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**CMH 405**

**First Semester M.Com. Degree Examination, December 2018  
(CBCS) (New Syllabus)  
COMMERCE  
Management Science**

Time : 3 Hours

Max. Marks : 70

**Note : Non-programmable calculator and present value table are allowed.**

**SECTION – A**

**Note :** Answer **any four** questions out of seven, each question carries **10** marks, answer to **each** question should **not** exceed **4** pages. **(10×4=40)**

1. Explain the significance and scope of OR in modern management.
2. Define Linear Programming. What are its essential characteristics ?
3. What is an unbalanced transportation problem ? Illustrate.
4. A firm manufactures two products A and B. Products are produced and sold on a weekly basis. The weekly production cannot exceed 25 for product A and 35 for product B because of limited available facilities. The company employs total of 60 workers. Product A requires 2 man weeks of labour, while B one man week of labour. Profit margin on A is Rs. 60 and on B is Rs. 40. Formulate the problem.
5. Solve the following LPP using Graphical Procedure.

$$\text{Maximise } Z = 10x_1 + 5x_2$$

$$\text{Subject to } 4x_1 + 5x_2 \leq 100$$

$$5x_1 + 2x_2 \leq 80$$

$$x_1, x_2 \geq 0$$

**P.T.O.**



6. Solve the following transportation problem using Matrix Minimum Method.

Steel mills		A	B	C	D	Availability
Ports	A	50	60	100	50	20,000
	B	80	40	70	50	38,000
	C	90	70	30	50	16,000
Demand		10,000	18,000	22,000	24,000	74,000

7. Find the initial basic feasible solution to the following assignment model.

Contractors	Projects			
		Spring	Monsoon	Hot
M	2	10	9	7
N	13	4	14	8
O	13	14	16	11
P	4	15	13	9

SECTION – B

**Note :** Answer **any two** questions out of three questions, **each** question carries **15** marks, answer to **each** question should **not** exceed **7** pages. **(15×2 =30)**

- 8. Explain various methods of solving transportation problem. Which is the best method of solving it and why ?
- 9. A project has the following time schedule

Activity	times (weeks)	Activity	times (weeks)
1 – 2	2	3 – 7	5
1 – 3	2	4 – 6	3
1 – 4	1	5 – 8	1
2 – 5	4	6 – 9	5
3 – 6	8	7 – 8	4
8 – 9	3		

Construct PERT network and compute critical path and its duration.



10. The following table gives data on normal time and cost and crash time and cost for a project.

Activity	Normal		Crash	
	Time (days)	Cost (Rs.)	Time (days)	Cost (Rs.)
1 – 2	6	600	4	1000
1 – 3	4	600	2	2000
2 – 4	5	500	3	1500
2 – 5	3	450	1	650
3 – 4	6	900	4	2000
4 – 6	8	800	4	3000
5 – 6	4	400	2	1000
6 – 7	3	450	2	800

The indirect cost per day is Rs. 100.

- a) Draw the PERT network and identify the critical path.
- b) What are the normal project duration and associated cost ?
- c) Crash the critical activities systematically and determine the optimum project completion time and cost.

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