The figures in the right hand margin indicate marks.Part-1Q1Short Answer Type Questions (Answer All-10)(2 x 10)a)Define the term Multiset and power set with example.(2 x 10)b)What are disjoint sets ? Give example.210210c)State DE Morgain's laws in Boolean algebra.210210d)Define invertible function with example.210210e)Compare and contrast between directed graph and undirected graph.7 Prove by Boolean algebra that $a+b.c=(a,b)+(a,c)$ 210g)Give an example of graph which has both Hamiltonian circuit and Euler's circuit.N What do you mean by chromatic number?210i)Define POSETS.210210j)Define shortesh path in a graph "with suitable diagram.210210Part- IIQ2Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)(6 x 8)a)Reduce the following Boolean expressions to complete sum of products form: $a, f(a,b,c) = (a'+b)'+a'b$ b. $f(a,b,c) = (a+b)'(ab')'$ (6 x 8)		21	210	210	21	0		210	210	21
PCS31001         31 <sup>rd</sup> Semester Regular / Back Examination 2018-19 DISCRETE STRUCTURES BRANCH : CSE Time : 3 Hours Max Marks: 100 Q.CODE : E882         Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO 2:0         2:0 <td< th=""><th></th><th>Re</th><th>gistration No :</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>		Re	gistration No :							
PCS31001         31 <sup>rd</sup> Semester Regular / Back Examination 2018-19 DISCRETE STRUCTURES BRANCH : CSE Time : 3 Hours Max Marks: 100 Q.CODE : E882         Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO 2:0         2:0 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>•</td><td></td><td></td><td></td></td<>							•			
<ul> <li><sup>3<sup>rd</sup></sup> Semester Regular / Back Examination 2018-19 DISCRETE STRUCTURES BRANCH: CSE Time: 3 Hours Max Marks: 100 Q.CODE : E882</li> <li>Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO are and from Part-III. 210 210</li> <li>The figures in the right hand margin indicate marks.</li> <li>Part-I</li> <li>91 Short Answer Type Questions (Answer All-10) (2 x 10)</li> <li>a) Define the term Multiset and power set with example.</li> <li>b) What are disjoint sets ? Give example.</li> <li>c) State DE Morgan's laws in Boolean algebra. 210 210 210</li> <li>d) Define invertible function with example.</li> <li>c) State DE Morgan's laws in Boolean algebra. 210 210 210</li> <li>d) Define invertible function with example.</li> <li>c) Compare and contrast between directed graph and undirected graph.</li> <li>f) Prove by Boolean algebra that a+b.c= (a.b) +(a.c.)</li> <li>g) Give an example of graph which has both Hamiltonian circuit and Euler's circuit.</li> <li>h) What do you mean by chromatic number?</li> <li>i) Define POSETS.</li> <li>j) Define shortest path in a graph with suitable diagram. 210 210</li> <li>210</li> <li>Poruse that Intersection of two equivalence relations is an equivalence relation. 210</li> <li>c) Show that Z7 =(0,1, 2, 3, 4, 5, 6) is group under addition modulo 7.</li> <li>d) Define and give example of a. Homeomorphic graph b. Complete bipartite graph.</li> <li>e) State and prove Lagrange theorem.</li> <li>f) State Koinsberg seven bridger problem. What is the solution to this problem. Elaborate.</li> <li>g) Prove that If R is an equivalence relation on a set A, show that R-1 is also an equivalence relation on A.</li> <li>h) Definition of Isomorphic graphs. Give an example.</li> <li>j) State and prove Lagrange theorem.</li> <li>k) Suppose R and S are symmetric relation on a Set A. Show that R-1 is also an equivalence relation on a set A, show that R-1 is also an equivalence relation on A.</li> </ul>	Tota	l Nur	nber of Pages : 02						Р	
