**KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE, WARANGAL-15**

**DEPARTMENT OF PS AND M&H**

No. /PS/M&H/KITS/2024 Date: 30 /09/2024

**CIRCULAR**

*Sub: I Semester -Allotment of Practicum topics– Reg.*

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**INSTRUCTIONS**

**Students:**

1. The students should meet immediately the allotted course faculty for practicum and start working on the practicum with the guidance of course faculty.

2. To complete the Practicum, the student shall work in laboratories under supervision of allotted course faculty, in the allotted hours in the classwork timetable and also outside the class work hours during weekdays.

**Practicum/Course Faculty:**

1. The course faculty are advised to guide the allotted students for practicum during the semester course work.

2. In case of any clash in respect of practicum slot and practicum-faculty classwork, the practicum faculty should allot 4.00 p.m. to 6.00 p.m. slot to their practicum students on any full day. The same shall be informed to the class teacher, for record

Following are the practicum topics allotted to the I semester students of 1CSM2 section.

***Section : 1CSM2.***

| S. No. | Roll no. of the student | Practicum topic allotted | Practicum under the course | Course faculty |
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| 1 | B24AI065 | Newton's Method for Finding Roots of Equations | Differential Calculus and ordinary differential equations [DCODE] | Narahari Raji Reddy (NRR) |
| 2 | B24AI066 | Use Euler forward and Euler backward scheme to LCR Circuit and its solution | DCODE | NRR |
| 3 | B24AI067 | Application of second order differential equations: Spring with a mass body. | DCODE | NRR |
| 4 | B24AI068 | Deflections of beams using differential equation | DCODE | NRR |
| 5 | B24AI069 | Iterative method for finding root of equations- Its convergence & divergence. | DCODE | NRR |
| 6 | B24AI070 | Real world applications of simultaneous linear equations | DCODE | NRR |
| 7 | B24AI071 | Applications and verification of Rolle's mean value theorem for the function of one variable. | DCODE | NRR |
| 8 | B24AI072 | Lagrange's mean value theorem and its application for the function of one variable | DCODE | NRR |
| 9 | B24AI073 | Application of Linear differential equations- Electrical Circuits: -LCR Circuit | DCODE | NRR |
| 10 | B24AI074 | Expanding the given function of one variable up to required number of terms using Taylor's series method. | DCODE | NRR |
| 11 | B24AI075 | Motion of a boat across a stream:<br>i) Formation of the model problem<br>ii) Solving the problem | DCODE | NRR |
| 12 | B24AI076 | Expanding the given two variable functions up to required number of terms using Taylor's series method. | DCODE | NRR |
| 13 | B24AI077 | Application of first order differential equations:<br>Maxima and minima of functions of one variable, its applications- First order differential equation | DCODE | NRR |
| 14 | B24AI078 | "Analysis of Water Quality Parameters using Spectrophotometry" | Engineering Chemistry (EC) | Dr. M. Ranadheer Kumar |
| 15 | B24AI079 | "Determination of pH and Total Dissolved Solids in Industrial Effluents" | EC | MRK |
| 16 | B24AI080 | Removal of Heavy Metals from Wastewater using Adsorption Techniques" | EC | MRK |

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| 17 | B24AI081 | "Synthesis and Characterization of Nanoparticles for Catalytic Applications" | EC | MRK |
| 18 | B24AI082 | "Investigation of Corrosion Inhibition using Green Inhibitors" | EC | MRK |
| 19 | B24AI083 | **Synthesis of Nanoparticles**: Methods like sol-gel, chemical reduction, or physical vapor deposition. | EC | MRK |
| 20 | B24AI084 | ''Development of a Low-Cost Sensor for Detection of Toxic Gases" | EC | MRK |
| 21 | B24AI085 | "Study of the Effects of pH on the Degradation of Polymers | EC | MRK |
| 22 | B24AI086 | **Passivation**: Study of protective coatings and materials that resist corrosion | EC | MRK |
| 23 | B24AI087 | "Design and Fabrication of a Solar Still for Water Purification" | EC | MRK |
| 24 | B24AI088 | "Development of a Novel Adsorbent for the Removal of Pollutants from Water" | EC | MRK |
| 25 | B24AI089 | Investigation of the Electrochemical Behavior of a Corroding Metal" | EC | MRK |
| 26 | B24AI090 | Green chemistry in organic synthesis | EC | MRK |
| 27 | B24AI091 | 4-bit Binary Adder-Subtractor | Switching Theory and Logic Design [STLD] | Dr. V. Raju [VR] |
| 28 | B24AI092 | 4-bit Carry Look-Ahead Adder | STLD | VR |
| 29 | B24AI093 | N-Bit Parallel Adder | STLD | VR |
| 30 | B24AI094 | 7-Segment Display Decoder (BCD to 7 Segment) | STLD | VR |
| 31 | B24AI095 | Priority Encoder (8-to-3) | STLD | VR |
| 32 | B24AI096 | 4:1 Multiplexer Implementation of Boolean Function | STLD | VR |
| 33 | B24AI097 | Full Adder using Multiplexer | STLD | VR |
| 34 | B24AI098 | 4-bit Synchronous Binary Counter | STLD | VR |
| 35 | B24AI099 | 4-bit Asynchronous Binary Counter | STLD | VR |
| 36 | B24AI100 | Johnson Counter | STLD | VR |
| 37 | B24AI101 | SR Flip-Flop Implementation | STLD | VR |
| 38 | B24AI102 | J-K Flip Flop with Race Around Condition | STLD | VR |
| 39 | B24AI103 | Binary to Gray Code Converter | STLD | VR |
| 40 | B24AI104 | **Problem Statement**<br>A math game is introduced in a school competition to test the skills of students. The game deals with Prime numbers.<br>The game rules are as follows:<br>• From the given set of distinct natural numbers as input, consider the smallest natural number as q.<br>• Your task is to compute the smallest prime number (p) such that when p is divided by all the distinct numbers in the input, except q, should result q as the remainder. | Programming for Problem Solving with C [PPSC] | Ms.D. Haritha |
| 41 | B24AI105 | **Problem Statement** | PPSC | DH |

