OPS. MAN. EXAM - 12/06/23 - MCQ - Prof. Portioli - Traditional Teaching - Room L12

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- You do not lose points if you choose a wrong answer
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ASHWINI KUMAR

4. Which one of the following statement is true considering the batching (1 Point)

- ○ Batching creates only inefficiencies and waste.
- ○ In a decoupled system each stage has its own batching only depending on the change over of the stage itself
- ◉ Batching is useful to address the entire range and quantity required by the customer in the time available.
- ○ The higher the batch size is, the higher the flexibility is.

5. Grossis Spa production process is made by 5 stages with the following EPEs: EPE (S1) = 0 days; EPE (S2) = 3,14; EPE (S3) = 1,21 days; EPE (S4) = 0,16 days, EPE (S5) = 2,47 days.
Which is the frequency according to which Sailor Spa is able to produce the whole volume and mix required by the customer? (1 Point)

- ○ 1,396 days
- ○ 0,16 days
- ○ 2,47 days
- ◉ 3,14 days

6. Choose the wrong sentence (1 Point)

- ○ Cost of Underestimation represents the lost revenues associated with reserving too few seats as full fare
- ◉ Protection level of discunted price tickets is necessary to avoid cannibalization from full price tickets
- ○ The no-show phenomena could characterise both full and discounted price customers

- ○ Having fixed capacity of event's seats, we should start selling discounted price tickets to ensure profit maximization

7. In a grocery store, there are 5 people waiting in line for the payment. There are 2 cash counters and the service rate of each cashier is 2 people every 10 minutes. The clients are served by the two cashiers following a FIFO approach in one single line. What is the queue configuration? (1 Point)

- ● M/M/2
- ○ 2M/M/2
- ○ M/M/5
- ○ 2M/M/1

8. Which characteristic belongs to a single queue with respect to multiple queue? (1 Point)

- ● Less variability in the system
- ○ More variability in the system
- ○ Balking actions are less frequent
- ○ More service diversification

9. For an event one can buy 40 days advance ticket for 60$, the regular full price is 120$. The participants of the events will receive a 15$ book commemorating the event, which is offered by a sponsor. (1 Point)

- ○ Cu = 120
- ● Cu=120-60
- ○ Cu = 120- 60-20

- ◯ Cu= 120-60+20

10. Quality/Flexibility as performance objectives, possible high customisation and slow growth in sales are characteristics of the following stage of the product: (1 Point)

- ◯ Maturity
- ◯ Decline
- ◯ Growth
- ◯ Introduction

11. There are 5 vending machines that work in parallel by receiving their own customer based on their own queue. Each resource is able to serve 4 customer in 6 minutes and on average there are 100 customers per hour arriving. What is the ρ of the system? (1 Point)

- ◯ 40/20=2
- ◉ (100/5)/40=0.5
- ◯ 40/(100/5)=0,08
- ◯ 100/40=2.5

12. Which characteristic belongs to a performance that is classified as Order Qualifier? (1 Point)

- ◯ The performance defines the competitive advantage of the company
- ◯ If company's performance improves, the company gains more orders
- ◯ Company's quality performance is very good

- [x] If company's performance gets worse, the company loses orders

13. Which one of the following statement is false considering the daily production capacity of a coupled system (1 Point)

- [x] It can be computed considering the maximum cycle time
- [ ] It is not affected by the availabilities of all the stages that compose the system
- [ ] It might be lower than the daily production capacity of a decoupled system
- [ ] It is affected by the availabilities of all the stages composing the systems

14. In the HQ case, which lever should you implement in order to improve flexibility performance? (1 Point)

- [ ] Launch production of big batches in order to reduce setups.
- [x] Split production capacity in larger number of machines.
- [ ] Increase capacity saturation.
- [ ] Increase automation grade in order to produce faster.

15. In the welding department, there are two operators working in parallel with a CT=10min/piece. The department works 2 shifts per day (Ta=960 min/day). Change over time is 2 min/set up and the availability is 100%. Which of the following sentence is correct? (1 Point)

- [ ] EPE>=(1min/setup*#setups)/(1920min-10min/piece*D)
- [x] EPE>=(1min/setup*#setups)/(960min-5min/piece*D)
- [ ] EPE>=(2min/setup*#setups)/(960min-10min/piece*D)

- ○ EPE>=(2min/setup*#setups)/(960min-5min/piece*D)

16. In the store there are three different areas corresponding to different goods to be sold. Every area has one server waiting for his customers to arrive. (1 Point)

- ○ The system is a M/M/3
- ◉ The system is a 3/M/M/1
- ○ It is a system based on prehemtive priority
- ○ There are not enough information to describe the system

17. The introduction of a reservation system is done to (1 Point)

- ○ Increase sales volume
- ◉ Increase the capacity during unexpected demand peaks
- ○ Level the customer demand
- ○ Foster one piece flow

18. A low-cost company sells a 14-day advance-purchase fare for 30 euros. The regular full fare price for local flight is 60 euros. A 3 euros tea (paid in advance) is offered to the full price passengers that actually have to spend in advance 22 euros for the lagguage. Choose the correct answer (1 Point)

- ○ Co=30-3+22=49
- ◉ Co=30+3+22=55
- ○ Co=30

- ◯ Co=30+3=33

19. In the new market for HQ: (1 Point)

- ◯ customers require a large variety of products so then after-sales service is required to assist clients.
- ◯ customers require a small variety of products that are ordered in a advance.
- ◯ customers require a small variety of products so the focus is on product flexibility.
- ◉ customers require a large variety of products so then variety and flexibility performance play a key role.

