2M)

Q3. [10 Marks]

i. How long does it take a packet of length 4000 bytes to propagate over a link of distance 2800km, propagation speed 2.5×10^8 m/s, and transmission rate 10Mbps? [2M]

(a) 11ms

(b) 110s

(c) 0.11s

(d) 11s

ii. Which of the below delay depends on traffic intensity? [1M]

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

iii. Processing 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) Data link Layer b) Network Layer c) Physical Layer

v. Explain how UDP is different from TCP in at least 2 aspects [2M]

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

Q4. (a) write briefly on the functional blocks of the 8085 microprocessor. Registers in 8086 microprocessor. [5M]

(b) Analyze the following pseudocode and determine the content of registers A, R3 and R2. Assume that FDH and EBH 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
```