B.E. DEGREE EXAMINATION, APRIL 2011

Sixth Semester

Industrial Engineering

IE 384 – FACILITY LAYOUT AND MATERIAL HANDLING

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions

PART A – (10 X 2 = 20 marks)

1. Differentiate between facility location and layout
2. How the location decisions are carried out?
3. What is the need for layout study?
4. When does a layout problem arise?
5. Define the term line balancing
6. Differentiate between ALDEP and CRAFT.
7. What are the functions of packaging?
8. What is the relationship between layout and material handling?
9. Which technique is preferable for designing product layouts?
10. What is the effect of noise on human performance?

PART B – (5 X 16 = 80 marks)

11. (i) List down and explain all the factors which are influencing the location decisions (8)

    (ii) Discuss the various plant location analysis techniques. (8)

12a) (i) Describe the classification of layout problem with its major criteria (8)

    (ii) Discuss the basic principles of best layout while designing a plant Layout (8)

(OR).

b) Explain the advantages and disadvantages of product and process layout with suitable example. (16)

13a) The Joy Job shop has requested that a new layout be designed for their operation in Erode, Tamilnadu. There are 12 departments involved. The department areas (in square feet) and activity relationships for the job shops are given below: Design a block layout using CORELAP algorithm.

Activity	Area (sq.ft)
Office	600
Personnel Services	1000
Welding	800
Press	900
Foundry	1200
Machining	1000
Assembly	700
Painting	500
Steel storage	600
Finished storage	1000
Other storage	800
Maintenance	600

I											
U	U										
U	U	U									
A	U	U	U								
U	I	U	U	U							
U	E	I	U								
I	I	E	U	U							
I	U	U	U	U	U						
U	U	U	E	U	U						
E	U	E	U	U	U						
E	I	U	I	I	U						
E	E	I	I	I							
U	U	I	E	I							
U	A	I	I								
U	E	U	I								
U	I	U									
U	U	U									
U	U										
U											

(OR)

.b) An electronic appliance is manufactured in an assembly line. The identical work is performed at more than one workstations .The assembly tasks, their performance times and precedence relationships are given below.

Task	Performance time (mins)	Immediate preceding task
1	1.1	--
2	0.4	1
3	0.5	1
4	1.1	1
5	0.3	2,3
6	0.4	4
7	3.2	5
8	0.8	6
9	0.7	7,8
10	0.3	9

The manufacturer desires an output of 400 units per 8 hour shift and stops the line for a 40 mins lunch break. Balance the line using COMSOAL and find the efficiency of the line. (16)

14a) Describe the basic materials handling equipments used in a manufacturing industry. (16)

(OR)

b) Explain the various principles of material handling (16)

15a) Describe the procedure of systematic layout planning with suitable RELchart.

(OR)

b) Write short notes on any two of the following

(i) Ventilation and illumination

(ii) CRAFT algorithm

(iii) Designing product layout