VPM's
DR VN BRIMS, Thane
Programme: MMS (2021-23)
Fourth Semester Regular Examination June 2023

Course Name:	Operations Applications & Cases	**Course Code**	O405
Roll No.		**Marks**	60
Total No. of Questions	6	**Duration**	3 Hours
Total No. of printed pages	3	**Date**	03.06.2023

Course Outcome Statements:

CO1. DESCRIBE the Key Concepts and Definitions associated with operations Applications.
CO2. SUMMARIZE the features of various frameworks used in processes and operations of the product & service industry.
CO3. APPLY various techniques, tools & practices in different situations for executing the system in the best manner.
CO4. EXAMINE the concepts of operations using process analysis, MRP, Vendor selection, and vendor management for effective implementation.
CO5. EXPLAIN how what-if analysis is used to have an optimum solution.
CO6. SOLVE the real-time issues mentioned in Operations cases using the appropriate method.

Instructions: -			**Marks**	**BL**	**CO**
Q. No 1 (All Questions are Compulsory)					
Q. No.		**Questions**			
Q. 1		**Chad's Creative Concepts** Chad's Creative Concepts designs and manufactures wood furniture. Founded by Chad Thomas on the banks of Lake Erie in Sandusky, Ohio, the company began by producing custom-made wooden furniture for vacation cabins located along the coast of Lake Erie and on nearby Kelly's Island and Bass Island. Being an outdoors" type himself, Thomas originally wanted to bring "a bit of the outdoors" inside. Chad's Creative Concepts developed a solid reputation for creative designs and high-quality workmanship. Sales eventually encompassed the entire Great Lakes region. Along with growth came additional opportunities. Traditionally, the company focused entirely on custom-made furniture, with the customer specifying the kind of wood from which the piece would be made. As the company's reputation grew and sales increased, the sales force began selling some of the more popular pieces to retail furniture outlets. This move into retail outlets led Chad's Creative Concepts into the production of a more standard line of furniture. Buyers of this line were much more price sensitive and imposed more stringent delivery requirements than did clients for the custom line. Custom-designed furniture, however, continued to dominate sales, accounting for 60 percent of volume and 75 percent of dollar sales. Currently, the company operates a single manufacturing process in Sandusky, where both custom furniture and standard furniture are manufactured. The equipment is mainly general purpose in nature to provide the flexibility needed for producing custom pieces of furniture. The layout puts together saws in one section of the facility, lathes in another, and so on. The quality of the finished product reflects the quality of the wood chosen and the craftsmanship of in-dividual workers. Both custom and standard furniture compete for processing time on the same equipment by the same craftspeople. During the past few months, sales of the standard line steadily in- creased, leading to more regular scheduling of this product line. However, Source: This case was prepared by Dr. Brooke Saladin, Wake Forest University, as a basis for om furniture was always profit margins. Thus, scheduled Creative Concepts, Thomas is when scheduling trade-offs had to be made, custom furniture w given priority because of its higher sales and profit margins. Thus, lots of standard furniture pieces were left sitting around the plant in stages of completion. As he reviews the progress of Chad's Creative Concepts pleased to note that the company has grown. Sales of custom furniture main strong, and sales of standard pieces are steadily increasing How finance and accounting indicate that profits are not what they should Costs associated with the standard line are			

rising. Dollars are being tied up in inventory, both in raw materials and work-in-process. Expensive public ware house space has to be rented to accommodate the inventory volume. Thomas also is concerned with increased lead times for both custom and standard orders, which are causing longer promised delivery times. Capacity is being pushed, and no space is left in the plant for expansion. Thomas begins al careful assessment of the overall impact that the new standard line is having on his manufacturing process.

Source: This case was prepared by Dr. Brooke Saladin, Wake Forest University

	a.	**Examine** sales and marketing factors which affect operations when they began to sell standard pieces to retail outlets.	**6**	**Level 4**	**CO4**
	b.	**Evaluate** probable decisions must Chad Thomas make daily for his company's operations to run effectively.	**6**	**Level 5**	**CO5**
Q. 2		Answer **Any one** from the following.			
	a.	**Evaluate** aggregate planning using the chase and the level strategy. Calculate and compare the total cost for both strategies. Two additional assumptions: • Unmet demands in a period can be held and fulfilled in a future period. • There is no cost associated with unmet demands (i.e., negative inventory has no costs). Beginning Inventory: 20 units Beginning Workforce: 8 workers Production Rate: 10 units/worker/period Regular Production Costs: $6.5/unit Inventory Costs: $19/unit/period Hiring Cost: $90/worker Firing Cost: $70/worker	**6**	**Level 5**	**CO5**

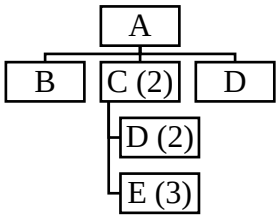
Period	1	2	3	4	5
Demand	80	60	90	70	100

	b.	Calculate NPV for each project. Assume opportunity cost of capital is 10%.	**6**	**Level 5**	**CO5**

Year	Project A	Project B
0	-5000	1000
1	4000	1500
2	2000	2000
3	1500	4000
4	1000	-5000

Based on NPV Rule, which project you **choose** if Project A and B are mutually exclusive.

