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Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



I SEMESTER M.TECH (CONSTRUCTION ENGINEERING & MANAGEMENT)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: OPERATIONS RESEARCH AND DECISION THEORY

[CIE 503]

03-12-2015

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- * Answer ANY FIVE FULL questions.
- Missing data may be suitably assumed.

1A.	Briefly explain decision under uncertainty											
1B.	Explain artificial	variables	with e	xample	Э		(02)					
	Consider the payoff matrix of player A as shown below. Find the optimal strategies and value of the game. Use graphical approach to reduce the matrix size.											
1C.		Player B										
		B ₁	B ₂	B_3	B_4	B ₅						
	A ₁	4	2	1	7	3						
	A ₂	2	7	8	1	5						
2A.	A consultancy c hours an avera different engined Assuming that t exponentially dis (a) Probabi (b) Probabi (c) Average (d) Average (e) Average	ell has si ge. The ers. Clier the client stributed, lity that the lity that the queue has system waiting	ix expe clients nts arri t arriva deterr ne syst there s ength length time in	ert eng s are r ve at t als are nine tem is i hall be hall be	ineers egister he cor Poisse dle 8 clier	each of whom can handle the clients in 5 red at a single counter and then sent to isultancy cell at an average of 1 per hour. On distributed and the handling times are	(06)					

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2 B .	Solve the follov Maximizo Subject And x ₁ ,x ₂ ≥	ving LPP e Z=3x ₁ + to -3x ₁ - 3x ₁ - x ₁ + 0	9 graph -4x ₂ +2x ₂ ≤ 6 +x ₂ ≥ 6 x ₂ ≤ 8	ically ô												(04)
3A.	What is the imp	oortance	of Dua	l of a	Primal?											(01)
3B.	Obtain the opti Minimize Subject And x	mal solut e Z = 24> to 4 3x x ₁ , x ₂ and	tion to t $x_1 + 36x$ $x_1 + 8x$ $x_1 + 6x_2$ $x_3 \ge 0$	the fo x ₂ + 3 x ₂ + 6 + 12	billowing L $80x_3$ $x_3 ≥ 64$ $x_3 ≥ 96$	PP	using	j Two	-pha	ise m	heth	nod.				(09)
4A.	What are the a	idjustmei	nts to b	be ma	ade in VA	M	while	solvir	ng th	ie ma	axir	niza	tion p	roble	ms	(01)
4B.	Obtain the opti supplied in bol in thousands o Sources Demand	mal solu d figures f INR. A B C	tion to b. Make D ₁ 25	the for e use 8 12 9	Dillowing t of MODI Dest D2 2 30 32	ran ma ina 10 9 11	sporta ethod tions D ₃ 40 40	ation Tab	prob le giv D ₄ 23	lem f	for cost 6 7 8	whic t of t Sup 50 40 30	h the ransp	IBFS ortati	ion	(09)
5A.	Briefly explain	the gene	ral stru	cture	of waitin	g li	ne mo	odels								(03)
5B.	The matrix be contractors. Ho the total cost of	elow give ow the fo f constru	es bid ur diffe ction is	amo rent j mini	unt in m jobs shou mized.	illic Ild I	ons o De ass	f INR signe	t sul d to	bmitte four d	ed con	by itrac	four o	differe uch th	ənt hat	(07)

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		Co	ntract	ors														
	J ₁ J ₂ J ₃ J ₄	C ₁ 18 13 38 19	C2 26 28 19 26	C ₃ 17 14 18 24	C ₄ 11 26 15 10	-												
6A.	A truck is to be loaded with cargo be loaded) whose details are sho tons, find the optimal cargo load returns is maximized Item Weight/ Uni (tons) A 1 B 2 C 2					t of three below. I using d Returns/ U (in thousau 20 50 60	iterr f the lynai	ns (a mic of IN	R)	ast c um gran	one i weig nmir	unit ıht c ıg s	of e if the uch	ach e ve that	type sse : the	e mu I is ⁻ e tot	ıst 10 tal	(06)
6B.	Solve the FIG.Q6B. 1	minir The nu	mum Imber	spa s on t	an he br	problem anches r	n epre	for sen	tl t the	ne e cos	ne sts ir	etwo n lak	rk .hs c	sh of INI	owr R	١	in	(04)

