|  |  |  |  |
| --- | --- | --- | --- |
| Daily Demand | Probability | Cumulative Probability | Random Number Interval |
| 0 | 0.05 | 0.05 | 00-04 |
| 1 | 0.10 | 0.15 | 05-14 |
| 2 | 0.30 | 0.45 | 15-44 |
| 3 | 0.45 | 0.90 | 45-89 |
| 4 | 0.10 | 1.00 | 90-99 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Random Number | Daily Demand | Closing Stock In hand | Receipt | O.S in Hand | Stock on Order | Order quantity | Closing Stock |
| 89 | 3 | 8 | ---- | 8-3=5 | 6 | ----- | 5 |
| 34 | 2 | 5 | 6 | 11-2=9 | --- | ----- | 9 |
| 78 | 3 | 9 | ---- | 9-3=6 | ----- | 5 | 6 |
| 63 | 3 | 6 | ---- | 6-3=3 | 5 | ---- | 3 |
| 61 | 3 | 3 | ---- | 3-3=0 | 5 | 5 | 0 |
| 81 | 3 | 0 | 5 | 5-3=2 | 5 | 5 | 2 |
| 39 | 2 | 2 | ---- | 2-2=0 | 10 | ---- | 0 |
| 16 | 2 | 0 | 5 | 5-2=3 | 5 | ----- | 3 |
| 13 | 1 | 3 | 5 | 8-1=7 | --- | 5 | 7 |
| 73 | 3 | 7 | --- | 7-3=4 | 5 | --- | 4 |

Total inventory cost = Total ordering cost + Total inventory carrying cost

= 10\*4+39\*0.5= 40+19.5=59.5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Category of Service | Service Time required | Probability | Cumulative probability | Random Number |
| Filling | 45 | 0.40 | 0.40 | 00-39 |
| Crown | 60 | 0.15 | 0.55 | 40-54 |
| Cleaning | 15 | 0.15 | 0.70 | 55-69 |
| Extraction | 45 | 0.10 | 0.80 | 70-79 |
| Check Up | 15 | 0.20 | 1.00 | 80-99 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Patient Number | Scheduled Arrival | Random Number | Category of Service | Service Time |
| 1 | 8.00 | 40 | Crown | 60 |
| 2 | 8.30 | 82 | Check Up | 15 |
| 3 | 9.00 | 11 | Filling | 45 |
| 4 | 9.30 | 34 | Filling | 45 |
| 5 | 10.00 | 25 | Filling | 45 |
| 6 | 10.30 | 66 | Cleaning | 15 |
| 7 | 11.00 | 17 | Filling | 45 |
| 8 | 11.30 | 79 | Extraction | 45 |

|  |  |  |  |
| --- | --- | --- | --- |
| Time | Event (Patient Number) | Patient Number (Time to exit) | Waiting (Patient Number) |
| 8.00 | 1 arrive | 1(60) | ---- |
| 8.30 | 2 arrive | 1(30) | 2 |
| 9.00 | 1 departs, 3 arrives | 2(15) | 3 |
| 9.15 | 2 departs | 3(45) | --- |
| 9.30 | 4 arrives | 3 (30) | 4 |
| 10 | 3 departs, 5 arrives | 4(45) | 5 |
| 10.30 | 6 arrives | 4 (15) | 5.6 |
| 10.45 | 4 departs | 5(45) | 6 |
| 11 | 7 arrives | 5(30) | 6,7 |
| 11.30 | 5 departs, 8 arrives | 6(15) | 7,8 |
| 11.45 | 6 departs | 7(45) | 8 |
| 12.00 | ….. | 7(30) | 8 |

Waiting time for the patients

|  |  |  |  |
| --- | --- | --- | --- |
| Patient | Arrival time | Service Starts at | Waiting time |
| 1 | 8.00 | 8.00 | 0 |
| 2 | 8.30 | 9.00 | 30 |
| 3 | 9.00 | 9.15 | 15 |
| 4 | 9.30 | 10.00 | 30 |
| 5 | 10.00 | 10.45 | 45 |
| 6 | 10.30 | 11.30 | 30 |
| 7 | 11.00 | 11.45 | 45 |
| 8 | 11.30 | 12.30 | 60 |
| Total |  |  | 255 |

Profit= [(S.P- V.Cost)/ unit\* No of units sold]- Fixed cost

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No. of trials | R.No | S.P/unit | R.No | Variable cost | R.No | Sales volume in 000 |
| 1 | 81 | 5 | 32 | 2 | 60 | 5 |
|  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |

Profit= (5-2)\*5000-4000= 15000-4000=11,000

|  |  |  |
| --- | --- | --- |
| Paper Name | Paper Code | Batch |
| Quantitative Techniques | MB 106 | MBA 2020-2022 |
| Operational Research/Application of Quantitative Methods in Public Health II | MHAN(304)/ MPH (303) | MHA 2019-2021/MPH 2019-2021 |
| Procurement and Quality Management | BSCM 505 | BSCM 2018-2021 |
|  |  |  |