20. The online self check-in is an example of the following configuration: (1 Point)

- ◯ Multiple queue
- ◉ Infinite Servers
- ◯ Single queue
- ◯ Take a number

21. In the assembly department, there are three operators that works in parallel. Their workcontent is equal to 15 min/piece. Which is the cycle time of department? (1 Point)

- ◯ CT= 45 min/piece
- ◉ CT= 5 min/piece
- ◯ It depends on the Time available

- ○ CT= 15 min/piece

22. In a service company, which benefits does centralization of back-office activities give? (1 Point)

- ● Less volume variability
- ○ Activities overlapping
- ○ Shorter lead-times
- ○ Greater Flexibility

23. What is the goal of Lean Management ? (1 Point)

- ○ Reduce waste
- ○ Reduce inventory
- ○ Increse delivery speed
- ● Foster improvement

24. Consider a company with 3 stages having the first 2 stages working in parallel with downstream and upstream buffers equally dimensioned. The three stages are characterised by the following EPEs: EPE (S1) = 1 days; EPE (S2) = 2,1 days; EPE (S3) = 4,1 days. Which is the bottleneck of the company (1 Point)

- ● stage 3
- ○ stage 2
- ○ stage 1 and 2

- ◯ There are not enough information to provide the answer

25. In the HQ case, which are the most significant performance to compete the new market? (1 Point)

- ◯ Price and quality of design
- ◯ Time (speed), price and flexibility (variety)
- ◯ Quality (conformity) and time (delivery reliability)
- ◉ Time (speed), flexibility (product and plan), quality of design

26. In the PoliMi Official store, there are 7 people waiting in line to buy a new T-shirt. In the store there are 2 automatic cash counters and 1 cashier and the service rate of each station is 4 people every 20 minutes. The clients are served by the 3 stations following a FIFO approach in 3 different line. What is the queue configuration? (1 Point)

- ◯ M/M/2
- ◉ 3 M/M/1
- ◯ M/M/3
- ◯ 2 M/M/1

27. Choose the one correct sentence (1 Point)

- ◯ Protection level of discounted price tickets is necessary to avoid cannibalization from full price tickets
- ◉ Having fixed capacity of event's seats, we should start selling discounted price tickets to ensure profit maximization
- ◯ No-show phenomena can happen only to discouted price tickets holders

- ○ The overbooking is introduced to avoid cannibalization phenomena

28. Knowing that the probability to sell, for an art show, a number of ticket less than 150 is 85% and the demand is described by a normal distribution with mean 100 and Z=1.25, how much is the standard deviation? (1 Point)

- ○ σ=80
- ◉ σ=40
- ○ σ=60
- ○ σ=200

29. Estimate the Revenues of an event knowing that it can hold up to 500 participants, Full price=400€, Discounted price=300€, PL=250, the dinner for the discounted price ticket holders during the event that is paied 40 € by each person, and 70% of full price ticket holders will have a dinner at the day of the event that will be paied by the company 50€. (1 Point)

- ○ R=20*400+0.7*50*X
- ◉ R=400*X+300* (500-250)+ 40*250
- ○ R=40*500+0.7*50*250
- ○ R=400*250+300* (500-250)+ 40*250 + 5%*70*X

30. Calculate the revenues of an event knowing that it can hold up to 700 participants, Full price=1000€, Discounted price=650€, PL=467, and full price ticket holders get invited to an gala costing 200€ to the company. (1 Point)

- ◉ R=1000*X+(700-467)*650
- ○ R=(1000+200)*X+(700-467)*650

- ○ R=(1000-200)*X+(700-467)*650
- ○ R=1000*X+467*650

31. A company producing shirts, has a daily demand of 60 piece, each shirt requires 3 buttons. The buttons' supplier delivers every 5 days. Considering to double the minimum necessary stock, which is the amount of buttons the company needs to holds? (1 Point)

- ○ 1200 buttons
- ○ 900 buttons
- ○ 720 buttons
- ◉ 1800 buttons

32. Linus company works for 900min/day and the daily demand of product family A is 2000. The packaging department is dedicated to the product family A and it is able to pack the product in 12 different colours. The cycle time of this stage is 20sec while the time to change the colour of the packaging takes 4min. The department is 100% available. