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MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY, Bhopal

Mid Sem Examination — April 2025

Course – B.Tech. **Sem – II** **Section - F/G/H/I/J**
Subject Name- Problem Solving & Computer Programming **Subject Code CSE-105**
Time- 1 hour **Max Marks- 20**
Note- Answer all questions. If required, take necessary assumptions and mention the same

Q. No.	Question	Marks	CO
Q1	In your class of **100 students**, you have selected a class representative (CR) who will interact with MANIT Alumni Cell to get details of Alumni and contact the Alumni for career guidance. Now, based on the expertise and availability of the alumni, **3 different events** are organised on weekends throughout the year. Consider the following cases - i. Alumni who are experts in the AI/ML domain deliver lectures on how to start an **AI/ML** project from scratch. ii. Alumni who are founder or co-founder of a company, guide students how to start a **Startup** while studying at MANIT. iii. Alumni who are working in the Web / Mobile App development area, guide how to develop **Website / Mobile App** using the latest AI tools. The CR who is interacting with different Alumni, plans to smoothly organise the event. You are asked to choose **only one out of 3 fields** (1- **AI/ML, 2- Startup, 3- Website / Mobile App**) and based on your choice (1 or 2 or 3), you will attend that particular event. **Weekend program is compulsory for all students. Timing and Venue are fixed.** • **Venue for AI/ML is Mechanical Auditorium** • **Venue for Startup is Rolta Incubation Centre** • **Venue for Website / Mobile App is Civil Auditorium** Every student will fill the interest form and get notification about the event details like **"Attend [Program X] at [Venue - Y]"**. a) Write an algorithm to design the overall execution of the weekend program where every student should get the notification about the event details based on his/her interest. Also display the **overall most popular event** based on total participants attending the event. b) Draw the flowchart for the above scenario.	5	CO1
Q2	Write a C program using if-else that simulates a traffic light system by taking the color name (e.g., R or r, G or g, and Y or y) as input by the user and displaying the corresponding action (e.g., Stop, Go, and Get ready). If the user enters an invalid color, display an appropriate error message.	5	CO3
Q3	A medical clinic has a team of three specialist doctors (D1, D2 and D3). D1 visits the clinic on Monday and Thursday, D2 visits the clinic on Tuesday, Thursday and Saturday while D3 visits the clinic on Monday, Wednesday and Friday. Clinic is closed on Sunday. Each day different number of patients arrive in the clinic and if multiple doctors are visiting the clinic on that day every patient consults each doctor. For instance, if on Thursday Doctor D1 and D2 are present in the clinic and X number of patients arrive at clinic on Thursday, both Doctors D1 and D2 will attend X number of patients separately. Write a C program that computes the total number of patients attended by each doctor over a given time-period. The program should take the following inputs: a) Time period in weeks for which the computation has to be made (integer number greater than 0) (Week starts from Monday) b) Number of patients visiting the clinic each day in the given time period	5	CO3

	The program should provide the following output in the given format: Total number of patients attended by Doctor D1: <Patient Count> Total number of patients attended by Doctor D2: <Patient Count> Total number of patients attended by Doctor D3: <Patient Count> **Sample Input:** **Input Value** | **Explanation** 2 | // Time period in weeks 10 | // Patients visiting clinic on Monday (Week 1) (Treated by D1 & D3) 12 | // Patients visiting clinic on Tuesday (Week 1) (Treated by D2) 14 | // Patients visiting clinic on Wednesday (Week 1) (Treated by D3) 16 | // Patients visiting clinic on Thursday (Week 1) (Treated by D1 & D2) 18 | // Patients visiting clinic on Friday (Week 1) (Treated by D3) 20 | // Patients visiting clinic on Saturday (Week 1) (Treated by D2) 4 | // Patients visiting clinic on Monday (Week 2) (Treated by D1 & D3) 6 | // Patients visiting clinic on Tuesday (Week 2) (Treated by D2) 8 | // Patients visiting clinic on Wednesday (Week 2) (Treated by D3) 10 | // Patients visiting clinic on Thursday (Week 2) (Treated by D1 & D2) 12 | // Patients visiting clinic on Friday (Week 2) (Treated by D3) 14 | // Patients visiting clinic on Saturday (Week 2) (Treated by D1 & D2) **Sample Output:** Total number of patients attended by Doctor D1: 40 Total number of patients attended by Doctor D2: 78 Total number of patients attended by Doctor D3: 64		
Q4	Write a C program using nested loops to print the following pattern based on number "n" provided as an input by the user. **Sample Input:** 5 **Output Pattern:** 1 2 3 2 3 4 5 4 3 4 5 6 7 6 5 4 5 6 7 8 9 8 7 6 5 **Sample Input:** 3 **Output Pattern** 1 2 3 2 3 4 5 4 3	5	CO3

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