

## B.Tech I Year II Semester Regular &amp; Supplementary Examinations August-2023

## FUNDAMENTALS OF DIGITAL COMPUTING SYSTEMS

(Electronics &amp; Communications Engineering)

Time: 3 Hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a What are the major considerations and factors that would be important while buying a computer? CO1 L1 6M  
b Distinguish between primary storage and secondary storage. CO1 L2 6M

OR

- 2 a Describe the features of IBM -Z series mainframe computers. CO1 L2 6M  
b Interpret the following terms: CO3 L3 6M  
(i) Computer network (ii) Internet

**UNIT-II**

- 3 a Explain general concept of system with an example. CO3 L2 6M  
b Discuss the importance of application architecture in IT system design. CO3 L2 6M

OR

- 4 a Why web-based system architecture is a popular approach to many organizational systems? Explain with an example. CO3 L2 6M  
b Describe the principal responsibilities of a system architect. CO2 L2 6M

**UNIT-III**

- 5 a Discuss various number systems of a computer. CO4 L2 8M  
b Calculate how many bits it will take to represent the decimal number 3,175,000 and how many bytes will it take to store this number. CO4 L3 4M

OR

- 6 a Convert the following numbers from decimal to binary and then to hexadecimal: CO4 L2 6M  
(i) (27.625)<sub>10</sub> (ii) (4192.37761)<sub>10</sub>  
b Using the division method, convert the following decimal numbers: CO4 L2 6M  
(i) (13750)<sub>10</sub> to base 12 (ii) (6026)<sub>10</sub> to hexadecimal  
(iii) (3175)<sub>10</sub> to base 5

**UNIT-IV**

- 7 a Briefly explain the three standards that are used in common for alphanumeric characters. CO5 L2 6M  
b Explain the PNG & JPEG image formats. CO5 L2 6M

OR

- 8 With a neat sketch, describe how an A-to-D converter converts audio data into binary data. CO5 L2 12M

**UNIT-V**

- 9 a Define 9's complement and 10's complement of a given number and explain the relation between them. CO6 L2 6M  
b Calculate the 16-bit 1's and 2's complements of the following binary numbers. CO6 L3 6M  
(i) 10000 (ii) 100111100001001 (iii) 0100111000100100

OR

- 10 a Compute division of the following two numbers, normalize the result obtained and round it to 3-bit. CO5 L3 6M  
i) 04220000/02712500 ii) 625.2035 / 25.7585 iii) 7024.775E2 / 512.225E0  
b Compute the floating-point representation for 0.0000019557. CO4 L3 6M

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