**JAIPURIA INSTITUTE OF MANAGEMENT, INDORE**

**PGDM, SECOND TRIMESTER (Batch 2021 - 2023)**

**END TERM (Improvement) EXAMINATION, March - 2022**

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| --- | --- | --- | --- |
| Course Name | **Operations Management** | Course Code | **40502** |
| Max. Time | **2 hours** | Max. Marks | **40** |

**INSTRUCTIONS:**

Students can use MS Excel Solver to answer question No. 5. However, following instructions MUST be followed for Q. 5

* Mathematical model of LPP must be written in the answer sheet in physical form.
* Solution generated on Excel Must be stored in MS Excel file with student’s name as file name and file must be submitted to exam invigilator before leaving examination hall.
* Analysis of Solver output solution Must be done in physical (pen & Paper form) in the answer sheet.

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**Q1.** Explain Seven QC tools available to an Operations Manager with one example of each technique. **(7 Marks)**

**Q2.** Explain following selective inventory control techniques with one example of each technique.

1. ABC analysis
2. VED analysis
3. FSN analysis
4. GOLF analysis

 **(4 X 2 = 8 Marks)**

**Q3.** Goldie Spices has five markets. The coordinates of market and their annual demand for spices is as under. The cost of transportation is Rs 250 per MT per unit distance.

|  |  |  |  |
| --- | --- | --- | --- |
| **Market** | **X coordinate** | **Y coordinate** | **Annual Demand ( MT)** |
| A | 250 | 700 | 1500 |
| B | 550 | 120 | 2800 |
| C | 700 | 650 | 2200 |
| D | 350 | 470 | 3000 |
| E | 110 | 120 | 1500 |

Apply Operations Management concepts, use center of gravity method and suggest best location for manufacturing facility to minimize total transportation cost. **(8 Marks)**

**Q4.** “Bridal Attire” ” is a chain of traditional Indian wedding attire which offers Bridal costumes to its customers. The process steps for making four items is as under :-

|  |  |  |
| --- | --- | --- |
| **Item** | **Processing Sequence (Departments)** | **Monthly Quantity (Units)** |
| Saree | 1 – 3- 5 – 6 - 8 | 2500 |
| Blouse | 1 – 2 – 5 – 6 - 7 | 3000 |
| Lehenga | 2 – 3 – 4 – 6 – 8  | 3500 |
| Chunari | 3 – 5 – 6 – 7 – 8  | 4500 |

The company wish to modify its current manufacturing facility. Two alternate layouts are proposed. (Each section is 10 x 10 meters).

|  |  |  |
| --- | --- | --- |
| **Layout A** |  | **Layout B** |
| **1** | **4** | **3** | **5** |  | **3** | **4** | **5** | **8** |
| **6** | **7** | **8** | **2** |  | **1** | **2** | **7** | **6** |

Apply Operations Management concepts and suggest the better Layout. **(7 Marks)**

**Q5.** A small motor manufacturer makes two types of motor, models A and B. The assembly process for each is similar in that both require a certain amount of wiring, drilling, and assembly. Each model A takes 3 hours of wiring, 2 hours of drilling, and 1.5 hours of assembly. Each model B must go through 2 hours of wiring, 1 hour of drilling, and 0.5 hours of assembly. During the next production period, 240 hours of wiring time, 210 hours of drilling time, and 120 hours of assembly time are available. Each model A sold yields a profit of $22. Each model B can be sold for a $15 profit. Assuming that all motors that are assembled can be sold, find the best combination of motors to yield the highest profit.

1. Formulate the problem to find the best combination of motors to yield the highest profit as an LP model.
2. Find the graphical solution for the model.
3. Solve the problem using Excel.

 **(2 + 4 + 4 = 10 Marks)**