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Roll No

ME-705 (GS)**B.E. VII Semester**

Examination, December 2017

Grading System (GS)**Operation Research and Supply Chain**

Time : Three Hours

Maximum Marks : 70

- Note: i) Attempt any five questions.
 ii) All questions carry equal marks.
 iii) Draw neat diagrams wherever required.

1. a) What are the basic assumptions made for formulating linear programming problem? 7
 b) Solve the following problem using simplex method. 7

$$\text{Minimize } Z = 8x_1 + 4x_2 + 2x_3$$

$$\text{Subjected to } 4x_1 + 2x_2 + x_3 \leq 8$$

$$3x_1 + 2x_3 \leq 10$$

$$x_1 + x_2 + x_3 = 4$$

$$x_1, x_2, x_3 \geq 0$$

2. Solve the following transportation problem to minimize cost of the given cost matrix. 14

	D ₁	D ₂	D ₃	Supply
O ₁	1	2	6	7
O ₂	0	4	2	12
O ₃	3	1	5	11

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3. a) Write the concept and objectives of supply chain management. 7
 b) Discuss coordination and leadership issue in SCM. 7
4. a) Discuss forecasting models in supply chain. 7
 b) The demand for a particular item is 18000 units per year. The holding cost per unit is 1.20 per year. And cost of one procurement is ₹ 400. No shortage is allowed and the replacement rate is instantaneous. Determine : 7
 i) EOQ
 ii) No. of order per year
 iii) Time between orders; and
 iv) Total cost per year when the cost of one unit is ₹1
5. a) Discuss evolution of MRP to ERP to SCM. 7
 b) Explain VED analysis used in inventory control. Write advantages and limitations. 7
6. a) Write Little's formula. State some applications of queuing theory. 7
 b) Write short note on following. 7
 i) Single Server Model (M|M|L)
 ii) Multi Server Models (M|M|S)
7. a) Explain non-linear optimization problems. 7
 b) Indicate the difference between decision under risk and under uncertainty in statistical decision theory. 7
8. a) Explain Hurwitz criteria of decision analysis. 7
 b) Describe some methods which are useful for decision making under uncertainty. Illustrate each by an example. 7

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