

B.E., DEGREE EXAMINATIONS: APRIL/MAY 2014

(Regulation 2009)

Sixth Semester

MECHATRONICS ENGINEERING

MCT141: Plant layout and Material handling

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10x1=10 Marks)

1. Objective of plant layout is
 - a) minimum material handling
 - b) minimum equipment utilization
 - c) minimum manpower utilization
 - d) minimum utilization of floor area
2. "O" type flow pattern used in _____ industry
 - a) bottling plant
 - b) steel plant
 - c) cement plant
 - d) paper plant
3. _____ is useful where volume of manufacture is high and variety of jobs is less
 - a) product layout
 - b) process layout
 - c) line layout
 - d) fixed position layout
4. Material handling and plant location is analyzed by
 - a) gantt chart
 - b) bin chart
 - c) emersion chart
 - d) travel chart
5. Respirators used for
 - a) lung protection
 - b) eyeprotection
 - c) handprotection
 - d) liverprotection
6. _____ is concerned with the orderly storage and issuing of finished goods
 - a) tool room
 - b) receiving area
 - c) shipping area
 - d) warehousing area
7. _____ is a traction type conveyor
 - a) chute conveyor
 - b) screw conveyor
 - c) arm conveyor
 - d) roller conveyor
8. For narrow aisles, long loads (like pipes, angles) _____ truck is used.
 - a) crane truck
 - b) platform truck
 - c) side load truck
 - d) hand lift truck
9. Which type of layout is used to achieve a smooth and rapid flow of large volumes of output?
 - a) process-oriented
 - b) batch-oriented
 - c) product-oriented
 - d) unit production

10. In assembly line balancing, cycle time (the ratio of production time to demand), is the
 - a) minimum time that a product is available at each work station
 - b) maximum time that a product is available at each work station
 - c) optimum time that a product is available at each work station
 - d) desired cycle time that a product is available at each work station

PART B (10 x 2 = 20 Marks)

11. What do you understand by plant design?
12. Define the term plant capacity.
13. What is the basic difference between flow diagram and string diagram?
14. Write short notes on combination layout.
15. Name any two types of factory buildings.
16. List some of the cushion materials.
17. Mention the scope in material handling system.
18. What are the factors to be considered for the selection of material handling equipment?
19. Define flow analysis.
20. State the efficiency of containers.

PART B (5 x 14 = 70 Marks)

21. a) (i) Discuss the various factors to be considered in deciding the location of a plant. (7)
(ii) What are the factors to be analysed while selecting space and manpower requirements for a plant? (7)

(OR)

b) (i) Elaborate on factors to be taken for facilities planning. (8)
(ii) Explain the term serviceability and flexibility of a plant. (6)
22. a) (i) Enumerate the product layout with its advantages and disadvantages. (7)
(ii) Explain in detail about the layout planning procedure. (7)

(OR)

b) (i) Explain about the flow process charts. (7)

(ii) Write about the balancing of fabrication and assembly lines. (7)

23. a) (i) While designing a factory building what are the factors to be considered? (10)

(ii) Will you prefer an 'L' shape building for a new plant? Why? (4)

(OR)

b) (i) Give the importance for lighting in a plant. Discuss about the nature, characteristic and advantages of lighting. (7)

(ii) What is the importance of packaging? Sketch the layout for packaging machinery. (7)

24. a) (i) Discuss about the function and principles of material handling. (7)

(ii) Name the different types of conveyor and with neat sketch explain the chain conveyor. (7)

(OR)

b) (i) How the Cranes are classified? With the diagrams explain each type of crane. (7)

(ii) Write in detail about concept of containerization and palletization. (7)

25. a) (i) What is motion analysis? Explain the steps involved in motion analysis? (7)

(ii) How the cost of the equipment is analysed with respect to the material handling explain. (7)

(OR)

b) (i) Discuss in detail about the factors involved in the graphical analysis. (7)

(ii) Write short note on principle of unit load design. (7)
