Registration No: | | | | | | | | | | |

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MCA
MCA305

3rd Semester Regular/Back Examination 2017-18
Quantitative Techniques (OR & SM)
Branch: MCA
Time: 3 Hours
Max Marks: 100
Q.CODE : B1136

Answer Question No.1 & 2 which is compulsory and any four from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions by choosing appropriate options given below.** **(2×10)**

a) In simplex method the kind of variable use in " ≤" constrain_____
(i)slack (ii) surplus (iii)artificial (iv) all of these.

b) The values of basic feasible solution are always _____
(i)Positive (ii) Negative (iii) At least one positive (iv) At least one negative.

c) _____ is a special case of LPP
(i)Transportation (ii) Assignments (iii) (i)&(ii) both(iv)None.

d) A activity which do not take any resource & time known as _____activity
(i) Predecessor (ii)successor (iii)Dummy(iv)None

e) Objective of queuing system is to minimise _____
(i)Activity time (ii) waiting time (iii) service time(iv)all of these.

f) When number of task of assignment is not equals to number of menthe assignment problem is _____
(i)Unbalance (ii)Restricted (iii)balance (iv) None.

g) A case of disconnect activity before the completion of all activities, known as_____
(i) Looping(ii) dangling (iii) dependency (iv) None.

h) The process by which we generate random variable by random number known as _____
(i)LCM (ii) Analysis of variance (iii)inverse transformation(iv) None.

i) We can solve LPP by graphical method when number variable is _____
(i)more than two (ii) more than equals to two (iii) less than equals to two (iv) all of these.

j) In replacement policy when running cost of (n+1)th year more than the average cost of nth year than replacement due on _____
(i)End of nth year (ii) End of (n+1)th year (iii)both ((i)&(ii)) (iv)None

Q2 **Answer the following questions:** **(2 x 10)**

a) What do you mean by infeasible solution?
b) What do you mean by degeneracy in transportation?
c) Write mathematical formulation of Transportation Problem.
d) What is little's formula ?
e) What do you mean simulation?
f) What is meant by replacement policy?
g) Write the uses of artificial variable.
h) What do you mean by Kendall notation ?
i) What do you mean by variance reduction technique?
j) What do you mean expected time, how it calculated?

Q3 Solve the transportation problem. **(15)**

	M1	M2	M3	M4	M5	SUPPLY
F1	4	2	3	2	6	8
F2	5	4	5	2	1	12
F3	6	5	4	7	7	14
demand	4	4	6	8	8	

Q4 Solve the Assignment problem. **(15)**

	JOBS					
MEN		I	II	III	IV	V
	A	2	9	2	7	1
	B	6	8	7	6	1
	C	4	6	5	3	1
	D	4	2	7	3	1
	E	5	3	9	5	1

Q5 A bakery keeps stock of a popular brand of cake. Previous experience shows the daily demand for the item with associated probabilities, as given below: **(15)**

Demand	0	10	20	30	40
Probability	0.05	0.15	0.25	0.45	0.10

Simulate for next 10 days by using following random numbers. 25, 39, 65, 76,89,98,45,09,12,56.

Q6 A firm is considering the replacement of a machine, whose cost price is Rs 12200, and itsScrap value is Rs200.From experience the running costs are found to be as follows. **(15)**

year	1	2	3	4	5	6	7	8
Running cost	200	500	800	1200	1800	2500	3200	4000

When should the machine be replaced?

Q7 Solve the LPProblem by simplex methods **(15)**

Max $Z=x_1-3x_2+5x_3$

Subject to$3x_1+3x_2 \leq 22$,

$X_1+2x_2+3x_3 \leq 14$,

$3x_1+2x_2 \leq 14$,

$x1,x2,x3 \geq 0$

Q8 The activity of a project and their estimates are given below **(15)**

Activity	Optimistic Time	Most likely time	Pessimistic time
1-2	2	5	8
1-4	4	19	28
1-5	5	11	17
2-3	3	9	27
2-6	3	6	15
3-6	2	5	14
4-6	3	6	15
5-7	1	4	7
5-8	2	5	14
6-8	6	12	30
7-8	2	5	8

Draw the PERT Network

Find the critical path and the standard deviation for the critical path