ANIPAL INSTITUTE OF TECHNOLOGY



DEPARTMENT OF MECHATRONICS ENGINEERING VII SEMESTER B.TECH. (MECHATRONICS ENGINEERING) MAKE-UP EXAMINATIONS, FEBRUARY 2022

Reg. No.

SUBJECT: PRODUCTION AND OPERATIONS MANAGEMENT [MTE 4080]

(22.02.2022)

Time: 75 + 10 MINUTES MAX.]								MA	ARKS	5: <u>20</u>			
Instructions to Candidates: ❖ Answer ALL the questions. ❖ Missing data if any can be suitably assumed													
QUESTIONS								М	со	РО	LO	BL	
Derive EOQ and its associated cost for the manufacturing model without shortages with instantaneous delivery. Use suitable notations and assumptions.							5	2	1, 3, 4,11	1, 2, 3, 4, 5, 11, 13	4		
Two jobs are to be processed on 4 machines A,B,C and D. The processing time in hours and sequence are as shown below.							5	2	1, 3, 4,11	1, 2, 3, 4, 5,	4		
	Job 1	Α	В	С	D							11, 13	
	Time (H	·s) 2	3	1	4								
	Job 2	В	C	А	D								
	Time (H	rs) 1	3	4	2								
In what order the jobs be done on each machine to minimize makespan? Calculate the makespan, idle time of Job 1 and Job 2.													
An automobile manufacturing Co. is planning to expand to cater the growing demand. The search has been maneuvered down to 4 possible locations. Assessment of these sites in terms of 7 location factors, the factor weights and scores (1=poor, 5=excellent) are shown in the table below: Calculate the weighted score of each location. Which location would you recommend?							5	5	1, 3, 4, 11, 12	1, 2, 3, 5, 13	6		
S No	Location Factor	Factor		Fa	Factor for each location								
S.No.	Location Factor		Weight	А		В	С	D					
1	Labor Skills		30	2		3	5	1					
2	Quality of Life		5	5		4	3	5					
3	Transportation Syste	m	15	2		5	5	4					
4	Proximity to Market	s	25	5		3	4	4					

Q. No

1A.

1**B**.

2A.

	5	Proximity to materials	5	3	2	3	5					
	6	6 Land & Construction costs		5	4	2	1					
	7	Utilities	5	3	4	3	5					
	Total:		100									
2B.	A manufacturing company is considering the expansion of one of its product line by adding additional capacity. The capacity of the present line is 1 ton. The process consists of loading, processing and unloading. Putting all together, the processing time for one ton is 30 min. The line can work 80% of the shift due to power restriction and availability of material handling equipment. The expected output of the new layout is to be 16tons per shift of 8 hours. Plant (system) efficiency is 50% of the system capacity. Find the number of lines required and estimate the percentage of time the line will be idle.								4	1, 2, 3, 4, 11	1, 2, 3, 5, 13	5