JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA
PGDM (G/M/SM)
FIFTH TRIMESTER (Batch 2020-22)
END TERM EXAMINATIONS, January - 2022

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

INSTRUCTIONS (Read Carefully):
a. This is a closed book examination.
b. All questions are compulsory.
c. Mode of Submission:
   ✓ Answer sheet to be submitted/ uploaded on Moodle as a single word file (MS Word).
   ✓ All numerical to be done with pen and paper. Name and Roll Nos. of the student MUST be written on each paper used. Any paper without name and roll no of a student will not be evaluated. The photo or scanned copy of the answers to these questions to be pasted in main the MS word file. The same may be followed in case any graph, curve or diagram need to be used.
d. Permitted % of Plagiarism in Answer sheets: 10%. Penalty in case the permitted plagiarism limit is breached: 1 mark for every 1 % beyond maximum limit.
e. Answers should be pointwise and precise. Avoid unnecessary long answers.

Q.1. **Case Study: Sassy Machineries**
The Sassy machineries has a problem. The machines are fairly expensive to make and store, so the company tends to keep the inventory low. At the same time, it is important to respond to demands quickly, since a customer who wants a machine is very likely to get one from a competitor if Sassy doesn't have one available immediately. Sassy's current policy to produce machines is to produce 10 per week, which is the average demand. Even this is a problem, as the production manager has pointed out, since the equipment is also used for other products and the lot size of 30 would be much more efficient. He said he is currently set up for machine production for the next week and states that he has capacity available to produce 30 at a time next week.
The following lists the forecasts and actual customer orders for the next 12 weeks

Week	1	2	3	4	5	6	7	8	9	10	11	12
Forecast	9	12	11	8	8	9	10	11	9	9	10	11
Customer Orders	10	10	9	7	10	7	5	2	2	1	0	1

The president of Sassy has said that he wants to consider using a formal MPS with ATP logic to try to meet demand more effectively without a large impact on inventory. Sassy has decided to use a demand time fence at the end of week 3 and has also found out that its current inventory is 2 units. Assume Sassy will use the MPS lot size of 300 and that it will produce the first of those lots in week 1.
1. Develop a master schedule using the information above.
2. **A** customer has just requested a major order of 5 machines for delivery in week 5. Analyze the situation and formulate a response to the customer about having such an order?

(6 +4=10 Marks)

Q.2. A company manufactures five sizes of screw drivers. Setup cost and carrying costs are not known for these screw drivers but assumed to be same for all sizes. At present, each size is produced four times per year. If the demand for each size produced is as follows, calculate the order quantities to minimize inventories and maintain the same total number of runs. Examine the old and new average inventories. Suggest if there is any change in the number of times each size is to be produced in a year?

Sizes	1	2	3	4	5
Annual usage (in rupees)	12,100	8,100	3,600	1,600	225

(10 Marks)

Q.3. Examine the relationship between service level and number of orders placed per year. If standard deviation is 130 units, and the demand during the lead time is 250 units, calculate the safety stock and order point for
a) 50% service level
b) 85% service level (safety factor = 1.04)   **(2+1+1 = 4 Marks)**

Q.4. A group of six jobs is to be processed through a three-machine flow shop. The first operation involves cleaning and the second involves painting. Processing times in hours are given as follows:

Jobs	Cleaning time (in hrs.)	Painting time (in hrs.)	Varnishing time (in hrs.)
A	3	8	13
B	12	6	14
C	5	4	9
D	2	6	12
E	9	3	8
F	11	1	13

(a) Determine an optimal sequence that will minimize the total completion time for this group of jobs.
(b) Determine the elapsed time and idle times at the work centres.   **(8 Marks)**

Q.5. Elaborate the meaning of Procurement strategy and examine its various aspects? Evaluate any 4 strategies by providing one example for each strategy ?   **(8 Marks)**