**JAIPURIA INSTITUTE OF MANAGEMENT, INDORE**

**PGDM, FIFTH TRIMESTER (Batch 2020-22)**

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

|  |  |  |  |
| --- | --- | --- | --- |
| Course Name | **Materials and Inventory Management** | Course Code | **40524** |
| Max. Time | **2 hours** | Max. Marks | **40** |

**INSTRUCTIONS:**

Students can use MS Excel to answer questions. However, following instructions MUST be followed.

* Solution generated on Excel must be stored in MS Excel file with student name as file name and file must be submitted to exam invigilator before leaving examination hall.
* Analysis of output solution must be done in physical (pen & paper form) in the answer sheet.

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Q1. Indo -German textiles manufactures Denim cloth which is used for making Jeans pants. The demand forecast and other data is presented below. There is NO opening Inventory. The available work force as on 01 January is 30 workers. (Make all other assumption deemed necessary). Three Materials and Inventory Management plans are proposed.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | **January** | **February** | **March** | **April** | **May** | **June** |
| Demand Forecast | 1200 | 1500 | 2300 | 3100 | 2700 | 2200 |
| No. of Working Days (@8 hours per day) | 23 | 19 | 23 | 20 | 22 | 23 |

|  |  |
| --- | --- |
|  | **Cost (Rs.)** |
| Material cost  | 500/unit |
| Inventory carrying cost  | 20/unit/month |
| Marginal Stock out cost  | 500/unit/month |
| Subcontracting cost (Including Material cost) | 700/unit/month |
| Hiring and training cost  | 2500/worker |
| Layoff cost | 4000/worker |
| Labor hour requirement | 2/unit |
| Normal Labor hour cost (Regular Hours) | 450/hour |
| Over time cost | 750/hour |

1. Produce as per exact monthly requirement and vary the workforce
2. Maintain constant workforce to meet average demand and allow inventory to manage fluctuations in demand. Make adjustments in the first month for required labor force.
3. Produce at a constant workforce to meet average demand with Overtime and Idle Time for excess or less demand. Make adjustments in the first month for required labor force.

Compare all the four plans and suggest the best plan. (CLO 1)**(3 x 4 = 12 Marks)**

Q2. Write short notes on following:-

1. E - Procurement benefits and limitations in B2C retail sector.
2. Circular economy practices followed in Pharmaceutical sector.

(CLO 2)**(5 x 2 = 10 Marks)**

Q3. Farm First is a dealer for a Farm equipment manufacturing company. The dealer has round 50 major spare parts items for repairs of tractors. The details are as under :-

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Part Code** | **Unit Cost (Rs)** | **Annual usage units** |  | **Part Code** | **Unit Cost (Rs)** | **Annual usage units** |
| FT 001 | 500 | 53 |   | FT 026 | 576 | 20 |
| FT 002 | 1703 | 68 |   | FT 027 | 840 | 29 |
| FT 003 | 1599 | 10 |   | FT 028 | 390 | 40 |
| FT 004 | 234 | 20 |   | FT 029 | 408 | 30 |
| FT 005 | 268 | 200 |   | FT 030 | 570 | 60 |
| FT 006 | 675 | 256 |   | FT 031 | 740 | 30 |
| FT 007 | 145 | 210 |   | FT 032 | 890 | 45 |
| FT 008 | 790 | 100 |   | FT 033 | 920 | 57 |
| FT 009 | 897 | 1000 |   | FT 034 | 1002 | 200 |
| FT 010 | 245 | 2809 |   | FT 035 | 1400 | 1200 |
| FT 011 | 253 | 2000 |   | FT 036 | 1902 | 30 |
| FT 012 | 1098 | 209 |   | FT 037 | 1099 | 20 |
| FT 013 | 2099 | 2300 |   | FT 038 | 1200 | 20 |
| FT 014 | 123 | 109 |   | FT 039 | 879 | 30 |
| FT 015 | 199 | 120 |   | FT 040 | 1280 | 50 |
| FT 016 | 2201 | 100 |   | FT 041 | 293 | 39 |
| FT 017 | 242 | 25 |   | FT 042 | 1098 | 80 |
| FT 018 | 583 | 27 |   | FT 043 | 120 | 23 |
| FT 019 | 981 | 109 |   | FT 044 | 1299 | 80 |
| FT 020 | 980 | 20 |   | FT 045 | 300 | 23 |
| FT 021 | 2582 | 1220 |   | FT 046 | 2039 | 39 |
| FT 022 | 2302 | 1432 |   | FT 047 | 2340 | 40 |
| FT 023 | 431 | 23 |   | FT 048 | 2099 | 200 |
| FT 024 | 871 | 20 |   | FT 049 | 568 | 38 |
| FT 025 | 970 | 30 |   | FT 050 | 230 | 20 |

Apply selective inventory control technique and suggest appropriate inventory management practice.

 *(CLO1)* **(8 Marks)**

Q4. An automobile company has three suppliers for a critical engine component. Their performance details (Avg. for last twelve months) on a Five point scale (5=Best, 1=Worst) and weightages are presented below:-

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Vendor Performance Parameter** | **Weightage** | **Supplier A** | **Supplier B** | **Supplier C** |
| On time Delivery | 10 % | 4.25 | 3.89 | 3.42 |
| Response time | 10 % | 3.01 | 3.89 | 4.01 |
| Quality | 25 % | 4.21 | 4.01 | 3.20 |
| Flexibility | 10 % | 2.30 | 3.40 | 4.20 |
| Quantity Precision | 15 %  | 3.25 | 4.25 | 4.00 |
| Service performance | 15 %  | 4.21 | 3.98 | 3.70 |
| Use of advance technology |  5 % | 3.21 | 3.50 | 3.80 |
| Willingness to participate in NPD | 10 %  | 4.00 | 3.20 | 2.90 |

Evaluate these vendors and suggest appropriate material allocation. *(CLO3)* **(10 Marks)**