Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, Dec 2020

Course: Facilities Planning & Material Handling	**Semester:** VII
Program: B. Tech- ADE	**Time 03 hrs.**
Course Code: MEAD 4005	**Max. Marks: 100**

SECTION A

1. Each Question will carry 5 Marks
2. Instruction: Complete the statement / Select the correct answer(s)

S. No.		Marks	CO

Q 1	Fill in the blanks:
	  a. Slowest operating component in the production line leads to _____.
	  b. Not very robust if there is a disruption is a typical dis-advantage of _____ Layout.
	  c. In a _____ Layout, the equipment, machinery, plant and people move as necessary.
	  d. Complex flow can be difficult to control is a typical dis-advantage of _____ Layout.
	  e. Drafting, 2-D Templates, 3-D Templates are typical examples of layout_____.
		5	CO1

Q 2	Compare the following (w.r.t direction of movement):
	  a. Hoist
	  b. Overhead Crane
		5	CO3

Q 3	Explain the following:
	  a. Flow Process Chart
	  b. String Diagram
		5	CO2

Q 4	State the full-form of the following abbreviations:
	  a. SLP
	  b. CORELAP
	  c. CRAFT
	  d. ALDEP
	  e. AGV
		5	CO3

Q 5	Identify & explain any two-steps during the process of procurement of raw material up to deliverance of the final product to the consumer, which does not add any value to the final product.	5	CO2
Q 6	List the five most important environmental factors, which are required to be taken into consideration during the design & development of the plant layout.	5	CO1

SECTION B

1. Each question will carry 10 marks
2. Instruction: Write short / brief notes

Q 7	Explain the term **'Assembly Line Balancing'** & how does it affect a plant layout.	10	CO2

Q 8	Compare & contrast between **'Load Distance Method'** and **'Break Even Analysis method'** used for the design & development of a Plant Layout.	**10**	**CO3**
Q 9	Explain the five most important **'Geographical parameters'** that are required to be considered while planning & designing a Plant Layout.	**10**	**CO2**
Q 10	Justify the usage of **'Gravity'** for designing a **'Material Handling system'** & how it is beneficial in the overall productivity enhancement of the manufacturing system & its layout.	**10**	**CO3**
Q 11	Differentiate between **'Improvement Algorithm'** & **'Construction Algorithm'** along with their respective examples used for the development of a Plant Layout.	**10**	**CO3**

SECTION-C

1. Each Question carries 20 Marks.
2. Instruction: Write long answer.

Q 12	An automobile manufacturing plant produces an automobile component having a sales forecast of 30,000 units/year. Three operation are required to be performed to give final shape to the product as given below: ...	**20**	**CO4**

Q 12 — An automobile manufacturing plant produces an automobile component having a sales forecast of 30,000 units/year. Three operation are required to be performed to give final shape to the product as given below:

1. Operation-A by Machine-X = 8 min/ piece
2. Operation-B by Machine-Y = 5 min/ piece
3. Operation-C by Machine-Z = 15 min/ piece

Select the appropriate Machine configuration (no. of machines).
Consider:
  a. Operation hours = 2400 hours/ year
  b. Production Efficiency = 95%

OR

The milling machine in an automobile plant produces 3 types of gears (Gear-A, Gear-B & Gear-C) as per the following:

S. No	Details	Gear-A	Gear-B	Gear-C
1	Set-up time (min)	40	50	70
2	Standard time/ Unit (min)	2	1	2.5
3	Weekly Demand	1000	5000	3000
4	No. of set-ups/ week	3	5	7

Select the appropriate Machine configuration (no. of machines).
Consider:
  a. Operating Hours/ Week = 48 Hours
  b. Allowance for scrap = 5%