## K. J. Somaiya Institute of Technology, Sion, Mumbai-22 (Autonomous College Affiliated to University of Mumbai)

Nov - Dec 2024

B. Tech Program: Artificial Intelligence & Data Science Scheme III

Regular Examination: SY Semester: III

Course Code: AIC303 and Course Name: Design and Analysis of Algorithms

Date of Exam: 21/11/24 29 12 24 Duration: 02.5 Hours Max. Marks: 60

Dec24

Q. No.						Quest	tion		The		ax. arks	СО	BT level
Q 1	Solve any	two q	uestic	ons ou	t of th	ree: (	05 ma	arks e	ach)	/ · 1	0		
a)	Compare Quick Sort vs Merge Sort									CO2	Un		
b)	Explain the relationship with P, NP, and NP-Hard problems.									CO1	Un		
c)	Discuss about Job sequencing problem using greedy approach								10014) -8 2 10014 598	102 H	CO3	Un	
Q2	Solve any	two q	uestic			ree: (		irks e	ach)	smer el	0	na runk au	
a)	Distinguish between dynamic programming and divide and conquer technique.							X X X (4.18		CO4	Un Un		
b)	Write a no	te on	Naïve	Strin	g-Mat	tching	algo	rithm				CO6	Un
c)	Write a rec	cursive	e back	ctrack	ing al	gorith	m for	the s	um of subsets probler	n.		CO5	Un
Q.3	Solve any	two q	uestic	ns ou	t of th	ree. (	10 m	arks	each)	2	0		
a)	Find the complexity of the recurrence relation using master theorem i. $T(n)=2T(n/2)+n$ ii. $(n)=4T(n/2)+n^3$											CO1	Ap
b)	Write an algorithm for quick sort. Trace Quicksort for the data set: A= {44, 22, 33, 77, 11, 55, 66}											CO2	Ap
c)	Consider the		1		CO3	Ap							
	Objects	X1	X2	ХЗ	X4	X5	Х6	X7				. 4	
	Profit	10	5	15	7	6	18	3					
	Weights	2	3	5	7	1	4	1	100				

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Q.4	Solve ar	ny two que	stions our	t of three	(10 marks	enal.								
a)	Solve the	e shortest p programin	ath from	source 1 f	for the follo	owing	graph	n usin	g	mark	20		CO4	Ap
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St	tring = x y /here Patt	yztrwq; ern = xyz	xyzfg	seprica bri	s obivile br	ve gni	enema	goiq :	oi avusni			lauge bugi	nia)	
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