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| | | A Company has decided to give some gifts to all of its employees. For that, the company has given some rank to each employee. Based on that rank, the company has made certain rules for distributing the gifts.<br>The rules for distributing the gifts are:<br>Each employee must receive at least one gift.<br>Employees having higher ranking get a greater number of gifts than their neighbours.<br>What is the minimum number of gifts required by the company? | | |
| 42 | B24AI106 | **Problem Statement**<br>**Consecutive Prime Sum**<br>Some prime numbers can be expressed as a sum of other consecutive prime numbers.<br>For example<br>5 = 2 + 3, 17 = 2 + 3 + 5 + 7, 41 = 2 + 3 + 5 + 7 + 11 + 13.<br><br>Your task is to find out how many prime numbers which satisfy this property are present in the range 3 to N subject to a constraint that summation should always start with number 2.<br>Write code to find out the number of prime numbers that satisfy the above-mentioned property in a given range. | PPSC | DH |
| 43 | B24AI107 | **Problem Statement**<br>Write a program to accept a number representation, perform the successive base reductions as given below and print the resulting final number. | PPSC | DH |
| 44 | B24AI108 | **Problem Statement**<br>For enhancing the book reading, the school distributed story books to students as part of the Children's Day celebrations. To increase the reading habit, the class teacher decided to exchange the books every week so that everyone will have a different book to read. She wants to know how many possible exchanges are possible.<br>If they have 4 books and students, the possible exchanges are 9. Bi is the book of i-th student and after the exchange, he should get a different book, other than Bi. | PPSC | DH |
| 45 | B24AI109 | **Problem Statement**<br>In the theory of numbers, square free numbers have a special place. A square free number is one that is not divisible by a perfect square (other than 1). Thus 72 is divisible by 36 (a perfect square), and is not a square free number, but 70 has factors 1, 2, 5, | PPSC | DH |

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| | | 7, 10, 14, 35 and 70. As none of these are perfect squares (other than 1), 70 is a square free number.<br>For some algorithms, it is important to find out the square free numbers that divide a number. Note that 1 is not considered a square free number.<br>In this problem, you are asked to write a program to find the number of square free numbers that divide a given number. | | |
| 46 | B24AI110 | **Problem Statement**<br>Given an array of integers, perform atmost K operations so that the sum of elements of final array is minimum. An operation is defined as follows –<br>• Consider any 1 element from the array, arr[i].<br>• Replace arr[i] by floor(arr[i]/2).<br>• Perform next operations on the updated array.<br>• The task is to minimize the sum after utmost K operations.<br>**Constraints**<br>• 1 <= N, K <= 10^5 | PPSC | DH |
| 47 | B24AI111 | **Problem Statement**<br>Implement the following function:<br>**char* Decrypt (char str[], int n);**<br>The function accepts a string 'str' of size 'n' as its argument. Implement the function to decrypt the given 'str' in such a way that each character of the string is replaced as follows: ('a' -> 'z', 'b' -> 'y', 'c' -> 'x', 'd' -> 'w', 'e' -> 'v', 'f' -> 'u', 'g' -> 't', 'h' -> 's', 'i' -> 'r', 'j' -> 'q', 'k' -> 'p', 'l' -> 'o', 'm' -> 'n', 'n' -> 'm', 'o' -> 'l', 'p' -> 'k', 'q' -> 'j', 'r' -> 'i', 's' -> 'h', 't' -> 'g', 'u' -> 'f', 'v' -> 'e', 'w' -> 'd', 'x' -> 'c', 'y' -> 'b', 'z' -> 'a').<br>Return the decrypted string.<br>**Assumption:**<br>The string contains only lowercase alphabets. | PPSC | DH |
| 48 | B24AI112 | **Problem Statement**<br>Implement the following function:<br>def AddDistinctDuplicate (a,b,c,d):<br>The function accepts four integers 'a','b','c' and 'd' as its argument . Implement the function to find the sum of distinct numbers and subtract the duplicate number and return the difference (sum of distinct number - duplicate number).<br>• For sum of distinct number add all number that appears only once<br>For duplicate number subtract the duplicate number only once | PPSC | DH |

