



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

MECHANICAL ENGINEERING

TUTORIAL QUESTION BANK

Course Name	:	PLANT LAYOUT AND MATERIAL HANDLING
Course Code	:	A80365
Class	:	IV-II
Branch	:	Mechanical Engineering
Year	:	2018 – 2019
Course Faculty	:	Dr Paidi Raghavulu, Professor, Mr. G. Musalaiah, Assistant Professor.

OBJECTIVES:

This course is an introduction to the concepts and problems underlying the design and operation of contemporary production systems. Emphasis is placed on the design and operation of manufacturing facilities, but many of the presented results apply also to the design, planning and control of operations taking place in the service sector. More specifically, the course seeks to offer a balanced development of the following issues: A systematic exposition of the design, planning and control problems that arise in the context of the aforementioned facilities. A systematic introduction to inventory control theory and its application in the contemporary production and distribution networks.

S. No	Question	Blooms Taxonomy Level	Course Outcome
UNIT – I			
	PART - A (SHORT ANSWER QUESTIONS)		
1	Explain the definition of plant layout.	Remember	1
2	Discuss the main objectives of layout.	Understand	1
3	Describe the principle of plant layout.	Remember	1
4	Explain the principle of minimum handling.	Remember	1
5	Explain the principle of maximum feasibility.	Remember	1
6	Explain the principle of cubic space utilization.	Remember	1
7	Describe about a good layout.	Understand	1
8	Explain various types of manufacturing units.	Understand	1
9	Explain process layout.	Remember	1
10	Explain the advantages of process layout.	Understand	1
11	List out the limitations of process layout.	Understand	1
12	Compare process layout and product layout.	Understand	1
13	List out the advantages of product layout	Understand	1
14	Describe the applications of process and product layouts	Understand	1
15	Explain the application of product layout	Understand	1
16	Explain the suitability of process layout	Remember	1
17	Describe group technology.	Remember	2
18	Give outline of fixed position layout.	Understand	2

19	Explain combination layout.	Remember	2
20	List out the limitation of fixed position layout.	Understand	2
	PART - B (LONG ANSWER QUESTIONS)		
1	Explain the steps in selecting the plant site	Remember	1
2	Explain the advantages and disadvantages while selecting a site in rural areas.	Understand	1
3	Explain objectives of good plant layout.	Understand	1
4	Explain the advantages and disadvantage while selecting the site in urban area.	Understand	1
5	Describe the different types of layout.	Understand	1
6	List advantages and limitations of Plant layout.	Understand	1
7	What factors you consider while selecting a location for a plant.	Remember	1
8	Explain the overview of the plant layout.	Understand	1
9	Explain the Advantages and disadvantages of process layout.	Understand	1
10	Compare the differences between process and product layout.	Understand	1
11	Write the Advantages and disadvantages of group layout.	Understand	1
12	How product layout differs from process layout.	Understand	1
13	Write short notes on product layout.	Understand	1
14	What are the factors we need to select a Process Layout?	Remember	1
15	What are the steps we need to select a Plant Layout?	Remember	1
16	List advantages and disadvantages of product layout.	Understand	1
17	Write short note on process layout.	Understand	2
18	Compare the applications between process and group layout.	Understand	2
19	List out the difficulties in selection of a layout.	Understand	2
20	Explain the overview of the group layout.	Understand	2
	PART - C (ANALYTICAL QUESTIONS)		
1	Explain Line balancing in Layout.	Remember	1
2	Explain selection of location with example.	Understand	1
3	Considering a suitable example explain the process layout.	Understand	2
4	Considering a suitable example explain the product layout.	Understand	2
5	Considering a suitable example explain the group layout.	Understand	2
UNIT II			
	PART - A (SHORT ANSWER QUESTIONS)		
1	Explain the features of ALDEP.	Remember	3
2	Identify steps involved in ALDEP.	Understand	3
3	Draw the structure of ALDEP.	Remember	3
4	Describe CORELAP according to Muther's.	Understand	3
5	Describe sweep pattern.	Remember	3
6	Summarize REL-chart.	Understand	3
7	Outline CORELAP algorithm.	Understand	3
8	Define placement order of departments.	Remember	3
9	Explain about CRAFT.	Understand	3
10	Identify features of CRAFT.	Remember	3

