

<b>Name:</b>	 <b>UPES</b> UNIVERSITY WITH A PURPOSE
<b>Enrolment No:</b>	

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

<b>Course:</b> Logistics & Supply Chain Management	<b>Semester:</b> III
<b>Program:</b> BBA_LM	<b>Time:</b> 03 Hours
<b>Course code:</b> LSCM 2002	<b>Max. Marks:</b> 100

**Instructions:** Answer the required number of questions as instructed in respective sections.

**SECTION A**

		Marks	CO
Q 1	Answer all questions. Overwriting is not permissible.	<b>20</b>	
(i)	_____ is the cheapest mode of transportation.	<b>1</b>	<b>1</b>
(ii)	Procurement cycle connects _____ and _____ interfaces of the supply chain?	<b>2</b>	<b>1</b>
(iii)	SCOR model is popularly referred by supply chains. What does SCOR stand for?	<b>1</b>	<b>1</b>
(iv)	Oxidizing substances are treated as dangerous goods. [True/ False]	<b>1</b>	<b>1</b>
(v)	Mention two cross-functional drivers of the supply chain.	<b>2</b>	<b>1</b>
(vi)	Flow of material and money have same direction in a supply chain. [True/ False]	<b>1</b>	<b>1</b>
(vii)	The expanded form of SRM is _____.	<b>1</b>	<b>1</b>
(viii)	The expanded form of CRM is _____.	<b>1</b>	<b>1</b>
(ix)	Supply chains express the inventory turnover in _____. [ <u>days/months</u> , <u>number/fraction</u> ] [Select the right answer]	<b>1</b>	<b>1</b>
(x)	Transit time variability is one of the criteria for the choice of transportation mode. [True/ Fale]	<b>1</b>	<b>1</b>
(xi)	$SWC = INV + AR - AP$ . What does SWC stand for _____.	<b>1</b>	<b>1</b>
(xii)	When you print posters of the players and maintain the stock to sell in a 20-20 cricket match in your city, the type of inventory is <u>seasonal/ fluctuation/ anticipation</u> . [Select the right answer.]	<b>1</b>	<b>1</b>
(xiii)	Decentralized inventory practice is suitable for <u>slow/ fast</u> moving goods. [Select the right answer.]	<b>1</b>	<b>1</b>
(xiv)	Putaway is done after receiving the goods in a warehouse. [True/ False]	<b>1</b>	<b>1</b>
(xv)	In mass production, takt time is equal to the cycle time. [True/ False]	<b>1</b>	<b>1</b>
(xvi)	In batch production, the takt time is the <u>average/ sum</u> of part cycle times. [Select the right answer.]	<b>1</b>	<b>1</b>
(xvii)	Sweep method is used for _____. [route selection/ network design]	<b>1</b>	<b>1</b>
(xviii)	NVOCC stands for _____.	<b>1</b>	<b>1</b>