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| 49 | B24AI113 | **Problem Statement**<br>Airport security officials have confiscated several items of the passengers at the security checkpoint. All the items have been dumped into a huge box (array). Each item possesses a certain amount of risk[0,1,2]. Here, the risk severity of the items represent an array[] of N number of integer values. The task here is to sort the items based on their levels of risk in the array. The risk values range from 0 to 2. | PPSC | DH |
| 50 | B24AI114 | **Problem Statement**<br>**int NumberOfBalls (int arr[], int n);**<br>The function accepts a non-negative integer array 'arr' of size 'n' as its argument. Every Kth element in the array is the number of balls in the Kth row of a box. Every Kth row of the box needs (K+1)^2 balls, where 0 <= K <= (n-1). Implement the function to find the number of balls required to complete each row of the box and return the total number of balls required. | PPSC | DH |
| 51 | B24AI115 | **Problem Statement**<br>Alice loves candies, so she went into a candy shop. Now the shopkeeper sells candies in packets and all packets contain an odd number of candies **(1, 3, 5, 7.....)**. Alice wants exactly N candies but she also loves patterns so she decided to buy candies only if the number of candies in the packets is consecutive and distinct (means she cannot buy the same candy packet more than once) and the sum of all the candies in those packets is exactly N.<br>Alice has an infinite amount of money and the shopkeeper also has infinite amount candy packets, so Alice wonders how many different sets of candy packets she can buy. Find the number of different sets of candy packets that Alice can buy. | PPSC | DH |
| 52 | B24AI116 | **Problem Statement**<br>Alex works at a clothing store. There is a large pile of socks that must be paired by color for sale. Given an array of integers representing the color of each sock, determine how many pairs of socks with matching colors there are.<br>For example, there are **n=7** socks with colors **ar = {1,2,1,2,1,3,2}**. There is one pair of color **1** and one of color **2**. There are three odd socks left, one of each color. The number of pairs is **2**. | PPSC | DH |

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| 53 | B24AI117 | DARE TO DREAM-AN ANALYSIS A.P.J.ABDUL KALAM'S AUTOBIOGRAPHY, 'WINGS OFFIRE' | English Communication and Report Writing [ECRW] | Dr. G. Manjulatha Devi [GMLD] |
| 54 | B24AI118 | USE OF ARTICLES TO CONVEY MEANING IN DIFFERENT SITUATIONS | ECRW | GMLD |
| 55 | B24AI118 | SKILL IMPROVEMENT THROUGH LANGUAGE LEARNING- ANALYZE ANY TWO LESSONS WHICH YOU STUDIED IN INTERMEDIATE TEXT BOOK TO SUBSTANTIATE THIS STATEMENT | ECRW | GMLD |
| 56 | B24AI120 | THE POSSIBILITIES OF LANGUAGE LEARNING THROUGH PRESCRIBED SYLLABUS- WRITE A CONCLUSIVE REPORT WITH YOUR FINDINGS AND RECOMMENDATIONS WITH ANALYSIS ON THE SYLLABUS OF NCERT OF X CLASS | ECRW | GMLD |
| 57 | B24AI121 | IMPORTANCE OF LSRW IN LANGUAGE | ECRW | GMLD |
| 58 | B24AI122 | ENGLISH COMMUNICATION AND COSMOPOLITON LIFE | ECRW | GMLD |
| 59 | B24AI123 | TAKE AN INTERVIEW WITH ANY THREE BUS CONDUCTORS, DRIVERS AND WOMEN PASSANGERS AND REFLECT ON THE POLICY OF THE GOVERNMENT 'FREE BUS TRAVEL FOR WOMEN' | ECRW | GMLD |
| 60 | B24AI124 | VISIT ANY TWO GOVERNMENT PRIMARY SCHOOLS IN YOUR AREA AND INTERACT WITH TEACHERS OF ENGLISH AND STUDENTS. PREPARE A QUESTIONARE OF TWENTY QUESTIONS TO UNDERSTAND HOW ENGLISH IS BEING TAUGHT AND LEARNT IN PRIMARY SCHOOLS. PRESENT YOUR ANALYSIS | ECRW | GMLD |
| 61 | B24AI125 | YOUR PLANS TO PREPARE FOR TOEFL/GRE/CAT/IELTS | ECRW | GMLD |
| 62 | B24AI126 | BUSINESS COMMUNICATION | ECRW | GMLD |
| 63 | B24AI127 | COMMUNICATIVE ENGLISH | ECRW | GMLD |
| 64 | B24AI128 | SPOKEN ENGLISH | ECRW | GMLD |
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*(Signature of class teacher)*
*Narahari Raji Reddy*
*Assistant Professor*
*Dept. of M & H*