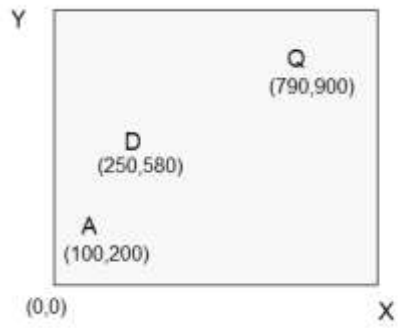
UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2021

Course: Operations Management **Semester:** I
Program: MBA (Core) **Duration:** 3 Hrs.
Course Code: LSCM7001 **Max. Marks:** 100
Instructions: Do as directed in each section.

Q.1	**Section A** **(Answer all questions)**	**20 Marks**	**COs**
(i)	What are the resources used in a service organization like a hospital?	2	CO1
(ii)	Give an example of locational transformation process.	2	
(iii)	Mention the name of two 'Quality Gurus'.	2	
(iv)	What are the expanded forms of CRP, ERP, MRP as per the discussions related to production and operations management?	2	
(v)	A company manufactures its products at a cost of $ 33000 and earns a sales revenue of $ 40831. Calculate its productivity.	2	
(vi)	Which of the following would be the "best" MAD value in an analysis of the accuracy of a forecasting model? a) 100 b) 10 c) 1 d) 0	2	
(vii)	_____ is known as the father of 'Quality Circles'.	2	
(viii)	_____ is an input to _____. [Fill in the blanks by using two words from: CRP, BOM, MRP, ERP]	2	
(ix)	Cause and Effect is another name of _____. a) Ishikawa's Fishbone chart b) Shewart's Control chart c) Gantt chart	2	
(x)	As per the value analysis concept, Value = (_____) / (_____) [Fill in the blanks]	2	
Q.2	**Section B** **(Answer all questions)**	**20 Marks**	**COs**

<table>
<tr><td>(i)</td><td>Explain the supply chain as a value chain with reference to any business of your own choice.</td><td>5</td><td>CO1</td></tr>
<tr><td>(ii)</td><td>Explain different types of productions with respect to the volume and variety handled therein.</td><td>5</td><td>CO1</td></tr>
<tr><td>(iii)</td><td>Write a short note on ‘Flexible Manufacturing System’.</td><td>5</td><td>CO1</td></tr>
<tr><td>(iv)</td><td>Define and differentiate the terms ‘delivery speed’ and ‘development speed’ with respect to a consumer durable product.</td><td>5</td><td>CO2</td></tr>
<tr><td>Q.3</td><td>Section C
(Answer all questions)</td><td>30 Marks</td><td>COs</td></tr>
<tr><td>(i)</td><td>Given the data below, what is the simple linear regression model that can be used to predict sales in future weeks?
<table><tr><th>Week</th><th>Sales</th></tr><tr><td>1</td><td>150</td></tr><tr><td>2</td><td>157</td></tr><tr><td>3</td><td>162</td></tr><tr><td>4</td><td>166</td></tr><tr><td>5</td><td>177</td></tr></table></td><td>10</td><td>CO2</td></tr>
<tr><td>(ii)</td><td>Several automobile showrooms are located according to the following grid, which represents coordinate locations for each showroom.
 

<table><tr><th>Showroom</th><th>No ofZ-Mobiles sold permonth</th></tr><tr><td>A</td><td>1250</td></tr><tr><td>D</td><td>1900</td></tr><tr><td>Q</td><td>2300</td></tr></table>
Where should be the new location for Z-Mobile for their warehouse/ temporary storage facility considering only distances and quantities sold per month?</td><td>10</td><td>CO2</td></tr>
<tr><td>(iii)</td><td>Consider the following two machines and six Job’s flow-shop scheduling problem. Obtain the optimal sequence and makespan using Johnson’s algorithm.</td><td>10</td><td>CO2</td></tr>
</table>

	<table><tr><th rowspan="2">Jobs</th><th colspan="2">Processing time</th></tr><tr><th>Machine-1</th><th>Machine-2</th></tr><tr><td>A</td><td>4</td><td>5</td></tr><tr><td>B</td><td>3</td><td>2</td></tr><tr><td>C</td><td>14</td><td>13</td></tr><tr><td>D</td><td>1</td><td>10</td></tr><tr><td>E</td><td>9</td><td>8</td></tr><tr><td>F</td><td>11</td><td>12</td></tr></table> **OR** A company has annual demand of a particular part for ten thousand pieces per year. The purchase cost per unit is two rupees and the cost of placing an order is thirty-six rupees. Carrying the inventory costs at the rate of 9% of the average inventory investment. Determine – • The economic ordering quantity. • The optimal ordering cost. • The optimal inventory carrying cost. • The optimal total inventory cost.		
Q.4	**Section D** **(Answer all questions)**	**30 Marks**	**COs**
(i)	List and explain the importance of the factors affecting the selection of a business location (manufacturing or services).	15	CO3
(ii)	A company having 7 hours production and 1 hour lunch-break, is engaged in the assembly of electric fans with the following tasks: <table><tr><th>Task</th><th>Time (Mins)</th><th>Description</th><th>Predecessors</th></tr><tr><td>A</td><td>2</td><td>Assemble frame</td><td>None</td></tr><tr><td>B</td><td>1</td><td>Mount switch</td><td>A</td></tr><tr><td>C</td><td>3.25</td><td>Assemble motor housing</td><td>None</td></tr><tr><td>D</td><td>1.2</td><td>Mount motor housing in frame</td><td>A, C</td></tr><tr><td>E</td><td>0.5</td><td>Attach blade</td><td>D</td></tr><tr><td>F</td><td>1</td><td>Assemble and attach safety grill</td><td>E</td></tr><tr><td>G</td><td>1</td><td>Attach cord</td><td>B</td></tr><tr><td>H</td><td>1.4</td><td>Test</td><td>F, G</td></tr></table> a) Using the knowledge of cycle time, what is the company's regular production capacity? b) If it receives a special order of 100 fans in a day from a client, what will be its cycle time? c) While working on the special order, the company decides to go for line balancing. What could be the improvement in efficiency due to the successful line balancing? **OR** List and describe different types of manufacturing plant layouts. Also, explain which type of layout is suitable for which type of production.	15	CO4