

GUJARAT TECHNOLOGICAL UNIVERSITY**MBA - SEMESTER-II • EXAMINATION – SUMMER • 2014****Subject Code: 820007****Date: 04-06-2014****Subject Name: Research Methodology and Operation Research (RM&OR)****Time: 10.30 am - 13.30 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is hypothesis? Explain the concept of Null and Alternative Hypothesis. **07**
 (b) What is the difference between Qualitative and Quantitative Research? **07**

- Q.2** (a) Prepare a research proposal taking a research topic of your choice. **07**
 (b) Discuss various sources of secondary data. **07**

OR

- (b) Discuss the research process in detail. **07**

- Q.3** (a) Explain the following concepts: **07**
 1. Infeasibility in LPP
 2. Unboundedness in LPP
 3. Types of Integer Programming Problems

- (b) Explain various types of projective techniques with examples. **07**

OR

- Q.3** (a) In the modification of a plant layout of a factory four new machines M1, M2, M3 and M4 are to be installed in the machine shop. There are five vacant places A, B, C, D and E available. Because of limited space, machine M2 cannot be placed at C and M3 cannot be placed at A. The cost of locating a machine at a place in hundreds of rupees is as under: Find the optimal assignment schedule. **07**

	A	B	C	D	E
M1	9	11	15	10	11
M2	12	9	--	10	9
M3	--	11	14	11	7
M4	14	8	12	7	8

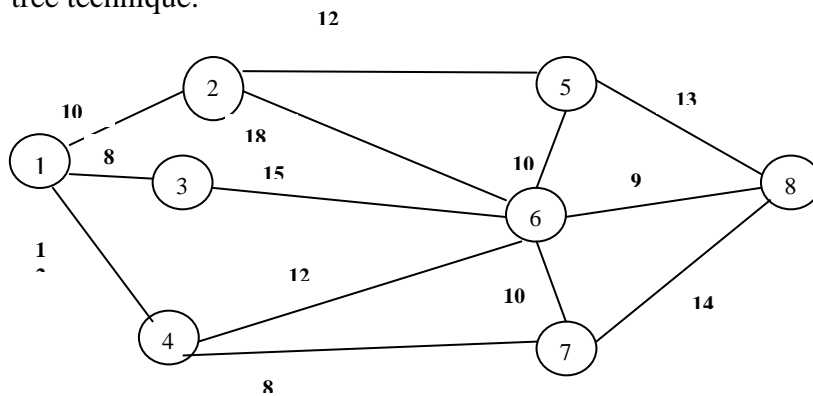
- (b) Explain the difference between parametric and non-parametric tests. **07**

- Q.4** (a) A retired person wants to invest up to an amount of Rs. 30,000 in fixed income securities. His broker recommends investing in two bonds: Bond A yielding 7% and Bond B yielding 10%. After some consideration, he decides to invest at most Rs. 12,000 in Bond A and least in Bond A. He also wants the amount invested in Bond A to be least equal to the amount invested in Bond B. What should the broker recommended if the investor wants to maximize his return on investment? Solve graphically. **07**

- (b) Explain various observation methods with suitable examples. **07**

OR

- Q.4 (a)** A horse breeding farm is planning to install a complete water system connecting all of the various stables and barns. The location of facilities and the distances between them are given in the following diagram. Identify the least expensive way to provide water at each facility using minimum spanning tree technique. **07**



- (b)** Explain primary scales of measurement with suitable examples. **07**
- Q.5 (a)** How the travelling salesmen problem differs from assignment problem? Explain in detail. **07**
- (b)** Discuss various components of research report. **07**
- OR**
- Q.5 (a)** What are the advantages and Disadvantages of Simulation? **07**
- (b)** What is Type I and Type II error? **07**
