Time: 10:30 a.m. to 01:30 p.m.

No. of printed pages: 2

Max Marks: 70

[8]

SARDAR PATEL UNIVERSITY

M. Sc. Information Technology

Semester - I External ATKT Examinations

PS01CINT03 – Introduction to Theoretical Computer Science 7th April 2016, Thursday

Q-1 1.		se the most a ' = 1 is		•	n for e	each qu	estion.				
	(A)	Idempotent Law Identity Law			(C)	Complement Law					
	(B)				(D)	Invol	ution Law				
2.	Maxi	mum number	of edges	in simple	e grap	h is		. *			
	(A)	n(n-1)/2	(B)	n-2		(C)	n/n-2	(D)	None of these		
3.	is used to denote the universal lower bound an								is used to denote		
	universal upper bound.										
	(A)	0, 0	(B)	1, 0		(C)	1, 1	(D)	0, 1		
4.	Replacing meet operation over join and join over meet operation is known as										
	(A)	Principle of membership			(C)	Princ	Principle of lattices				
	(B)	Principle of duality			(D)	None	None of these				
5.	The C	Cardinality of a	a set A is	denoted	by no	tation I	ike				
	(A)	{A}	(B)	[A]		(C)	<a>	(D)	[A]		
6.	According to modus tollens if P => Q and					'Q is tru	e then	is	is true.		
	(A)	~P	(B)	Р	Vαj	(C)	Q	(D)	~P V Q		
7.	A phrase structure grammar with no restriction is referred as grammar.										
	(A)	type – 0	(B)	type –	1	(C)	type – 3	(D)	None of these		
8.	reflects the dynamic pace of movements of a phenomenon over a period										
	of time.										
	(A)	Time series			(C)	Statis	stics				

