USN | | | | | | | | | | **18IM55**

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Facility Planning and Design

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. List the theories of location and explain the Alfred Weber's theory of location mentioning the criticisms faced by the theory. **(10 Marks)**
   b. Describe the term plant layout and explain any five principles of plant layout. **(06 Marks)**
   c. Briefly explain the concept of unit load mentioning its characteristics. **(04 Marks)**

OR

2 a. List and explain the factors that one must consider for the selection best location for an industry. **(10 Marks)**
   b. With Schematic diagram, explain the layout type, commonly used in aircraft industry, mention its merits and demerits. **(06 Marks)**
   c. Define material handling, write the classification of basic material handling equipment types. **(04 Marks)**

Module-2

3 a. Explain Immer's basic layout planning and Nadler's ideal system approaches. **(08 Marks)**
   b. With a Schematic example, explain activity relationship chart in detail. **(07 Marks)**
   c. Write the Symbols and Codes table required for construction of relationship chart and diagrams. **(05 Marks)**

OR

4 a. Construct a flow chart of SLP proposed by muther and give the brief explanation. **(08 Marks)**
   b. Choose a suitable example and explain the constructional procedure for activity relationship diagram. **(07 Marks)**
   c. Briefly the reed's systematic plan of attack. **(05 Marks)**

Module-3

5 a. Categorize the factors to be considered for space planning. **(10 Marks)**
   b. Describe the actual area allocation procedure with suitable schematic assumptions, wherever necessary. **(10 Marks)**

OR

6 a. Explain the total presentation of layout to management. **(08 Marks)**
   b. Draw possible arrangements of shipping and receiving departments. **(06 Marks)**
   c. Give any six efficiency indices used in quantitative evaluation of facility layout. **(06 Marks)**

Module-4

7 a. Develop a mathematical model for warehouse layout. **(10 Marks)**

b. Consider a machine tool in maintenance department. Suppose there are five existing machines that have Material handling relationship with new machines, the existing machines are located at the points $P_1 = (1, 1)$, $P_2 = (5, 2)$, $P_3 = (2, 8)$, $P_4 = (4, 4)$ and $P_5 = (8, 6)$, the cost per unit distance travelled is same between the new machine and each existing machine. The number of trips per day between the new machine and existing machines are 5, 6, 2, 4 and 8 respectively. Determine the optimum location for the new machine such that the distance moved or cost is minimized. **(10 Marks)**

OR

8 a. Write a note on block Stacking and waiting line model. **(10 Marks)**

b. 8 machines are to be maintained in a production area by crews from the central maintenance facility. The coordinate locations of the machines are (0, 0), (4, 6), (8, 2), (10, 4), (4, 8), (2, 4), (6, 4) and (8, 8). Determine the optimum location for maintenance department in the production area. **(10 Marks)**

Module-5

9 a. Define computerized layout planning and list the advantages that a layout planner get from computerized layout planning. **(08 Marks)**

b. Explain working of computerized Relationship Layout Planning; also mention its merits and demerits. **(12 Marks)**

OR

10 a. Write the working procedure for following :
i) CRAFT   ii) PLANET. **(16 Marks)**

b. Give brief comparison for CRAFT and CORELAP computerized layout planning in terms of inputs and features. **(04 Marks)**

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