Q. 3		Answer **Any one** from the following.			
	a.	**Analyze** the given components data and **examine** the plan order releases of all components:	**6**	**Level 4**	**CO4**

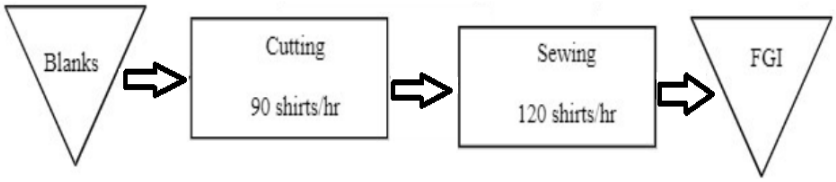


Gross Requirements of A:

	Period							
	1	2	3	4	5	6	7	8
Gross Requirement	15	30	20	15	20	20	30	40

Lead times, Lot Sizes & On hand inventory of components:

Item	Lead Time	Lot Size	On hand Inventory	Scheduled Receipt
A	1	L4L	10	20 IN PERIOD 1
B	1	10	20	15 IN PERIOD 4
C	1	200	200	NONE
D	2	100	200	NONE

		E	2	50	100	NONE			
	b.	GSB Department Store stocks toy cars. Recently, the store was given a quantity discount schedule for the cars: Discount Number | Discount Quantity | Discount | Discount Cost 1 | 0 to 999 | 0% | $5 2 | 1000 to 1999 | 4% | $4.8 3 | 2000 and over | 5% | $4.75 Thus, the normal cost for the cars is $5.00. For orders between 1,000 and 1,999 units, the unit cost is $4.80, and for orders of 2,000 or more units, the unit cost is $4.75. Furthermore, the ordering cost is $49 per order, the annual demand is 5,000 race cars, and the inventory carrying charge as a percentage of cost, I, is 20%, or 0.2. **Analyze** and **examine** order quantity which will minimize the total cost?		**6**	**Level 4**	**CO4**
Q. 4		Answer **Any two** from the following.						
	a.	Work Study is the best-known collection of techniques such as Method Study and Work Measurement developed in the early 20th Century, for studying, analysing and improving plant utilization levels and construction site productivity. Draw Multiple Activity Chart to **identify** the bottlenecks and idling resources by indicating the utilization of each resource with an appropriate example.		**6**	**Level 3**	**CO3**
	b.	A hotel chain has decided to change its supplier of cleaning supplies because its current supplier has become unreliable in its delivery performance. Question: Being a manager, **Apply** a set of criteria that could use to evaluate the supplier. Suggest ways to improve the developing suppliers' capabilities in this context.		**6**	**Level 3**	**CO3**
	c.	Imagine that you are the Head Administrator for MBA Institution. The prospect student must meet all requirements and eligibility criteria for admission. As a Head Administrator, **Identify** the processes to be converted into automation admission process.		**6**	**Level 3**	**CO3**
Q. 5		Answer **Any two** from the following.						
	a.	**Outline** MRP System Framework & **Explain**.		**6**	**Level 2**	**CO2**
	b.	**Explain** lot sizing rules.		**6**	**Level 2**	**CO2**
	c.	Practice Process Analysis Questions Consider this process for the manufacturing of clothes for Zara. Blanks stored in raw material inventory are cut and then sewed and put in finished goods inventory. There is no buffer between cutting and sewing:  If buffer with a capacity of 200 is placed between cutting and sewing, **Explain** the outcome of this situation with respect to following statements: i. Once the process starts functioning, the inventory in this buffer will increase until it hits 200 and then stay at that level. ii. The capacity of this process will increase. iii. The throughput time in this system will increase.		**6**	**Level 2**	**CO2**
Q. 6		Answer **Any two** from the following.						
	a.	**What** is the role of employees with respect to Kaizen & Quality Circles?		**6**	**Level 1**	**CO1**
	b.	**Define** below 3 factors with respect to positioning of the firm: i. Cost ii. Speed iii. Flexibility		**6**	**Level 1**	**CO1**
	c.	**Define** the term Work Study?		**6**	**Level 1**	**CO1**