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**

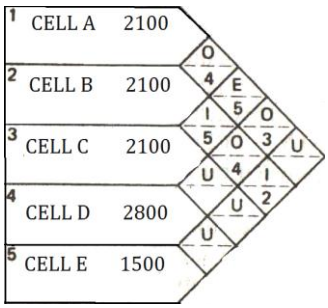
OR

(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. The details of the existing facilities are shown in the following table. **07**

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**

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