# **Moussa Academy**

# **Stat201 Exam**

## Section I:

1. **False**
2. **True**
3. **False**
4. **True**
5. **True**
6. **True**
7. **True**
8. ***“I can’t read the question from the photo you sent, It is not clear”***
9. **True**
10. **True**

## Section II:

1. **A**
2. **A**
3. **B**
4. **B**
5. **B**

**“*You did not send page 5 in the exam, so points from 6 : 10 are missing”***

1. **B**
2. **B**
3. **B**
4. **D**
5. **B**
6. **B**

## Section III:

1. **T = number of tables**

**B = Number of bookcases**

**Objective function:**

**Maximize: 9T + 12B**

|  |  |  |
| --- | --- | --- |
|  | **Varnish** | **Redwood** |
| **T “number of tables”** | **1** | **1** |
| **B “number of bookcases”** | **1** | **2** |
| **Quantity Available** | **10** | **12** |

**Constraints:**

**T + B ≤ 10**

**T + 2B ≤ 12**

**T ≥ 0**

**B ≥ 0**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **SST** | **SSE** | **SSR** | **r2** |
| **Formula** | **Σ(Y – Ȳ)2** | **Σ(Y – Ŷ)2** | **Σ(Ŷ - Ȳ)2**  **Or**  **SST - SSE** |  |
| **Numerical Result** | **32** | **6** | **32 – 6 = 26** | **= 0.8125** |

1. **Model: M/M/1**

**λ = 3 tickets per hour**

**system helps 1 student in 15 minutes → 4 students in an hour → µ = 4**

**µ = = 4 per hour**

**The average time a student’s ticket waits in the system = W**

**W = = = = 1 hour = 60 minutes**

**Probability that the system is idle = P0**

**P0 = 1 - = 1 - = = 0.25**

1. **d = 200 gallons per day**

**D = 73000 gallons**

**Co = 50**

**Ch = 1**

**l = 10**

**Optimal order quantity = Q\* = = = 2701.8 2702**

**Reorder point ROP = d \* l = 200 \* 10 = 2000**

## Section IV:

1. **“*I Think the problem contains mistakes, in the question it mentions that they have 4 customers, but they provide the data of 3 customers only in the table! The table and the problem are not consistent. You can cancel it and check any transportation problem from the assignment or the videos”***
2. **“*Page 12 is missing”***
3. **A) , B)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Number of cars arriving (per week)** | **Frequency** | **Probability** | **Cumulative probability** | **Random intervals** |
| **4** | **6** | **6/40 = 0.15** | **0.15** | **01 – 15** |
| **5** | **4** | **4/40 = 0.1** | **0.25** | **16 – 25** |
| **6** | **10** | **10/40 = 0.25** | **0.5** | **26 – 50** |
| **7** | **2** | **2/40 = 0.05** | **0.55** | **51 – 55** |
| **8** | **8** | **8/40 = 0.2** | **0.75** | **56 – 75** |
| **9** | **8** | **8/40 = 0.2** | **0.95** | **76 – 95** |
| **10** | **2** | **2/40 = 0.05** | **1** | **96 - 00** |
|  | **40** | **1** |  |  |

**C)**

|  |  |
| --- | --- |
| **Random numbers** | **Simulated number of cars** |
| **15** | **4** |
| **24** | **5** |
| **45** | **6** |
| **62** | **8** |
| **8** | **4** |
|  | **Total = 27** |

**D)**

**Average number of car arrivals = 27 / 5 = 5.4 cars per week**