

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014****Subject code: 1724601****Date: 16-06-2014****Subject Name: Facility Planning & Design****Time: 02:30 pm - 05:00 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 do you understand by the term “Facility Layout Design”? What are the strategic planning issues do you consider in facility design? Mention the significance of the same. **07**
- (b)** Explain the reasons for facility location problem. How to identify the alternative layout solution. **07**

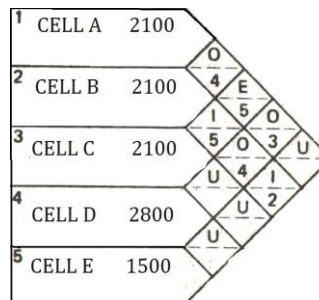
- Q.2 (a)** When would you recommend a group technology layout and a fixed position layout? **07**
- (b)** In designing a layout for an orthopedic hospital how the design might be affected by the most important flow component being designated to be either patients, doctors, nurses and diagnostics equipment like x-ray, CT-scan. **07**

OR

- (b)** Use the direct clustering algorithm to form cells for the machine part matrix shown below. If conflicts exist, propose alternative approaches for resolving the conflicts. **07**

	Machine #			
Part #	1	2	3	4
1		1	1	
2	1			
3			1	
4	1			1

- Q.3 (a)** What are the basic differences between construction type and improvement type layout algorithms? **07**
- (b)** The activity relationship chart is shown below for a machine shop. The space requirements are given in sq. feet. Construct relationship diagram and develop block layout. **07**

**OR**

- Q.3 (a)** There are five existing facilities which are to be served by a single new facility. **07**
The details of the existing facilities are shown in the following table.

Facility (i)	1	2	3	4	5
Coordinates (a_i, b_i)	5, 10	20, 5	15, 20	30, 25	25, 5
No of trips of loads/year (w_i)	150	300	210	320	120

- (b)** Explain the concept of cellular manufacturing? What are its objectives? **07**
- Q.4 (a)** What is line balancing? What are the reasons to balance the line? Comments should be based on the perspective of inventory, material handling and productivity improvement. **07**
- (b)** Briefly explain the purpose and concept of line of balance. **07**

OR

- Q.4 (a)** Explain the factors to be considered for determining storage and shipping department requirements. **07**
- (b)** Enlist the employee services required in industries. Explain any three. **07**
- Q.5 (a)** Define material handling along with its scope. Mention important principles of material handling system design. **07**
- (b)** Explain the factors to be considered for selecting material handling equipment. **07**

OR

- Q.5 (a)** Explain the factors to be considered in planning fixed path material handling equipment. Mention the names of those equipments. **07**
- (b)** Explain the concept of unit load with example. **07**
