SV-188

Total No. of Pages : 2

Seat No.	

S.E. (Computer Science and Engg.) (Semester - III) (New) Examination, April - 2018

DISCRETE MATHEMATICAL STRUCTURES

Sub. Code : 63525

Day and Date : Wednesday, 25 - 4 - 2018 **Total Marks : 50**

Time : 2.30 p.m. to 4.30 p.m.

Instructions :
1) **Q. 3 and Q. 6 are compulsory from Section - I and Section - II.**
2) **Attempt any one questions from Q. 1 and Q. 2.**
3) **Attempt any one questions from Q. 4 and Q. 5.**

SECTION-I

Q1) a) Write the following statement in symbolic form **[4]**

i) Indians will win the world cup if their fielding improves.

ii) If I am not in a good mood or I am not busy then I will go for a movie.

iii) If you know object oriented programming and oracle then you will get a job.

iv) I will score good marks in the exam if and only if I study hard.

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) $A=\{\alpha,\beta\}$ $B=\{1,2,3\}$ 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 $P\rightarrow Q$, $Q\rightarrow R$ and P. **[5]**

P.T.O.

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

a) Properties of Binary Relationship.

b) Clock Algebra.

c) Duality law and Duality theorem.

d) Partitioning and covering of set.

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) Three dice were rolled. Given that no two faces were the same, what is the probability that there was an ace? **[6]**

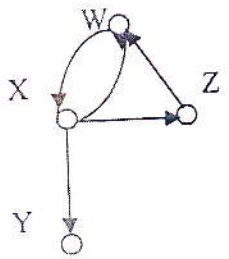
Q6) a) Define following with example **[6]**

i) Abelian group

ii) Sub group

iii) Cyclic group

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



OR

Explain rule of product & rule of Sum. **[7]**