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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (S, FE) / S8 (PT) (R, S) Examination June 2023 (2015 Scheme)



Course Code: ME476

Course Name: Material Handling & Facilities Planning

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks.

Marks

- 1 a) Define Plant layout. What are the important factors that influence a factory layout? (6)
 b) Draw neat sketches of a product and process layout. (4)
- 2 a) Explain constructive algorithms used in layout design? Illustrate the selection and placement rules for positioning a department in the layout using the constructive algorithm. (8)
 b) What is the significance of dust control in an industry? (2)
- 3 a) Explain the importance of computer applications in layout design? (6)
 b) Write a note on the applications of compressed air in industries? (4)
- 4 Five hundred vehicles are required per day. Production time per day is 420 minutes, and the assembly steps and times for the wagon are given below. Draw the precedence diagram and find the balance that minimizes the number of workstations, subject to cycle time and precedence constraints. Calculate the efficiency and evaluate the results. (10)

Work element	A	B	C	D	E	F	G	H	I	J	K	L
Time (Sec)	45	11	9	47	15	12	10	10	12	8	9	10
Immediate predecessor	-	-	A	A,B	B	C	C	C,D	F,G,H	E,H	I,J	K

PART B

Answer any three full questions, each carries 10 marks.

- 5 a) Explain the need for safety in industries? Give a method to implement it. (6)
 b) What are the effects of air pollution in humans? (4)
- 6 What are industrial hazards? Explain any six of them with an example. Suggest any two methods to control industrial hazards. (10)

- 7 a) Explain the factors that will lead to good relationship between plant layout and material handling. (5)
b) Explain the elements of material handling. (5)
- 8 a) Explain with sketch the overhead crane. (5)
b) What are the outcomes of bad material handling? (5)

PART C

Answer any four full questions, each carries 10 marks.

- 9 a) Define material handling. Explain the relationship between material handling and productivity in an industry. (5)
b) Explain the method oriented handling system. (5)
- 10 a) Explain the method to classify material handling equipment? (6)
b) What is unit load concept? What are the advantages of unit load concept? (4)
- 11 a) Draw the sketches of any three function oriented material handling system. (6)
b) Give the procedure for material handling equipment selection in an automobile industry. (4)
- 12 a) Explain the components of material handling cost. (4)
b) Explain the ergonomics of material handling system in a work place. (6)
- 13 a) Explain the factors considered in designing the material handling equipment. (6)
b) Explain the importance of a good maintenance system for material handling equipment. (4)
- 14 a) What are the correct and safe lifting practices? (4)
b) List out the safety norms for conveyors. (4)
c) What are the applications of hoppers? (2)
