# Department of Information and Communication Engineering
## Pabna University of Science and Technology
Course: Discrete Mathematics Sessional (PART-A)
Course code: ICE-2106 (PART-A)

# List of problems

| No. | Problem name |
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| 1. | Let A be the set {1, 2, 3, 4}. Write a program to find the ordered pairs are in the relation $R1 = \{(a,b) \mid a \text{ divides } b\}$  $R2 = \{(a,b) \mid a \leq b\}$ |
| 2. | Suppose that $\mathbf{A} = \{\mathbf{1}, \mathbf{2}, \mathbf{3}\}$ and $\mathbf{B} = \{\mathbf{1}, \mathbf{2}\}$. Let R be the relation from A to B containing (a, b) if $\mathbf{a \in A}$ , $\mathbf{b \in B}$ and $\mathbf{a > b}$. Write a program to find the relation R and also represent this relation in matrix form. |
| 3. | Suppose that the relations R1 and R2 on a set A are represented by the matrices $$M_{R1} = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix} \text{ and } M_{R2} = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \end{bmatrix}.$$ Write a program to find the MR1∪R2 and MR1⊕R2 . |
| 4. | Write a program to find shortest path by Warshall's algorithm. |
| 5. | Write a program for the solution of graph coloring problem by Welch-Powell's algorithm. |