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210       210       210       210       210         The figures in the right hand margin indicate marks.         Part-1         Q1       Short Answer Type Questions (Answer All-10)       (2 x 10)         a)       Define the term Multiset and power set with example.       (2 x 10)         b)       What are disjoint sets ? Give example.       210       210         c)       25 State DE Morgan's laws in Boolean algebra.       210       210         d)       Define invertible function with example.       210       210         e)       Compare and contrast between directed graph and undirected graph.       70       210         g)       Give an example of graph which has both Hamiltonian circuit and Euler's circuit.       10         h)       What do you mean by chromatic number?       10       210       210         j)       Define shortesh path in a graph with suitable diagram.       210       210         Part-11         Q2       Focused-Short Answer Type Questions: (Answer Any Eight out of Twelve)       (6 x 8)         a)       Reduce the following Boolean expressions to complete sum of products form: a. f(a,b,c) = (a'+b)'+a'b       b. f(a,b,c) = (a+b)(ab')'       210       210         e)       Prove that intersection of two equ										
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<ul> <li>j) <sup>2</sup>Define shortesh path in a graph <sup>2</sup>with suitable diagram.</li> <li>Part-II</li> <li>Q2 Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)</li> <li>a) Reduce the following Boolean expressions to complete sum of products form: <ul> <li>a. f(a,b,c) = (a'+b)'+a'b</li> <li>b. f(a,b,c) = (a+b)'(ab')'</li> </ul> </li> <li>b) Prove that intersection of two equivalence relations is an equivalence relation.</li> <li>c) Show that Z7 ={0,1, 2, 3,4,5,6} is group under addition modulo 7.</li> <li>d) Define and give example of a. Homeomorphic graph b. Complete bipartite graph.</li> <li>e) State and prove Lagrange theorem.</li> <li>f) State Koinsberg seven bridger problem. What is the solution to this problem. Elaborate.</li> <li>g) Prove that If R is an equivalence relation on a set A, show that R-1 is also an equivalence relation on A.</li> <li>h) Definition of Isomorphic graphs. Give an example.</li> <li>i) Show that the edge chromatic number of a graph must be at least as large as the maximum degree of a vertex of the graph.</li> <li>j) State and prove Lagrange theorem.</li> <li>k) Suppose R and S are symmetric relation on a Set A. Show that R intersection S is also</li> </ul>				nromatic numb	er?					
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<ul> <li>d) Define and give example of a. Homeomorphic graph b. Complete bipartite graph.</li> <li>e) State and prove Lagrange theorem.</li> <li>f) State Koinsberg seven bridger problem. What is the solution to this problem. Elaborate.</li> <li>g) Prove that If Rais an equivalence relation on a set A, show that R-1 is also an equivalence relation on A.</li> <li>h) Definition of Isomorphic graphs. Give an example.</li> <li>i) Show that the edge chromatic number of a graph must be at least as large as the maximum degree of a vertex of the graph.</li> <li>j) State and prove Lagrange theorem.</li> <li>k) Suppose R and S are symmetric relation on a Set A. Show that R intersection S is also</li> </ul>		$\leq$	210	210	$\leq$	0		210	210	2
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<ul> <li>maximum degree of a vertex of the graph.</li> <li>j) State and prove Lagrange theorem.</li> <li>k) <sub>2</sub>Suppose R and S are symmetric relation on a Set A. Show that R intersection S is also</li> </ul>		<b>h)</b> [	Definition of Isomorphic	graphs. Give a	an example.					
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<b>k</b> ) <sub>2</sub> Suppose R and S are symmetric relation on a Set A. Show that R intersection S is also			•	•	aph.					
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210		210	210	210	210	210	210	210
_10		with exa		2 I U	210	2 I U	210	210
	I)	Conside	r G = {1, 5, 7, 11} ι cyclic? b) Find all s					
				F	Part-III			
10		<sup>210</sup> Long Ar	nswer Type Quest	tions <sup>2</sup> (Answe	r Any Two out of F	our) <sup>210</sup>	210	210
	Q3	a) Cut po b) Simpl c) Euleri			d graph.			(16)
10	Q4	<sup>210</sup> Conside a) Draw	r the algebraic exp the corresponding E in Polish prefix f	<sup>210</sup> ression E = (x 2-tree.	210	210	210	210 (16)
	Q5		meant by minim n spanning trees.	um spanning	tree ? Explain pr	im's algorithn	n to find the	(16)
10	Q6	210 Solve the	210 e recurrence relatio	210 D <b>n</b> .	210	210	210	210 <b>(16)</b>
		S(n)+ 5S	S(n-1) +6S(n- 2) = 3	3n2 where S(C	)) = 1, S(I) = 2.			
0		210	210	210	210	210	210	210
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