** D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY**

**Set-: II**

**Q.P. Code:**

**23SYCS202302**

**KASABA BAWADA KOLHAPUR-416006**

**(An Autonomous Institute)**

S. Y. B. Tech/B. Arch

**END SEMESTER EXAMINATION, Jan. – 2023**

Course Name: Discrete Mathematics and Structures Course Code:201CSL202

Seat No:

**Day and Date: Wednesday, 18/01/2023**

**Time: 10.00 am-12.00 pm Max. Marks- 50**

***Instructions:***

1. *Question No. 1&2 is compulsory.*
2. *Figure to the right indicate full marks.*

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| **BT** | **CO’s** | **Q. No.** |  | **Marks** |
|  |  | **Q.1** | **All questions are compulsory .** | **20** |
| **3** | **CO1** | **a1**  **a2** | Show that for P→(Q→R)=(P˄Q)→R without truth table.  Express the following given formula in the form of NOR only  P→(~p→ Q) | **3 M**  **4 M** |
| **1**  **2** | **CO2** | **b1**  **b2** | Define the following with example  1.Power set  2.Proper Subset  Draw venn diagram for  1.A-(BUC)  2.A-B  3.A+B+C | **4 M**  **3 M** |
| **2** | **CO3** | c | Explain the following types of Algebraic System with example   1. Semigroup 2. Monoid 3. Group | **6 M** |
|  |  | **Q.2** | **All questions are compulsory.** | **10** |
| **2** | **CO3** | **a** | What is mean by Lattices? Explain different properties of Lattices.  **OR**  Define the following with example  i. Complemented Lattice  ii. Distributive lattice | **4** |
| **3** | **CO3** | **b** | Draw the Hasse diagram for following POSET with proper steps.   1. Let X= {2, 3, 6, 12, 24, 36} and relation R1={(x, y) | x divides y}. 2. Let X={1, 2, 3, 6, 12} and Relation R2={{(x, y) | x divides y } | **6** |
|  |  | **Q.3** | **All questions are compulsory .** | **10** |
| **1** | **CO4** | **a** | Define the following terms with respect to graph   1. Parallel Edges Graph 2. Mixed Graph 3. Null Graph | **6** |
| **2** | **CO4** | **b** | Explain storage representation of the following graph  C:\Users\Dell\Downloads\WhatsApp Image 2022-12-06 at 9.04.39 PM.jpeg  **OR**  Write a short note on PERT | **4** |
|  |  | **Q.4** | **Attempt any two out of three questions.** | **10** |
| **3** | **CO5** | **a** | A committee of 5 people is to be chosen from a group of 6 men and 4 women. How many committees are possible if:   1. there are to be 3 men and 2 women 2. there are to be men only 3. there is to be a majority of women | **5** |
| **3** | **CO5** | **b** | How many different 8 letter words are possible using the letters of the word **SYLLABUS** if:   1. the word should contain the two S’s together 2. the word should begin and end with L | **5** |
| **3** | **CO5** | **C** | Find the Sample space for the following random experiments   1. 3 coins are tossed simultaneously 2. Throwing a die two times 3. Tossing a coin 3 times | **5** |

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