Seat No.	

Total No. of Pages : 2

S.E. (Computer Science and Engineering) (Semester - III) (New) Examination, November - 2018

DISCRETE MATHEMATICAL AND STRUCTURES

Sub. Code : 63525

Day and Date : Saturday, 24 - 11 - 2018 **Total Marks : 50**

Time : 09.30 a.m. to 11.30 a.m.

Instructions: 1) Q.3 and Q. 6 are Compulsory from Section - I and Section - II

2) Attempt any one from Q1 and Q. 2 also any one from Q.4 and. Q.5

SECTION - I

Q1) a) Obtain PCNF and PDNF of the following without constructing Truth Table

$(\neg P \rightarrow R) \wedge (Q \longleftrightarrow P)$ **[4]**

b) Show that **[4]**

$(\sim P \wedge (\sim Q \wedge R)) \vee (Q \wedge R) \vee (P \wedge R) \Leftrightarrow R$

c) Draw Venn diagram **[5]**

i) $A-(B-C)=(A-B)\vee(A\cap B\cap C)$

ii) $(A-B)-C=A-(B\cup C)$

Q2) a) A = {α,β} B = {1,2,3} what are $A \times B$, $B \times A$, $B \times B$, $(A \times B) \cap (B \times A)$ **[4]**

b) What is monoid Homomorphism? Explain with example **[4]**

c) Demonstrate that R is a valid inference from the premises P → Q, Q → R, and P **[5]**

Q3) Write a short note on (Attempt any 3) **[12]**

a) Properties of Binary Relation

b) Clock Algebra

c) Duality law and Duality theorem

d) Partitioning and covering of set.

P.T.O.

SECTION - II

Q4) a) Define following with respect to Graph. **[6]**

i) Mixed Graph

ii) Isomorphic graph

iii) Multigraph

b) Explain Matrix representation of graph with example **[6]**

Q5) a) Write a short note on Distributive Lattice **[6]**

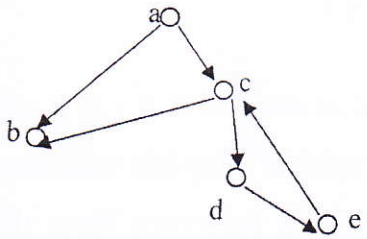
b) In how many ways three examination can be scheduled in five day period so that no two examinations are scheduled on the same day.? **[6]**

Q6) a) A box contains 6 white balls and 5 black balls find the number of ways 4 balls can be drawn from the box if **[6]**

i) Two must be white

ii) All of them must have the same color

b) Explain Storage representation of following diagraph **[7]**



OR

b) Explain rule of product & rule of sum. **[7]**

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