

NOTE: SECTION A IS COMPULSORY. ATTEMPT ANY FOUR QUESTIONS FROM SECTION B AND TWO FROM SECTION C

SECTION A MARKS 2 EACH

- Q1) a) Define ternary relation and give an example?
b) Explain the concept of chain?
c) What are domain, co domain and image of a function?
d) Discuss recurrence relations?
e) What is a subgraph?
f) If a, b, c are elements of a graph G and $a*b=c*a$, then $b=c$.
g) What is a Ring?
h) What do you mean by cosets?
i) How do you define degree of a graph?
j) What is basic counting principle?.

SECTION B MARKS 5 EACH

- Q2) Discuss an algorithm of solving n th order linear homogeneous recurrence relations?
Q3) Differentiate between chains and antichains with the help of suitable examples?
Q4) State and prove Euler's formula in connected maps?
Q5) How Boolean Algebra is applicable in Logic Circuit? Explain with the help of suitable example.
Q6) Give an example for simple graph, non-simple graph, multigraph, directed graphs, weighted graphs with diagrams..

SECTION C MARKS 10 EACH

- Q7) (a) Solve the recurrence relation
 $S(k) + 5S(k) + 6S(k-2) = f(k)$
where $f(k) = 0$; $r=0,1,5$
 $f(k) = 6$; otherwise
given that $S(0) = S(1) = 2$.
(b) What is Quotient Ring? Explain with the help of suitable example.
Q8) State and prove Lagrange's theorem on finite groups.
Q9) Write short notes on the following :
a) Eulerian paths and circuits.
b) Linear Recurrence relations.
c) Sum and Product rules.