**20CS104, 20CB/DS/CM105**

**Hall Ticket Number:**

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| **I/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION** | | | | |
| **February, 2024** | | **Common to CS, CB, DS & CM** | | |
| **First Semester** | **Introduction to Problem Solving** | | | |
| **Time:** Three Hours | | | **Maximum:** 70 Marks | |
| ***Answer question 1 compulsorily.*** | | | | **(14X1 = 14Marks)** |
| ***Answer one question from each unit.*** | | | | **(4X14=56 Marks)** |
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| 1 | a) | How can you classify the memory? |  | L2 | 1M |
|  | b) | Define Application Software. Give any Two examples. |  | L2 | 1M |
|  | c) | Draw a flowchart to find greatest of three numbers. |  | L2 | 1M |
|  | d) | Write an algorithm for finding the sum of all odd numbers in a given range. |  | L2 | 1M |
|  | e) | Illustrate an algorithm for sine function computation. |  | L2 | 1M |
|  | f) | Wire an algorithm to find the maximum of three numbers. |  | L2 | 1M |
|  | g) | What do you mean by factoring? Give example. |  | L2 | 1M |
|  | h) | Write an algorithm to find LCM of two numbers. |  | L2 | 1M |
|  | i) | Write an algorithm to find whether the given number is Prime or not. |  | L2 | 1M |
|  | j) | What is an ordered array? Give an example. |  | L2 | 1M |
|  | k) | What are the various metrics to analyse an algorithm. |  | L2 | 1M |
|  | l) | What is asymptotic notation? |  | L2 | 1M |
|  | m) | What is meant by sequential storage? What are its advantages? |  | L2 | 1M |
|  | n) | Convert (25)10 to (-------)2 |  | L2 | 1M |
| **Unit-I** | | | | | |
| 2 | a) | Explain about the basic organization of a computer with its various units. |  | L2 | 7M |
|  | b) | Explain about various problem solving strategies. |  | L2 | 7M |
| **(OR)** | | | | | |
| 3 | a) | Explain various generations of computers. |  | L2 | 7M |
|  | b) | What are the differences between algorithm, flowchart, pseudo code and program? |  | L3 | 7M |
| **Unit-II** | | | | | |
| 4 | a) | Write an algorithm to find sum of n numbers. |  | L2 | 7M |
|  | b) | Write an algorithm to exchange the values stored in two variables. |  | L3 | 7M |
| **(OR)** | | | | | |
| 5 | a) | Design the algorithm that reads a list of numbers and makes the count of number of negative and number of non-negative members in the set. |  | L3 | 7M |
|  | b) | Design an algorithm to compute the average of n numbers. |  | L3 | 7M |
| **Unit-III** | | | | | |
| 6 | a) | Write an algorithm to find the GCD of two integers. |  | L4 | 7M |
|  | b) | Write an algorithm to find the square root of a given number. |  | L2 | 7M |
| **(OR)** | | | | | |
| 7 | a) | Write an algorithm to find the factors of a given integer. |  | L3 | 7M |
|  | b) | Write an algorithm to generate a set of pseudo random numbers. |  | L2 | 7M |
| **Unit-IV** | | | | | |
| 8 | a) | Explain the algorithm development and description to reverse the elements of an array. |  | L2 | 7M |
|  | b) | What are the time complexity and space complexity of an algorithm? |  | L2 | 7M |
| **(OR)** | | | | | |
| 9 | a) | Design the algorithm to remove the duplicates from an array. |  | L3 | 7M |
|  | b) | Given a randomly ordered array of n elements determine the kth smallest element in the set. |  | L3 | 7M |

