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## B.Sc. (Part - III) (Semester - V) Examination, April - 2017 STATISTICS

### Operations Research (Paper VII)

				Operations Re	search (1	Paper - XII)	
				Sub. C	ode: 65	861	
D T	ay and ime : 3	Date .00 p	: Fri .m. to	day, 21-04-2017 5.00 p.m.		Total Marks	: 40
Instructions:			1)	All questions are Co		* 1 11 p	٠
	at i		2)	Figures to the right	indicate full	l marks.	
	al lengt					The second of the fire	
·Q	1) Ch	oose	the co	rrect alternative from	m given fo	our alternatives:	[8]
	a)	Sar	nple v	value of random vari for random number	able X hav	ving exponential distribution w	ith
		i)	ln 2		ii)	ln 0.25	
		iii)	ln 0		iv)	ln 1	
	b)	Wh	ich o	f the following meth	od is not u	used for obtaining I.B.F.S. of T	'P
		i)	N.V	V.C.R. method	ii)	MODI method	•••
		iii)	V.A	.M.	iv)	None of these	
	c)	Gra	phica	l method is used to	solve		20
		i)	T.P.		ii)	A.P.	
		iii)	S.P.		iv)	L.P.P. in 2 variables	
d)		Big	-M m	ethod is used if	varial	ble is present.	
		i)	Basi	c '	ii)	Slack	
		iii)	Surp		iv)	Artificial	
ų.	e)	Ma: prol	kimiza olem l	ation assignment pr by	oblem is 1	transformed into minimization	n
		i)	Addi	ng each entry in a col	umn from th	he maximum value in that column	
		ii) .	Subt colu	racting each entry in	a column i	from the maximum value in that	
		iii) iv)	Subtr Any	racting each entry in the	ne table fron	n the maximum value in that table	

			D-28:						
f)	The	e constraints of L.P.P. are $2x_1 + 3x_2 \le 10$ , $12x_1 + 13x_2 \le 20$ , $x$ write L.P.P. in standard form, we need	Section Committee						
	i)								
			2 slack and 1 surplus variables						
	ii)	1 slack and 2 surplus variables							
	iii)	2 slack, 1 surplus variables and 1 artificial variables							
	iv)	None of these	*						
g)	Wh	nich criterion is used for decision making under uncertainty?							
± ±	i)	Pessimistic ii) Optimistic							
	iii)	Both (i) and (ii) iv) EMV							
'h)	I.B. deg	F.S of transportation problem having $m$ origins and $n$ destingenerate if	ations is						
	i)	No. of positive allocations = $m + n - 1$							
	ii)	No. of positive allocations $< m + n - 1$	4						
	iii)	No. of positive allocations $> m + n - 1$							
	iv)	None of these							
			*						
O2) Atte	empt	any two of the following:	[16]						
a)		plain T.P. and the terms							
	i)	balanced T.P.							
	ii)	un-balanced T.P.							
	iii)	B.F.S. of T.P.							
	iv)	. IDEC CED							
b)		plain V.A.M. and NWCR method.							
c)		Explain Monte Carlo Method of simulation. State any two							
	i)	Advantages							
	ii)	Disadvantages							
a se silvata	iii)								

## Q3) Attempt any four of the following:

[16]

- a) Explain Big.-M method of solving L.P.P.
- b) Explain balanced A.P. and unbalanced A.P. How to convert them to balanced one.
- c) Describe sequencing problem of n jobs through 2 machines.
- d) Explain Hungarian Method of obtaining optimal solution of A.P.
- e) State Primal and Dual forms of L.P.P.
- f) Explain criteria of optimism and criteria of pessimism of decision making under uncertainty.

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# B.Sc. (Part -III) (Semester -V) (New) Examination, April - 2016 STATISTICS

## Operations Research (Paper - XII) Sub Code: 65861

				Sub.	. Code: 65	861	9930	
7	Day and I	Date .00 n	:Tues	day, 05 - 04 - 201 2.00 p.m.	16		daga yang Total Ma	rks : 40
	Instruction	ns:	1) 2)	All questions are Figures to the rig	compulsory. ht indicate fi	ull ma	arks.	
	Q1) Cho	ose t	he co	rrect alternative	from given i	four	alternatives:	[8]
	a)	The To	cons	traints fo L.P.P. L.P.P. in standar	are $2x_1 + 3$ . d form, we	$x_2 \le$ need	$10,12x_1 + 13x_2 \ge 20, x_1 + 3$	$3x_2 \le 5$ .
		i)	2 sla	ack and 1 surplus	variables		DE LE CALTERNA (ME)	
		ii)	1 sla	ack and 2 surplus	variables		Officers of the	38 g
		iii)	2 sla	ick, 1 surplus var	riables and 1	arti	ficial variables	
	is shous	iv)	1 sla	ick, 1 surplus var	riables and 1	arti	ficial variables	
	b)	Wh	ich of	the following m	ethod is not	used	d for obtaining I.B.F.S.	of T.P.
		i)	N.W	C.R. method		ii)	MODI method	
		iii)	V.A.	M.	ale i shorse.	iv)	none of these	
	c)		Big-M ction.	method, -M is		nije	variable in obj	ective
		i)	basi	c Tribil (h		ii)	slack	
		iii)	surp			iv)	artificial	

d)	problem by								
	i)	adding each entry in a column from the maximum value in that column							
	ii)	subtracting each entry in a column from the maximum value in that column							
2.21	iii)	subtracting each entry in the table from the maximum value in that table							
	iv)	any one of the above							
e)	Graj	Graphical method is used to solve L.P.P. in							
	i)	2 variables and objective function is of minimization type							
	ii)	2 variables and objective function is of maximization type							
	iii)	both (i) and (ii)							
	iv)	maximization L.P.P. in 2 or more variables.							
f)	Wh	Which criterion is used for decision making under uncertainty?							
	i)	Pessimistic ii) De Optimistic							
	iii)	both (i) & (ii) iv) EMV							
g)		F.S of transportation problem having m origins and n destinations is generate if							
	i)	no. of positive allocations = m+n-1							
	ii)	no. of positive allocations < m+n-1							
	iii)	no. of positive allocations > m+n-1							
	iv)	none of these							
h)		mple value of random variable X having exponential distribution with an 1 for random number 0.5 is							
	i)	ln2 ii) ln0.25							
	iii)	ln0.5 iv) ln1							

### Q2) Attempt any two of the following:

[16]

- a) Define:
  - i) a slack variable
  - ii) surplus variable
  - iii) artificial variable
  - iv) basic variable, used in L.P.P.
- b) Explain V.A.M. and MODI method.
- c) Explain Monte Carlo method of simulation. State any two:
  - i) advantages
  - ii) disadvantages
  - iii) applications, of simulation

#### Q3) Attempt any four of the following:

[16]

- a) Explain Big.-M method of solving L.P.P.
- b) Explain unbalanced T.P and unbalanced A.P. How to convert them to balanced one.
- c) Describe sequencing problem of n jobs through m machines.
- d) Explain Hungarian Method of obtaining optimal solution of A.P.
- e) State:
  - i) Primal form of L.P.P.
  - ii) Standard form of L.P.P.
- f) Explain criteria of E.M.V. and E.V.P.I. of decision making under risk.

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