Vidya Jyothi Institute of Technology (Autonomous)

(Accredited by NAAC & NBA, Approved By A.I.C.T.E., New Delhi, Permanently Affiliated to JNTU, Hyderabad)
(Aziz Nagar, C.B.Post, Hyderabad -500075)

R18

Subject Code:A23505

B.Tech. II Year I Semester Examination NOVEMBER-2019

SUBJECT:MFCS **BRANCH : CSE&IT**

Time: 3 Hours **Max. Marks:75**

Note: This question paper contains two ***Parts A and B.***

Part A is compulsory which carries 25 Marks. Answer all the questions.

Part B consists of 5 questions. Answer all the questions.

Bloom's Level:

Remember	L1	Analyze	L4
Understand	L2	Evaluate	L5
Apply	L3	Create	L6

	PART - A	Bloom`s Level	25 Marks
	ANSWER ALL THE QUESTIONS		
1	Define contradiction	L2	2M
2	Identify the disjunctive normal form of the formula: P↔Q.	L1	3M
3	Write the examples of applications of counting problems	L1	2M
4	Define permutation	L1	3M
5	State the binomial theorem.	L1	2M
6	Identify the generating function for the following sequence 1,-2,3,- 4….	L2	3M
7	Define Lattice.	L1	2M
8	Construct the hasse diagram for the divisibility relation A={3,6,12,36,72}	L2	3M
9	Define In-degree and Out-degree of a graph	L2	2M
10	Explain the incidence matrix of graph.	L2	3M
	PART - B	**Bloom`s Level**	**50Marks**
	ANSWER ALL THE QUESTIONS		
11.i.a)	Write the following arguments in symbolic form and test the validity of given argument.If I join MIT then I will get best education. If I get best education, then I will get job in USA. If I get Job in USA then I will become a millionaire. I joined MIT. I will become millionaire.	L2	5M
b)	Explain the principal disjunctive and principal conjunctive normal forms and obtain the principal disjunctive normal form of $(P \wedge Q) \vee (\neg P \wedge R) \vee (Q \wedge R)$.	L2	5M
	[OR]		
ii.a)	Prove that A) ~ (P↑Q)↔ ~P↓~ Q B) ~ (P↓Q)↔ ~P↑~ Q Without using truth table?	L2	10M
12.i.a)	Select the number of rows of 6 Americans, 7 Mexicans and 10 Canadians in which an American invariably stands between a Mexican and a Canadian never stand side by side.	L2	5M
b)	Estimate how many arrangements are there for the word `MISSISSIPPI` with no two pair of consecutive same letters.	L2	5M
	[OR]		
ii.a)	Recognize the number of ways of forming committee of 5 persons from a group of 5 Indians 4 Russians such that three are at least 3 Indians committee?	L2	5M
b)	Discover the number of ways of selecting 9 members committee with7persons?	L2	5M
13.i.a)	Identify the generating function for the following sequence $1^2, 2^2, 3^2, \ldots\ldots$	L2	5M
b)	Solve the recurrence relation $a_n=a_{n-1}+n^3$, $n>=1$ where $a_0=5$ by using substitution method?	L2	5M

P.T.O

	[OR]		
ii.a)	Solve the recurrence relation $a_{n+1}=8a_n$,n>=0 where $a_0=4$	L2	5M
b)	Solve the recurrence relation $a_n-3a_{n-1}=n$, n>=1 $a_0=1$ by using generating function ?	L2	5M
14.i.a)	Let A={1,2} and B={p,q,r,s}and let R be a relation from A to B defined by R={(1,q), (1,r), (2,p), (2,q), (2,s)} Write the matrix and digraph of R	L1	5M
b)	Explain properties of relations with examples.	L2	5M
	[OR]		
ii.a)	Define (A) Sub lattice (B) Lattice homomorphism (C) Complete lattice (D) Distributive lattice	L2	5M
b)	Explain the special properties of binary relations.	L2	5M
15.i.a)	Explain kruskal"s algorithm with an example?	L2	5M
b)	Discuss depth first search algorithm with an example?	L2	5M
	[OR]		
ii.a)	Explain proper coloring and chromatic number of a graph?	L2	5M
b)	Explain prims algorithm with example.	L2	5M

E009