**SECTION B**

Q 2	Answer any <u>four</u> questions.	<b>20</b>	
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(i)	List and explain the principles of material handling.	5	2																																																																				
(ii)	Explain the procedure of selecting a site for warehouse.	5	2																																																																				
(iii)	Draw the standard layout of a warehouse showing in it the operation-areas like – Goods Receipt; Cycle Counting; Unloading; Order Processing; Putaway; Picking; Replenishment; Goods Issue; Packing; Loading etc.	5	2																																																																				
(iv)	In a warehouse packing unit, a single stage sealing machines is used to seal and return the lot to the loading area for issuing them to the customer’s truck. The employees have one hour lunch break and the company has 8 effective hours of work in a day. If the customer wants to carry 80 packets in every truck. This work is done by a machinist in 6 minutes, assisted by a person to load the strips every 15 minutes on the machines. Estimate the scope for parallel processing. Calculate the takt time?	5	3																																																																				
(v)	The total transportation cost of a particular company includes the components like – shipping cost; transit inventory cost; plant inventory cost; warehousing cost. Three modes are open to the firm. In the railways the costs are respectively, ₹7000, ₹63000, ₹90000, ₹90000; in roadways the costs are respectively, ₹14000, ₹8000, ₹38000, ₹38000; and in airways the costs are respectively, ₹98000, ₹3000, ₹18000, ₹19000. Compare all the modes and decide the preferred mode of transport.	5	3																																																																				
(vi)	Below given are the table of transportation costs (between factory and customer locations) and the table of load allocation (w.r.t. customer demand and factory capacity). Value of ‘0’ indicates no allocation. As a logistics manager, you need to decides the values and do an optimal allocation in the second table. Finally calculate the total cost of shipment.	5	3																																																																				
	<table border="1"> <thead> <tr> <th></th> <th>Customer 1</th> <th>Customer 2</th> <th>Customer 3</th> <th>Customer 4</th> <th>Customer 5</th> </tr> </thead> <tbody> <tr> <td>Factory 1</td> <td>\$1.75</td> <td>\$2.25</td> <td>\$1.50</td> <td>\$2.00</td> <td>\$1.50</td> </tr> <tr> <td>Factory 2</td> <td>\$2.00</td> <td>\$2.50</td> <td>\$2.50</td> <td>\$1.50</td> <td>\$1.00</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="8"><i>Number of products shipped</i></th> </tr> <tr> <th></th> <th>Customer 1</th> <th>Customer 2</th> <th>Customer 3</th> <th>Customer 4</th> <th>Customer 5</th> <th>Total</th> <th>Capacity</th> </tr> </thead> <tbody> <tr> <td>Factory 1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>90,000</td> </tr> <tr> <td>Factory 2</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>90,000</td> </tr> <tr> <td>Total</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>Demand</td> <td>40,000</td> <td>33,000</td> <td>25,000</td> <td>42,000</td> <td>26,000</td> <td></td> <td></td> </tr> </tbody> </table> <table border="1"> <tr> <td><i>Total cost of shipping</i></td> <td>\$0</td> </tr> </table>		Customer 1	Customer 2	Customer 3	Customer 4	Customer 5	Factory 1	\$1.75	\$2.25	\$1.50	\$2.00	\$1.50	Factory 2	\$2.00	\$2.50	\$2.50	\$1.50	\$1.00	<i>Number of products shipped</i>									Customer 1	Customer 2	Customer 3	Customer 4	Customer 5	Total	Capacity	Factory 1	0	0	0	0	0	0	90,000	Factory 2	0	0	0	0	0	0	90,000	Total	0	0	0	0	0			Demand	40,000	33,000	25,000	42,000	26,000			<i>Total cost of shipping</i>	\$0		
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**SECTION-C**

Q 3	Answer any <u>three</u> questions.	30	
(i)	Explain the role of each driver towards the performance of a supply chain.	10	4
(ii)	Explain the role of technology in a supply chain. Justify it further as an enabler.	10	4
(iii)	Explain impact of Order Delivery Time, Responsiveness, Delivery Reliability, and Product Variety on customer service.	10	4
(iv)	Explain in detail, the procedure of benchmarking a supply chain.	10	4
(v)	Write short notes on <u>any two</u> of the following – <ul style="list-style-type: none"> <li>• Warehouse Operations Check Sheet</li> <li>• Bill of Lading</li> </ul>	10	4

- Stack Card

**SECTION-D**

Q 4 Following data is given for a company's 'Production Transportation' in 2-stage-transport, for multi-commodity handling situation. **30**

*Cost to make products*

	Product 1	Product 2	Product 3	
Factory 1	\$4	\$5	\$3	
Factory 2	\$2	\$8	\$6	
	Product 1	Product 2	Product 3	Cost
Factory 1	0	0	0	\$0
Factory 2	0	0	0	\$0
	<b>Total Cost</b>			\$0

