Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2019

Course: Operations Management **Semester: I**
Program: MBA (Oil and Gas) **Time: 03 Hours**
Course code: LSCM 7001 **Max. Marks: 100**
Instructions:

SECTION A Attempt all questions

		Marks	CO
Q 1	The minimum cycle time in line balancing is defined by the task with a. Minimum time b. Average time c. Maximum time d. None of these	2	2
Q 2	In level scheduling, what is kept uniform from month to month? a. product mix b. inventory levels c. demand levels d. production/workforce levels	2	2
Q 3	Which of the following is true regarding forward scheduling? Forward scheduling is the scheduling of a. the end items or finished products b. the start items or component parts c. the final operation first beginning with the due date d. jobs as soon as the requirements are known	2	1
Q 4	Training of workers is a. Appraisal cost b. Internal failure cost c. External failure cost d. Prevention cost	2	1
Q 5	Quality function deployment seeks to a. Build voice of customer into the design of product b. Focus on technical attributes in a process which have a bearing on customer satisfaction c. Benchmark with competition d. All of above	2	1
Q 6	This is a qualitative model of forecasting a. Regression	2	1

<table>
<tr><td></td><td>b. Exponential smoothing
c. Average
d. Delphi</td><td></td><td></td></tr>
<tr><td>Q 7</td><td>Inventory classification on the basis of importance is
a. ABC
b. VED
c. FSN
d. None of these</td><td>2</td><td>1</td></tr>
<tr><td>Q 8</td><td>A line is designed for producing 300 components in a day and works with 80% efficiency. If it requires a total of 10 workers in a day (each day of 8 hours), the line's labour productivity is
a. 5 units per man day
b. 8 units per man day
c. 3 units per man day
d. 6 units per man day</td><td>2</td><td>1</td></tr>
<tr><td>Q 9</td><td>The ratio output / input denotes
a. Efficiency
b. Productivity
c. Production rate
d. None of above</td><td>2</td><td>1</td></tr>
<tr><td>Q 10</td><td>This is a pure planning strategy for varying demand
a. Vary number of employees
b. Vary work force utilization
c. Vary size of inventory
d. All of above</td><td>2</td><td>1</td></tr>
<tr><td colspan="4">SECTION B (Attempt any 4 questions)</td></tr>
<tr><td>Q 1</td><td>Differentiate between QR and Periodic systems of inventory control.</td><td>5</td><td>1</td></tr>
<tr><td>Q2</td><td>Write short notes on
a. VED analysis
b. Product layout</td><td>5</td><td>2</td></tr>
<tr><td>Q3</td><td>The demand for a product is as below
<table><tr><td>Month</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>Demand</td><td>270</td><td>310</td><td>320</td><td>350</td><td>365</td></tr></table>Forecast for the month 6, using suitable tool</td><td>5</td><td>3</td></tr>
<tr><td>Q4</td><td>The suitable location of a cement plant is being identified. The prospective plant would receive raw materials from three lime stone mines. The coordinates and expected load transfer from the three mines M1, M2 and M3 are as under.</td><td>5</td><td>3</td></tr>
</table>

	<table><tr><th>Mine</th><th>Coordinates</th><th>Load</th><th>Transportation cost per unit load per unit distance</th></tr><tr><td>M1</td><td>20,10</td><td>22</td><td>10</td></tr><tr><td>M2</td><td>10,40</td><td>43</td><td>10</td></tr><tr><td>M3</td><td>40,20</td><td>36</td><td>10</td></tr></table> Use median model to find suitable coordinates for the new location. Also calculate the total transportation cost for your solution.		
Q5	Differentiate between level output plan and chase plan. Which plan would be preferable if a. Cost of inventory holding is very high b. Cost of production rate change is very high	**5**	**2**
SECTION-C Attempt any 3 questions			
Q 1	1. Following is the data for time study of a task involving 4 elements. The data has been collected for 5 cycles. <table><tr><th rowspan="2">Element</th><th colspan="5">Minutes per cycle</th><th rowspan="2">Performance rating</th></tr><tr><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td>A</td><td>1.47</td><td>1.48</td><td>1.52</td><td>1.59</td><td>1.49</td><td>100%</td></tr><tr><td>B</td><td>2.62</td><td>2.59</td><td>2.55</td><td>2.63</td><td>2.57</td><td>90%</td></tr><tr><td>C</td><td>1.83</td><td>1.89</td><td>1.77</td><td>1.81</td><td>1.85</td><td>95%</td></tr><tr><td>D</td><td>1.25</td><td>1.25</td><td>1.20</td><td>1.29</td><td>1.30</td><td>115%</td></tr></table>	**10**	**3**

<table>
<tr><td></td><td>Calculate the standard time for the task if the permissible allowance is 25% on normal time.</td><td></td><td></td></tr>
<tr><td>Q2</td><td>Potential locations for a production plant are as follows

<table><tr><th>Location</th><th>Fixed cost per year (Rs)</th><th>Variable cost per unit (Rs)</th></tr><tr><td>A</td><td>1,50,000</td><td>75</td></tr><tr><td>B</td><td>2,00,000</td><td>50</td></tr><tr><td>C</td><td>4,00,000</td><td>25</td></tr></table>
Find the most economical location for an expected volume of 6000 units. The product sells at Rs. 130 per unit</td><td>10</td><td>3</td></tr>
<tr><td>Q3</td><td>Explain the application of 7 QC tools in managing operations quality.</td><td>10</td><td>2</td></tr>
<tr><td>Q 4</td><td>What are the elements of a good forecast?
Following is the data of actual and forecasted demand.

<table><tr><th>Period</th><th>Forecast</th><th>Actual demand</th></tr><tr><td>1</td><td>170</td><td>155</td></tr><tr><td>2</td><td>140</td><td>160</td></tr><tr><td>3</td><td>165</td><td>130</td></tr><tr><td>4</td><td>170</td><td>185</td></tr><tr><td>5</td><td>180</td><td>170</td></tr><tr><td>6</td><td>155</td><td>125</td></tr></table>
Comment on the suitability of the forecasting technique being used.</td><td>10</td><td>3</td></tr>
<tr><td>Q 5</td><td>What are the components and limitations of MRP?</td><td>10</td><td>4</td></tr>
</table>

	Beginning inventory 23 lot size 25 Complete the MPS		

Beginning inventory 23 lot size 25						
Period	1	2	3	4	5	6
Forecast	10	10	10	10	20	20
Booked orders	13	5	3	1		
On hand inventory						
MPS quantity						
MPS start						

SECTION-D

Following are the quarterly demand data from the past 4 years

Quarter	**Year1**	**Year2**	**Year3**	**Year4**
1	45	70	100	100
2	335	370	585	725
3	520	590	830	1160
4	100	170	285	215
Total	1000	1200	1800	2200

Q1	Calculate the average seasonal index for all quarters	**15**	**5**
Q2	Forecast the demand for each quarter of year 5	**15**	**5**