Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM & ENERGY STUDIES

End semester Examination – June, 2021

Course: Operations Management **Semester: II**
Subject/: MBA AVM **Time: 3 Hours**
Course Code: LSCM 7001 **Max. Marks: 100**

SECTION A

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

S. No.	Question	COs
Q 1	Suppose you have to produce 400 units in a week to meet the demand requirements of a product. What is the cycle time to meet this demand requirement, assuming 5 days per week working and 8 hours per day a) 5 minutes b) 6 minutes c) 7 minutes d) 8 minutes	CO1
Q 2	In inventory modelling, the various types of inventory costs are _____, _____ and _____.	CO1
Q 3	In PERT analysis, The standard deviation of critical activities of a project are 3, 4, 5, 5 and 5 respectively, the standard deviation of project completion will be a) 24 b) 15 c) 10 d) 5.5	CO1
Q 4	Criteria that differentiates one firm from another in the market are called_____, whereas the criteria that permits the firm's products/services to even be considered for purchase are called _____.	CO1
Q 5	The difference(s) between the basic EOQ model and the production order quantity model is (are) that	CO1

<table>
<tr><td></td><td>a) The production order quantity model does not require the assumption of known, constant demand.
b) There are no holding costs in the production order quantity model.
c) The production order quantity model does not require the assumption of instantaneous delivery.
d) The EOQ model does not require the assumption of known, constant lead time.</td><td></td></tr>
<tr><td>Q 6</td><td>List any four important principles of Plant Layout</td><td>CO1</td></tr>
<tr><td colspan="3">SECTION B
1. Each question carries 10 marks
2. Instruction: Solve the numerical problems</td></tr>
<tr><td>Q 7</td><td>Discuss any four technological innovations that are improving efficiency and effectiveness of Aviation Operations</td><td>CO4</td></tr>
<tr><td>Q 8</td><td>A company is going to manufacture the item with the equipment that is estimated to produce 100 units per day. The consumption of the item is 10000 units/year. The cost of the unit thus produced is Rs 3.50 per unit. The set-up cost is Rs. 150 per set-up and the inventory carrying charge is 25 %. What is the optimum production lot size (Q*)? Assume 250 working days in the year.</td><td>CO3</td></tr>
<tr><td>Q 9</td><td>Green Grass’s plant manager just received marketing’s latest forecasts of Big Broadcaster sales for the next year. She wants its production line to be designed to make 2,400 spreaders per week for at least the next three months. The plant will operate 40 hours per week. The processes involved in making Big Broadcaster are listed in table below. Find the appropriate balanced production line and calculate balance efficiency.
<table>
<tr><th>Work Element</th><th>Description</th><th>Time (Sec)</th><th>Immediate Predecessor(s)</th></tr>
<tr><td>A</td><td>Bolt leg frame to hopper</td><td>50</td><td>None</td></tr>
<tr><td>B</td><td>Insert Impeller Shaft</td><td>30</td><td>A</td></tr>
<tr><td>C</td><td>Attach axle</td><td>50</td><td>A</td></tr>
<tr><td>D</td><td>Attach agitator</td><td>40</td><td>B</td></tr>
<tr><td>E</td><td>Attach drive wheel</td><td>6</td><td>B</td></tr>
<tr><td>F</td><td>Attach free wheel</td><td>35</td><td>C</td></tr>
<tr><td>G</td><td>Mount lower post</td><td>15</td><td>C</td></tr>
<tr><td>H</td><td>Attach Controls</td><td>20</td><td>D,E</td></tr>
<tr><td>I</td><td>Mount Nameplate</td><td>18</td><td>F,G</td></tr>
</table></td><td>CO2</td></tr>
</table>

Q 10	Student tuition at Uttaranchal University is Rs. 2000 per semester credit hour. The state supplements school revenue by Rs. 2000 per semester credit hour. Average class size for a typical 3-credit course is 50 students. Labor costs are Rs. 80,000 per class, material costs are Rs. 400 per student per class, and overhead costs are Rs. 500,000 per class. a. What is the multifactor productivity ratio for this course process? b. If instructors work an average of 14 hours per week for 16 weeks for each 3-credit class of 50 students, what is the labor productivity ratio?	CO3
Q 11	What is customer benefit package? Explain with an example.	CO4

Section C

1. Each Question carries 20 Marks.
2. Instruction: Solve any one numerical example

Q 12 — CO3

The ABC Video store wants to forecast the number of video rentals each day, based on the previous two week data given below:

Day	Week 1	Week 2	Week 3
Sunday	320	331	?
Monday	115	142	?
Tuesday	131	135	?
Wednesday	146	139	
Thursday	198	210	
Friday	313	302	
Saturday	432	420	

(a) If the linear trend line from the regression analysis for the above data is y= 187.02 + 6.8x, compute the seasonal indices.
(b) Assume the data has no cyclical pattern; forecast the number of daily rentals for the next three days of Quarter 3.

OR

The MDH Masala company has to process five items on three machines:- A, B & C. Processing times are given in the following table:

ITEM	A	B	C
1	5	5	7
2	9	5	9
3	8	3	11
4	6	4	8
5	3	6	7

(a) Find the sequence that minimizes the total elapsed time.
(b) Also find the idle time for each machines