

JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA

PGDM

FIFTH TRIMESTER (Batch 2020-22)

END-TERM EXAMINATIONS, JANUARY 2021

Set-I

Course Name	Materials and Inventory Management	Course Code	OM 502
Max. Time	2 hours	Max. Marks	40 Marks

INSTRUCTIONS:

1. All questions are compulsory. Attempt all questions in sequence.
2. Part A questions carry equal marks. Attempt any **FIVE** questions.
3. In Part B, Q1 carries 7 marks, Q2 carries 5 marks, and Q3 carries 8 marks respectively.

Part A

Attempt any 5 questions. All questions carry equal marks.

1. "Scope and importance of materials and inventory management has increased with globalization, introduction of disruptive information and communication technologies (ICTs), and competition". Elaborate.
2. Explain VED, ABC, FSN, XYZ, and SDE inventory control methods.
3. Why is vendor selection a critical aspect in inventory management? Elaborate the process.
4. "Ultimately, the circular economy is about inventory — extending its life, reusing it, repurposing it or eliminating the need for it altogether. Supply chain is responsible for inventory, and a global, circular economy requires supply chain innovation beyond its current scope in the linear economy." Elaborate the following using real case examples.
5. How does ICT enable sustainability in inventory management? Explain the transition in inventory management from lean towards sustainability.
6. What are the production planning strategies? As a plant manager in a ventilator manufacturing unit, how would you cope up with the scenario during the recent COVID times?
7. What are 5R principles of inventory management? Discuss the role of inventory management in J.I.T. with suitable examples.

Part B

1. A company produces a mix of high technology supplies for use in hospitals. The annual sales for these equipment are as follows:

Supply Code	Annual Sales	Unit price
F17UD	1000	2.50
J82MN	250	0.55
LKSA6	150	6.50
IOC9S	300	1.00
JHD72	100	1.50
9JA91	700	1.43
LAAO9	500	7.00
68DSJ	15	4.98
KSA90	1000	0.75
IWPO9	600	1.62
JHDS8	25	33.00
JHC96	4	15.50
HDK9Q	1000	5.00
DJSU8	2850	2.50
KWOQ9	10	0.83
GY21B	355	0.98
ZZVK9	40	1.37
JDL85	393	1.85

For avoiding the excessive inventory and control reasons, the company wants to classify the supplies on the basis of annual sales value. Based on your analysis, suggest different category of supplies to the company based on sales value.

2. A company that operates for 50 weeks in a year is concerned about its stocks of copper cable. This cable cost Rs. 240 per meter and there is a demand for 8000 meters a week. Each replenishment costs Rs.1050 for administration and Rs.1650 for delivery; while the holding charge is estimated at 25 percent of the cable value. Assuming no shortages are allowed, find the optimal order quantity for the company. Also, calculate the gross profit of the company if the company sells the cable for Rs.360 per meter.
3. A machine shop has five machines A, B, C, D and E. Two jobs must be processed through each of these machines. The time (in hrs.) taken for each job on each machine and the necessary sequence of jobs through the shop are given below:

Job 1	Sequence	A	B	C	D	E
	Time (in hrs.)	6	8	4	12	4
Job 2	Sequence	B	C	A	D	E
	Time (in hrs.)	10	8	6	2	12

Evaluate the total elapsed time and idle time for both the jobs using appropriate technique.

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~~Set-I~~ Set-2.

Course Name	Materials and Inventory Management	Course Code	OM 502
Max. Time	2 hours	Max. Marks	40 Marks

INSTRUCTIONS:

1. All questions are compulsory. Attempt all questions in sequence.
2. In Part 'A' Attempt any 4 questions. All questions carry equal marks.
3. In Part 'B', marks are given at the end of the questions.

Part A

1. Describe the differences between functional and innovative products.
2. What are characteristics of efficient, responsive, risk-hedging and agile supply chains? Can a supply chain be both efficient and responsive? Risk-hedging and agile? Why, or why not? Discuss.
3. "Ultimately, the circular economy is about inventory — extending its life, reusing it, repurposing it or eliminating the need for it altogether. Supply chain is responsible for inventory, and a global, circular economy requires supply chain innovation beyond its current scope in the linear economy." Elaborate the following using real case examples.

4. How does ICT enable sustainability in inventory management? Explain the transition in inventory management from lean towards sustainability.
5. What are the production planning strategies? As a plant manager in a ventilator manufacturing unit, how would you cope up with the scenario during the recent COVID times?

Part B

Marks are at the end of the questions.

1. A chemical company is trying to find the optimal batch size for the concentrated sulphuric acid. The management accountant has supplied the following information:
 - a. The purchase price of H_2SO_4 is Rs150per gallon.
 - b. The clerical and data processing costs are Rs500 per order.

All the goods are transported by rail. Each time the special line of the factory is opened the company is charged Rs2000. A charge of Rs20 per gallon is also made. The company uses 40,000 gallons per year.

Each gallon requires 0.5 sq ft of storage space. If the warehouse space is not used, it can be rented out to another company at Rs200per sq ft per annum. The available warehouse space is 1000 sq ft, the overhead cost being Rs 5000 per annum. Assume that all free warehouse space can be rented out

- a) Estimate the economic order size.
- b) Calculate the total annual cost of holding stock.

(6

Marks)

2. The following thirty numbers represents the annual value in thousands of rupees of some thirty items selected at random. Carry out an ABC analysis and create categories these items

as three different category of items.

(7 Marks)

1	2	4	9	75	4
25	3	6	13	2	4
12	30	100	2	7	40
15	55	1	11	15	8
19	1	20	1	3	5

3. Find an optimal sequence for the following four jobs which needs to be processed on five machines for which the processing times are given shown below:

Job	J1	J2	J3	J4
Machine 1	6	5	4	7
Machine 2	4	5	3	2
Machine 3	1	3	4	2
Machine 4	2	4	5	1
Machine 5	8	9	7	5

Also find the total elapsed time.

(7 Marks)