Sanjay Ghodawat University, Kolhapur

2020-21

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

EXM/P/09/00

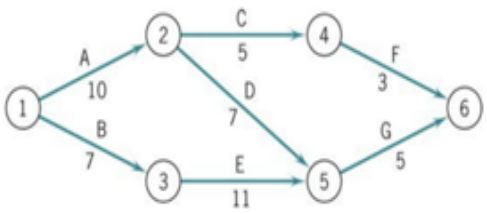
Year and Program:SY-B.Tech. **School of Technology** **Department: CSE**

Course Code: CST203 **Course Title: Discrete Structures** **Semester:III**

Day:Wednesday **End Semester Examination** **Time:2 Hrs.**
Date:03.02.2021 **Max Marks:50**

Instructions: 1) All Questions are compulsory.
2) Assume suitable data wherever necessary.

		Marks	Bloom's Level	CO
Q.1	**Answer the following (Any Two)**–			
a)	Draw the Hasse diagram of following set under partial ordering relation "divides" and indicate which are totally ordered. i) {2, 6, 12, 24} ii) {3, 5, 15, 18}.	8	1	CO1
b)	Given a set X = {1, 2, 3) and a relation R in X, R = {<1 ,2>, <2,1><3, 3>} find R^2, R^3, R^4 and find transitive closure of R.	8	2	CO1
c)	Compute earliest completion time (T_E) and latest completion time (T_L) for the following PERT diagram where 1 is the start node and 6 is the end node	8	2	CO3



Q.2 **Answer the following (Any two) –**

a) i. .Solve following without constructing truth table 8 3 CO3

$$(P \rightarrow Q) \rightarrow Q \Rightarrow P \vee Q$$

ii. Obtain infix form of following

$$P\ \neg\ P \rightarrow P \rightarrow P \rightarrow$$

b)	Translate the given formula into principle conjunctive normal form (PCNF) and principle disjunctive normal form (PDNF) $(B \rightarrow A) \wedge (\neg A \wedge B)$	8	2	CO2
c)	Let G={ 1,2,3,4,5} and the operation addition module 6 is denoted by $+_6$. Prepare composition table and show that set G is not a group.	8	3	CO2

Q.3 Answer the following (Any two) –

a)	In an engineering college there are three candidates for the position of Principal Mr.X, Mr.Y and Mr.Z, whose chances of getting the appointment are in the proportion 4:2:3 respectively. The probability that Mr. X if selected would introduce new branch of today's requirement in the college is 0.35. The probabilities of Mr.Y and Mr.Z doing the same are respectively 0.52 and 0.80. What is the probability that there will be new branch in the college next year?	9	3	CO4
b)	Calculate the follwing , Among 13 MP's(Member of parliament) i. How many ways to select a commite of 5 members. ii. How many ways to select a commite of 5 members so that a particular MP- X is always included. iii. How many ways to select a commite of 5 members so that particular MP-X & MP-Y is always included. iv. How many ways to select a commite of 5 members so that particular MP-X is always included & MP- Y is always excluded.	9	2	CO3
c)	i. In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there? ii. In how many different ways can the letters of the word 'OPTICAL' be arranged so that the vowels always come together? iii. There are 8 men and 10 women and you need to form a committee of 5 men and 6 women. In how many ways can the committee be formed?	9	2	CO4

*****