PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

SUMMER TERM / MAKE UP END TERM EXAMINATION

Semester: Summer Term 2019   **Date**: 26 July 2019

Course Code: CSE 203   **Time**: 2 Hours

Course Name: Discrete Mathematics   **Max Marks**: 80

Program & Sem: B.Tech & III Sem (2016 & 2017 Batch)   **Weightage**: 40%

Instruction
(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted

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Part A
Answer **all** questions. **Each** question carries **six** marks.   (5Qx6M=30M)

1. (a) How many permutations of the letters ABCDEFGH contain the string ABCD?
   (b) How many different strings can be made by reordering the letters of the word SUCCESS?

2. Find the number of ways of distributing, 7 identical objects into 5 identical boxes?

3. Let R be a relation in A $R = \{(1,1),(2,1),(3,2),(4,3)\}$ find R^n for $n = 2,3,4,5$

4. Draw Hasse diagram for the poset $(P(A),\subseteq)$ where A $= \{a,b,c\}$.

5. Define Lattice, give example which is not Lattice.

Part B
Answer **both** questions. **Each** question carries **ten** marks.   (2Qx10M=20M)

6. How many ways are there to put 4 different employees in 3 indistinguishable offices?

7. Find the M_{R^*} of a relation $M_R = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 0 \end{bmatrix}$

Part C
Answer **both** questions. **Each** question carries **fifteen** marks.   (2Qx15M=30M)

8. Draw Hasse diagram and Show that $(D_{30},/)$ is a Boolean algebra, $D_{30=}$ { set of all positive divisors of 30}

9. Find the solution to the recurrence relation $a_n = 6a_{n-1} - 11a_{n-2} + 6a_{n-3}$ with the initial conditions $a_0 = 2$ $a_1 = 5$, $a_2 = 15$.