1 APR 2026

National Law University
Quantitative Techniques and Business Statistics
II Semester M.B.A., Insurance & Risk Management
Midterm - 2026

Time: 90 Minutes **Max. Marks: 50**

Instructions:

- *Calculator should not be borrowed in the examination hall.*
- *All non-scientific calculators are allowed.*
- *All questions are compalsory.*

1.a) A firm produces two products, X and Y with a contribution of Rs.80 and Rs.100 per unit respectively. Production data per unit are **Marks:8**

	Labour hours	Material A	Material B
X	3	4	6
Y	5	2	8
Total	500	350	800

Formulate the LP model and solve by Graphical Method.

b). Solve by graphical Method **Marks:8**

Max. $z = 50x_1 + 30x_2$,
subject to the constraints : $3x_1 + 5x_2 \leq 15$,
$5x_1 + 2x_2 \leq 10$, and $x_1, x_2, \geq 0$.

2.a) A firm has three shops with a total of 80 televisions. An order is received from the local authority for 80 sets to be delivered to 4 schools. The transport costs from shops to schools are shown below together with the availabilities and requirements. **Marks:8**

Schools	A	B	C	D	Requirements
Shop I	3	4	1	6	40
Shop II	4	1	3	3	20
Shop III	1	2	3	3	20
Sets	20	30	15	15	80

Set up the initial tableau and Solve.

b) . Define assignments .A company employs service based at various locations throughout the country to service and repair their equipment installed in customer's premises. Four requests for service have received and the company finds that four engineers are given in the following table and the company wishes to assign engineers to customers to minimize the total distance to be travelled. **Marks:9**

Service engineers/ customer's	W	X	Y	Z
Alf	300	620	290	420
Bill	120	190	380	550
Charlie	170	290	500	410
Dave	350	400	380	400

3.a)Draw a network corresponding to the following information. Obtain the early and late start and completion times, and determine the critical activities. **Marks:9**

Activity	1-2	1-3	2-3	2-4	3-4	4-5
Duration(Days)	20	25	10	12	5	10

b).The Simple Engineering Company has a machine whose purchase price is Rs. 80,000.The expected maintenance costs and resale price in different years are as given here:

Year	1	2	3	4	5	6	7
Maintenance costs Rs	1000	1200	1600	2400	3000	3900	5000
Resale Value(`000 Rs)	75	72	70	65	58	50	45

After what time interval, in your opinion, should the machine be replaced? **Marks:8**