11	List out applications of CRAFT.	Understand	3
12	List out features of ALDEP.	Remember	3
13	List out features of CORELAP.	Understand	3
14	List use of bound method.	Understand	4
15	Describe cost matrix.	Remember	4
16	Explain initial layout.	Understand	4
17	Describe flow matrix.	Remember	4
18	Describe MCP.	Understand	4
19	List out features of fixed position layout.	Remember	4
20	List applications of branch method.	Understand	5
21	List the application of quadratic Assignment model.	Understand	5
	PART - B (LONG ANSWER QUESTIONS)		
1	Compare the differences between ALDEP and CORELAP.	Understand	3
2	Explain the process of CRAFT?	Remember	3
3	What are the computerized Facilities in plant layout? Explain.	Remember	3
4	Explain the process of ALDEP.	Remember	3
5	Write short notes on CRAFT.	Understand	3
6	Explain the principle of CAFL.	Remember	3
7	Explain the Automated layout design program (ALDEP)?	Understand	3
8	Write short notes on CORELAP.	Understand	3
9	Explain the about the heuristic procedure for CRAFT.	Remember	3
10	List out the steps involve in the heuristic procedure of ALDEP.	Remember	3
11	Explain the about the heuristic procedure for CORELAP.	Understand	3
12	Summarize about CORELAP.	Understand	3
13	Explain the term Group layout.	Understand	4
14	Explain the term Fixed position layout.	Remember	4
15	Write some of the examples of fixed position layout.	Understand	4
16	Explain the fixed position layout with a neat Sketch.	Understand	4
18	Write short notes group layout.	Understand	4
19	Explain quadratic assignment model.	Remember	5
20	Write short notes on Branch & bound method ?	Understand	5
	PART - C (ANALYTICAL QUESTIONS)		
1	Explain ALDEP procedure by considering a suitable example.	Understand	3
2	Explain CRAFT procedure by considering a suitable example.	Understand	3
3	Explain CORELAP procedure by considering a suitable example.	Understand	3
4	Illustrate branch method with a suitable example.	Understand	5
5	Illustrate quadratic assignment model with a suitable example.	Understand	5
UNIT – III			
	PART - A (SHORT ANSWER QUESTIONS) 3A		
1	Describe material handling	Remember	6
2	List out objectives of material handling	Understand	6
3	Explain standardization principle	Remember	6

4	Explain work principle	Remember	6
5	Explain work principle	Remember	6
6	Explain ergonomic principle	Remember	6
7	Explain space utilization principle	Remember	6
8	Describe delays in material handling.	Understand	6
9	Explain planning principle.	Remember	6
10	Explain unit load principle.	Remember	6
	PART - A (SHORT ANSWER QUESTIONS) 3 B		
1	Explain automation principle.	Remember	6
2	Describe motion principle.	Remember	6
3	Explain roller conveyor	Understand	7
4	Explain skate wheel conveyor	Remember	7
5	Explain belt conveyor	Understand	7
6	Explain elevator	Understand	7
7	Explain hand & fork lift trucks	Understand	8
8	Explain AGV	Remember	8
9	Describe efficiency of material handling.	Understand	8
10	Summarize space importance.	Understand	8
	PART – B (LONG ANSWER QUESTIONS) 3A		
1	What are the factors you consider in selection of Material Handling Equipment?	Remember	6
2	Write a brief outline on belt conveyor.	Understand	6
3	What do you think about the advantages of Material Handling?	Understand	6
5	Explain the objectives of Material Handling?	Remember	6
6	How do you explain about the importance of Material Handling System?	Understand	6
7	Illustrate about the functions involved in Material Handling System.	Understand	6
8	Briefly explain the principles of Material handling?.	Remember	7
9	Explain the working principle of conveying equipment.	Remember	7
10	Explain the working of an apron conveyor with a neat diagram.	Understand	7
	PART – B (LONG ANSWER QUESTIONS) 3B		
11	Discuss about the Driverless trains and wire-guided pallet trucks.	Remember	8
12	Explain about bridge crane in material handling.	Understand	8
13	List out any five principles of material handling.	Remember	8
14	Explain about the usage of containers in material handling.	Understand	8
15	Compare between wheel conveyor and screw conveyor.	Understand	8
16	Explain the usage of cranes and hoists in material handling.	Understand	8
17	Explain about roller conveyor in material handling.	Understand	8
18	Explain the usage of industrial tractor in material handling.	Understand	8
19	Compare the features of various types of hoists.	Remember	8
20	List out the usage of belt conveyor.	Understand	8

	PART - C (ANALYTICAL QUESTIONS) 3A		
1	Discuss the principles of material handling?	Remember	6
2	Discuss the usage of skate conveyor system?	Understand	6
3	Describe the operation of a belt conveyor with a neat sketch.	Understand	7
4	Describe the operation of a Roll conveyor with a neat sketch.	Remember	7
5	Describe the operation of chain conveyor with neat sketch	Understand	7
PART - C (ANALYTICAL QUESTIONS) 3B			
1	Summarize the relationship between plant layout and material handling.	Understand	8
2	Describe the principle of overhead conveyor and difficulty in carrying a material in overhead conveyor.	Remember	8
3	Describe the principle of Automate Storage and Retrieval System with a neat sketch.	Understand	8
4	Analyses the factors considered in design the bucket elevator	Remember	8
5	Describe the operation of overhead conveyor with neat sketch	Understand	8
UNIT – IV			
	PART - A (SHORT ANSWER QUESTIONS)		
1	List out different Belt conveyors.	Remember	9
2	List out different Roller conveyors.	Understand	9
3	Describe the selection of material handling.	Remember	9
4	Identify difficulties in material handling.	Understand	9
5	Describe the path for overhead conveyors.	Remember	9
6	Describe about fork lifters.	Understand	9
7	Describe about material handling for continuous production.	Understand	9
8	Identify about material handling for batch production.	Remember	9
9	Summarize fixed path equipment.	Understand	10
10	Describe various types of industrial trucks.	Remember	10
11	Describe the applications of hoists.	Understand	10
12	Describe the advantages of using robot in material handling.	Understand	10
13	Identify about material handling for product process.	Understand	10
14	Compare roll conveyor to belt conveyor.	Understand	10
15	Compare heavy lifting to normal lifting conveyor.	Understand	10
16	Describe about functional material handling system.	Understand	10
17	List out equipment used for functional oriented system.	Understand	10
18	Compare fixed path and variable path.	Understand	10
19	summarize fixed path equipment?	Understand	10
20	Compare normal material handling to functional material handling.	Understand	10
	PART - B (LONG ANSWER QUESTIONS)		
1	Classify the material Handling Equipment?	Remember	9
2	List out disadvantages of material system.	Understand	9
	Classify types of conveyor.	Remember	9
4	Illustrate the working principles of conveying equipment	Remember	9
5	Explain about fork lift truck used in industries.	Understand	9
	Explain about two wheeled trucks	Understand	9