*Cost of shipping (\$ per product)*

		<i>Destinations</i>				
		Warehouse 1	Warehouse 2	Warehouse 3	Warehouse 4	
Factory 1	Product 1	\$0.50	\$0.50	\$1.00	\$0.20	
	Product 2	\$1.00	\$0.75	\$1.25	\$1.25	
	Product 3	\$0.75	\$1.25	\$1.00	\$0.80	
Factory 2	Product 1	\$1.50	\$0.30	\$0.50	\$0.20	
	Product 2	\$1.25	\$0.80	\$1.00	\$0.75	
	Product 3	\$1.40	\$0.90	\$0.95	\$1.10	
Factory 1		Customer 1	Customer 2	Customer 3	Customer 4	Customer 5
	Product 1	\$2.75	\$3.50	\$2.50	\$3.00	\$2.50
	Product 2	\$2.50	\$3.00	\$2.00	\$2.75	\$2.60
Factory 2	Product 3	\$2.90	\$3.00	\$2.25	\$2.80	\$2.35
	Product 1	\$3.00	\$3.50	\$3.50	\$2.50	\$2.00
	Product 2	\$2.25	\$2.95	\$2.20	\$2.50	\$2.10
Factory 2	Product 3	\$2.45	\$2.75	\$2.35	\$2.85	\$2.45
		Customer 1	Customer 2	Customer 3	Customer 4	Customer 5
	Warehouse 1	Product 1	\$1.50	\$0.80	\$0.50	\$1.50
Warehouse 1	Product 2	\$1.00	\$0.90	\$1.20	\$1.30	\$2.10
	Product 3	\$1.25	\$0.70	\$1.10	\$0.80	\$1.60
	Warehouse 2	Product 1	\$1.00	\$0.50	\$0.50	\$1.00
Warehouse 2	Product 2	\$1.25	\$1.00	\$1.00	\$0.90	\$1.50
	Product 3	\$1.10	\$1.10	\$0.90	\$1.40	\$1.75
	Warehouse 3	Product 1	\$1.00	\$1.50	\$2.00	\$2.00
Warehouse 3	Product 2	\$0.90	\$1.35	\$1.45	\$1.80	\$1.00
	Product 3	\$1.25	\$1.20	\$1.75	\$1.70	\$0.85
	Warehouse 4	Product 1	\$2.50	\$1.50	\$0.60	\$1.50
Warehouse 4	Product 2	\$1.75	\$1.30	\$0.70	\$1.25	\$1.10
	Product 3	\$1.50	\$1.10	\$1.50	\$1.10	\$0.90

5  
5  
5  
15

3, 5

Draw the tables as given below and allocate such that it 'Minimizes the costs of producing 3 goods, and shipping them from factories to warehouses and customers; and warehouses to customers; while not exceeding the supply available from factories or the capacity of warehouses, while meeting the demand of each customer.

		Warehouse 1	Warehouse 2	Warehouse 3	Warehouse 4	Total
Factory 1	Product 1	0	0	0	0	0
	Product 2	0	0	0	0	0
	Product 3	0	0	0	0	0
Factory 2	Product 1	0	0	0	0	0

	Product 2	0	0	0	0	0		
	Product 3	0	0	0	0	0		
Total	Product 1	0	0	0	0			
	Product 2	0	0	0	0			
	Product 3	0	0	0	0			
Capacity	Product 1	35,000	20,000	30,000	15,000			
	Product 2	30,000	25,000	15,000	24,000			
	Product 3	20,000	20,000	25,000	20,000			
		Customer 1	Customer 2	Customer 3	Customer 4	Customer 5	Total	
Factory 1	Product 1	0	0	0	0	0	0	
	Product 2	0	0	0	0	0	0	
	Product 3	0	0	0	0	0	0	
Factory 2	Product 1	0	0	0	0	0	0	
	Product 2	0	0	0	0	0	0	
	Product 3	0	0	0	0	0	0	
							Capacity	
	Total products shipped out of factory 1				Product 1	0	0	
					Product 2	0	0	
					Product 3	0	0	
	Total products shipped out of factory 2				Product 1	0	0	
					Product 2	0	0	
					Product 3	0	0	
		Customer 1	Customer 2	Customer 3	Customer 4	Customer 5	Total	
Warehouse 1	Product 1	0	0	0	0	0	0	
	Product 2	0	0	0	0	0	0	
	Product 3	0	0	0	0	0	0	
Warehouse 2	Product 1	0	0	0	0	0	0	
	Product 2	0	0	0	0	0	0	
	Product 3	0	0	0	0	0	0	
Warehouse 3	Product 1	0	0	0	0	0	0	
	Product 2	0	0	0	0	0	0	
	Product 3	0	0	0	0	0	0	
Warehouse 4	Product 1	0	0	0	0	0	0	
	Product 2	0	0	0	0	0	0	
	Product 3	0	0	0	0	0	0	
Total	Product 1	0	0	0	0	0		
	Product 2	0	0	0	0	0		
	Product 3	0	0	0	0	0		
Demands	Product 1	30,000	23,000	15,000	32,000	16,000		
	Product 2	20,000	15,000	22,000	12,000	18,000		
	Product 3	25,000	22,000	16,000	20,000	25,000		
	<b>Total cost of shipping</b>						\$0	
	<b>Total cost of production</b>						\$0	
	<b>Total Cost</b>						\$0	