	Answer the fol									
a.	Define with and	d examp	le: Lat	tice, Comp	lete Lattice.					
b.	Explain Weighte									
c.	Draw Hasse dia									
d.	Draw a Truth ta									
e.	Explain utilities				ple.					
f.	Define Algorith									
g.	List the compo		time s	series.						
h.	Construct a gra	mmar fo	or the	language L	$= \{a^i b^{2i} / i > a^i / i > a$	>=1}.				
i.	List the major of	compone	ents of	phase stru	icture gram	mar.				
Q-3	Answer the fol	lowing o	questi	ons:						
a.	Explain proper	ties of bi	nary r	elations wi	th suitable	example.				[6
b.	Write a note o							•		[6
					OR					
b.	Write the shor	test path	algo	ithm.						[(
Q-4	Answer the fo	llowing	questi	ons:						
a.	Discuss tractal	ole and ir	ntract	able proble	ms in detai	l. Also spe	cify what	is class of	NP probl	em? [
	Explain the use	e of lattic	es in	design and	implement	ation of di	gital netw	orks in d	etail by ta	king [
b.	appropriate ex									
	*, *				OR					
b.	Discuss Boolea	an Lattice	e's and	·Boolean A		etail with e	xample.			[
b.	Discuss Boolea	an Lattice	e's and	⁻ B o olean A		etail with e	xample.]
	Discuss Boolea					etail with e	xample.			[
	Answer the fo	llowing	questi	ons:	lgebra in de			2015.]
		llowing	questi	ons: ne followin	lgebra in de			2015. 2010		
	Answer the fo	llowing	quest	ons: ne followin	lgebra in de g series. Est	imate the	value for]
Q-5	Answer the fo Fit a Straight li Year	llowing on the trend	quest for the	ons: ne followin 2006	g series. Est	imate the	value for 2009	2010]
Q-5	Answer the for Fit a Straight line Year Earnings	llowing on the trend 2004 60	quest for the 2005	ons: ne*followin 5 2006	g series. Est 2007 65	imate the 2008	value for 2009	2010		
Q-5 a.	Answer the for Fit a Straight line Year Earnings (Rs. Lakhs) Write a De Mo	2004 60 organ's L	quest for the 2009 72 aw an	ons: ne followin 5 2006 75 d Prove the	g series. Est 2007 65 em using tru OR	imate the 2008 80 uth table.	value for 2009 85	95]
Q-5 a.	Answer the fo Fit a Straight li Year Earnings (Rs. Lakhs)	2004 60 organ's L	quest for the 2009 72 aw an	ons: ne followin 5 2006 75 d Prove the	g series. Est 2007 65 em using tru OR	imate the 2008 80 uth table.	value for 2009 85	95	e the valu]
Q-5 a. b.	Answer the for Fit a Straight line Year Earnings (Rs. Lakhs) Write a De Mo	2004 60 organ's L	quest for the 2009 72 aw an	ons: ne followin 2006 75 d Prove the	g series. Est 2007 65 em using tru OR using Semi-	imate the 2008 80 uth table. Average m	value for 2009 85 ethod an	95 d estimat		[le for
Q-5 a.	Answer the for Fit a Straight live Year Earnings (Rs. Lakhs) Write a De Mo	llowing on the condition of the	questi for the 2005 72 aw and a follo	ons: ne followin 2006 75 d Prove the wing data	g series. Est 2007 65 em using tru OR using Semi-	imate the 2008 80 uth table. Average m	value for 2009 85 ethod an	2010 95 d estimat	2015]
Q-5 a. b.	Answer the for Fit a Straight live Year Earnings (Rs. Lakhs) Write a De Modern Determine tree 2017.	one trend 2004 60 organ's L	quest for the 2009 72 aw an	ons: ne followin 2006 75 d Prove the wing data	g series. Est 2007 65 em using tru OR using Semi-	imate the 2008 80 uth table. Average m	value for 2009 85 ethod an	2010 95 d estimat	2015	ie for
Q-5 a. b.	Answer the for Fit a Straight live Year Earnings (Rs. Lakhs) Write a De Modern Determine tree 2017.	llowing on the condition of the	quest for the 2009 72 aw an	ons: ne followin 2006 75 d Prove the	g series. Est 2007 65 em using tru OR using Semi-	imate the 2008 80 uth table. Average m	value for 2009 85 ethod an	2010 95 d estimat		ie for
Q-5 a. b.	Answer the for Fit a Straight live Year Earnings (Rs. Lakhs) Write a De Model Determine tree 2017.	one trend 2004 60 organ's Land of the	questi for the 2009 72 aw and and a following the 2010 2010	ons: ne followin 5 2006 75 d Prove the wing data 2011 24	g series. Est 2007 65 em using tru OR using Semi-	imate the 2008 80 uth table. Average m	value for 2009 85 ethod an	2010 95 d estimat	2015	[le for
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Q-5 a. b. Q-6 a.	Answer the for Fit a Straight li Year Earnings (Rs. Lakhs) Write a De Mo Determine tre 2017. Year Profit Answer the for Write a note of Given R and S	on fuzzy lare relate	questi for the 2009 72 aw and a following the following th	ons: ne followin 2006 75 d Prove the wing data 2011 24 ions: Also explainefined over	g series. Est 2007 65 em using tru OR using Semi- 2012 22 n fuzzy sets	imate the 2008 80 uth table. Average m 2013 30 in brief. } X {1,3,5}	value for 2009 85 ethod an 2	2010 95 d estimat 014 8	2015	[[[
Q-5 a. b.	Answer the for Fit a Straight live ar Earnings (Rs. Lakhs) Write a De Mode Determine tree 2017. Year Profit Answer the for Write a note of	on fuzzy lare relate	questi for the 2009 72 aw and a following the following th	ons: ne followin 2006 75 d Prove the wing data 2011 24 ions: Also explainefined over	g series. Est 2007 65 em using tru OR using Semi- 2012 22 n fuzzy sets	imate the 2008 80 uth table. Average m 2013 30 in brief. } X {1,3,5}	value for 2009 85 ethod an 2	2010 95 d estimat 014 8	2015	[le for
Q-5 a. b. Q-6 a.	Answer the for Fit a Straight lift Year Earnings (Rs. Lakhs) Write a De Mode Determine tree 2017. Year Profit Answer the for Write a note of Given R and S R= {(x,y) y = 1}	ollowing of the confuzzy on fuzzy are relatively and	question to the second	ons: ne followin 2006 75 d Prove the wing data 2011 24 ions: Also explained over	g series. Est 2007 65 em using tru OR using Semi- 2012 22 n fuzzy sets sets {1,3,5} Find Max-m OR	imate the 2008 80 uth table. Average m 2013 30 in brief. } X {1,3,5} shin compositions	value for 2009 85 ethod an 2 2 such that	2010 95 d estimat 014 8	2015 32	[[
Q-5 a. b. Q-6 a.	Answer the formal Fit a Straight live of the Arrange (Rs. Lakhs) Write a De Mode Determine tree 2017. Year Profit Answer the formal Formal Straight (X,y) y = 1 Y = 1	bllowing of the series of the	questi 2009 72 aw an e follo 20 quest logic. tion d	ons: ne followin 2006 2006 75 d Prove the wing data 2011 24 ions: Also explained over	g series. Est 2007 65 em using tru OR using Semi- 2012 22 n fuzzy sets sets {1,3,5} Find Max-m OR 3,1)} and E	imate the 2008 80 ath table. Average m 2013 30 in brief. X {1,3,5} sin composition of the composition of th	ethod an 2 2 2 2 such that sition R o	2010 95 d estimat 014 8	2015 32	[[[[]]]]] [[]] [[]] []]
Q-5 a. b. Q-6 a.	Answer the for Fit a Straight lift Year Earnings (Rs. Lakhs) Write a De Mode Determine tree 2017. Year Profit Answer the for Write a note of Given R and S R= {(x,y) y = 1}	billowing of the 2004 of the	questi for the 2009 72 aw and e follo 200 questi logic. (200 tion del S= {(200, 0.3)} rse of	ons: ne followin 2006 2006 75 d Prove the wing data 2011 24 ions: Also explained over	g series. Est 2007 65 em using tru OR using Semi- 2012 22 n fuzzy sets sets {1,3,5} Find Max-m OR 3,1)} and E	imate the 2008 80 ath table. Average m 2013 30 in brief. $X \{1,3,5\}$ in composition $3 = \{(x1,0)$ the following statement $x = (x1,0)$ the following statement $x = (x1,0)$ the following statement $x = (x1,0)$	ethod an 2 2 2 2 such that sition R o	2010 95 d estimat 014 8	2015 32	[[