7	Illustrate about Roller Conveyors.	Understand	9
8	Explain about chain conveyors	Remember	9
9	Discuss the main features of four wheeled powered drives such as. Fork lift, straddle trucks with aid of sketches.	Understand	9
10	Differentiate between roller conveyor and belt conveyor.	Understand	10
11	Differentiate platform truck and fork truck.	Understand	10
12	Explain relationship between plant layout and material handling.	Understand	10
13	Differentiate between fixed path equipment and variable equipment.	Understand	10
14	List out principles involved in material handling.	Remember	10
15	Differentiate between chain hoist and electric hoist.	Understand	10
16	Explain how robots are used for material handling.	Remember	10
17	Differentiate between jib crane and bridge crane.	Understand	10
18	Differentiate between wheel conveyor and screw conveyor.	Understand	10
19	Explain the working of belt feeders with the help of a neat sketch.	Understand	10
20	List out objectives of material handling.	Remember	10
	PART - C (ANALYTICAL QUESTIONS)		
1	Explain the working of belt feeders with the help of a sketch.	Understand	9
2	Explain the various hoists and describe their features.	Remember	9
3	Discuss the main features of powered driven such as side loading trucks and straddle trucks with aid of sketches.	Remember	9
4	Explain path equipments.	Understand	10
5	Explain function oriented systems.	Understand	10
UNIT – V			
	PART - A (SHORT ANSWER QUESTIONS)		
1	Describe cycle time in manufacturing.	Remember	11
2	Describe delays and damages in handling.	Understand	11
4	Describe fixed cost.	Remember	11
6	Describe operating cost.	Remember	11
7	Describe how labour cost included in material handling.	Understand	11
8	Describe how to reduce cycle time.	Understand	11
9	List out limitation of automated material handling system.	Understand	11
10	List out methods of material handling systems.	Remember	11
11	Describe open conveyor systems.	Understand	11
12	Explain about multi-lines in assemblies.	Remember	12
14	Describe about ergonomics of material handling.	Understand	12
15	Describe lifting principle.	Remember	12
18	Describe how an organization should maintain work place.	Understand	12
19	List out elements of material handling systems.	Understand	12
20	Describe handling of miscellaneous equipment.	Understand	12
	PART - B (LONG ANSWER QUESTIONS)		
1	Illustrate the reasons or causes of accident in case of conveyors.	Remember	11
2	Which events could have involved during a crane Failure	Understand	11
3	How would you list out safety norms for conveyors and cranes	Remember	11

4	In how many possible ways that safety can be implemented in Material Handling Equipment	Understand	11
6	Write a brief outline on pallet trucks	Understand	11
7	Judge the value of design methodology followed for different Material Handling Equipment	Remember	11
8	Write in your own words about dumpers and feeders	Understand	11
9	What factors would you consider that needed for maintain of Material Handling System	Remember	12
10	How would you Explain the types of maintains in Material Handling System.	Understand	12
11	Illustrate the design of conveyors.	Understand	12
12	Write a brief outline on precautions considering for material handling	Understand	12
13	Illustrate briefly about the design of trucks	Understand	12
14	Illustrate briefly about the mobile lifting frame	Understand	12
	Illustrate about the design Cranes	Understand	12
16	List out material handling ergonomics for human-beings.	Remember	12
17	Explain about material flow.	Understand	12
18	List out manual material handling tasks.	Understand	12
19	Explain about Air Cushion Handling Frame	Understand	12
20	Explain about ergonomics of material handling equipment.	Remember	12
PART - C (ANALYTICAL QUESTIONS)			
1	List out methods to minimize cost of material handling.	Remember	11
2	Explain the maintenance of material handling equipment.	Remember	12
3	Describe the objectives of ergonomics in material handling.	Understand	12
4	List out elements of a material handling ergonomics program.	Understand	12
5	Describe how care should be taken while designing the feeding equipment to avoid spillage of materials.	Remember	12

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