

Name:
Enrollment No:



UNIVERSITY OF PETROLEUM & ENERGY STUDIES
End Semester Examination (Online) – Dec., 2020

Course: Supply Chain and Logistics for Aviation
Program: MBA AVM
Course Code: LSCM 8015P

Semester : III
Time : 3 Hours
Max. Marks : 100

Section A

1. Attempt all the questions. Each question carries 5 marks.
2. Instruction: Complete the statement / Select the correct answer(s)

| S.No. | Question | Marks | COs |
|-------|--|-------|-----|
| Q.1. | Fill in the blanks for the following questions. First supply chain revolution occurred in by....., and second revolution by Toyota in 1960-70, third revolution byin And Disruptive supply chain in..... | 5 | CO1 |
| Q.2. | OTIF means.....and is one of thein case of distribution. | 5 | CO1 |
| Q.3. | 4 R's of Supply Chain are a).....b)..... c).....d)..... | 5 | CO1 |
| Q.4 | Mention any two applications of Artificial Intelligence in airlines a) b) | 5 | CO2 |
| Q.5 | Discuss any three assumptions and significance of backorder cost. | 5 | CO2 |

| Q.6 | Determine the initial basic feasible of the following Transportation Problem by using North West Corner Method (NWCM). <div style="text-align: center;">Destination</div> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Source</th> <th>E</th> <th>F</th> <th>G</th> <th>H</th> <th>Supply</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1</td> <td>5</td> <td>3</td> <td>3</td> <td>34</td> </tr> <tr> <td>B</td> <td>3</td> <td>3</td> <td>1</td> <td>2</td> <td>15</td> </tr> <tr> <td>C</td> <td>0</td> <td>2</td> <td>2</td> <td>3</td> <td>12</td> </tr> <tr> <td>D</td> <td>2</td> <td>7</td> <td>2</td> <td>4</td> <td>19</td> </tr> <tr> <td>Demand</td> <td>21</td> <td>25</td> <td>17</td> <td>17</td> <td>80</td> </tr> </tbody> </table> <p style="text-align: center;">OR</p> Discuss applications of Transportation Models logistics/aviation industry. | Source | E | F | G | H | Supply | A | 1 | 5 | 3 | 3 | 34 | B | 3 | 3 | 1 | 2 | 15 | C | 0 | 2 | 2 | 3 | 12 | D | 2 | 7 | 2 | 4 | 19 | Demand | 21 | 25 | 17 | 17 | 80 | 5 | CO2 |
|--------------|--|--------------|------------|----|----|--------|--------|---|---|---|---|---|----|---|---|---|---|---|----|---|---|---|---|---|----|---|---|---|---|---|----|--------|----|----|----|----|----|---|-----|
| | Source | E | F | G | H | Supply | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 1 | 5 | 3 | 3 | 34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 3 | 3 | 1 | 2 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 0 | 2 | 2 | 3 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | 2 | 7 | 2 | 4 | 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Demand | 21 | 25 | 17 | 17 | 80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S.No. | Section B Attempt all the questions. Each carries 10 marks. | Marks | COs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.7 | Discuss the significance of Facility Location driver. Discuss the factors affecting the location decision of an international airport in India. | 10 | CO1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.8 | Discuss the IoT applications in airport operations. Support your answer with real life examples from aviation industry. | 10 | CO2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.9 | a) Annual Demand for a component used in manufacturing mobile handset is 800 units and ordering cost is Rs. 1000 per order and storage cost per unit is 20% of the unit price. Purchase cost per unit of the component is Rs.96. Determine EOQ. b) Describe various costs associated with inventory. | 10 | CO2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.10 | Briefly discuss the significance of 'route planning' in aviation sector. How IT applications are contributing to revenue maximization through route planning and network designing post COVID 19? Illustrate with some live examples. | 10 | CO3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.11 | How AI and ML are contributing to the innovations and productivity of aviation sector? What sustainable and innovative strategies aviation companies are practicing for improving the efficiency of supply chain? Support your answer with live examples form aviation sector. | 10 | CO3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S.No. | Section C Each question carries 20 marks Instruction: Write long answer. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.12 | Attempt the following case: Lufthansa Cargo is the service provider for the logistics business in the Lufthansa Group. Its operating hubs are located in Frankfurt, Munich, Leipzig-Halle and Vienna and it serves a global network of 300 destinations worldwide. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | |
|--|---|----|-----|
| | <p>The company has 18 Boeing MD-11 freighters of its own, each with a maximum capacity of 534 cu m. This is supplemented by the freight capacities of the Lufthansa and Austrian Airlines passenger fleets as well as the equity investment AeroLogic. The shareholders of AeroLogic GmbH are Lufthansa Cargo and DHL Express, which each hold 50%. The two companies are the sole users of the capacities of the eight Boeing 777F freighters, with Lufthansa Cargo mostly using capacity weekends. The freight capacities of Lufthansa subsidiary SWISS and stake Brussels Airlines are not marketed directly by Lufthansa Cargo, but the group nevertheless enjoys a close partnership with the freight divisions of these airlines.</p> <p>Lufthansa Cargo also has further airline cooperation agreements with SAS Cargo, Singapore Airlines Cargo, Japan Airlines Cargo, Air China Cargo, Eva Air Cargo, Lan Cargo and South African Airways Cargo. The composition of Lufthansa's logistics capacity is around 50% freight on passenger aircraft, 40% on Lufthansa Cargo freighters, and around 10% on chartered freighters or on aircraft belonging to joint ventures. Lufthansa Cargo's 2020 strategy identifies six key points that are necessary for the company to achieve profitable growth in the years ahead:</p> <p>Fleet Development: In 2011, Lufthansa Cargo ordered five new Boeing 777 freighters which were planned to be delivered between 2013 and 2015. The order would cover anticipated growth and their fuel efficiency would deliver cost advantages.</p> <p>Modernization of IT: Replacement of the old IT system to bring the new network up to industry standards.</p> <p>Frankfurt Cargo Hub: The development of a new logistics Centre in Frankfurt to replace Lufthansa Cargo's existing 30 year-old facility.</p> <p>E-Cargo : The exchange of information between Lufthansa Cargo and customers would become increasingly digitalized, reducing costs.</p> <p>Quality/Lean Logistics: Lufthansa Cargo aimed to use more lean management methods. This philosophy had already been established at stations in Dusseldorf, Johannesburg and New York where productivity was increased substantially.</p> <p>Cooperation: Lufthansa Cargo wanted to arrange more agreements with airline partners, giving the company access on strategically attractive traffic flows. Agreements would also extend the range of products on offer to customers.</p> <p>Lufthansa Cargo CEO Karl Ulrich Garnadt summed up the 2020 strategy in a nutshell. "With the 'Lufthansa Cargo 2020' programme launched in year (2011), the company has clearly defined its long-term strategy, explained</p> | 20 | CO4 |
|--|---|----|-----|

the Chairman. With orders for new Boeing 777 freighters, the upgrading of the IT platform, plans for a new logistics center in Frankfurt to replace the existing 30 year-old facility as well as other long-term projects, the key markers are in place to ensure that the company remains industry leader also in 2020."

Attempt the following questions:

a) Discuss the supply chain strategy practiced by Lufthansa Cargo?

b) Discuss the significance of CPFR (Collaborative Planning, Forecasting and Replenishment) and IT applications in increasing the cargo volume by air cargo companies/Lufthansa Cargo?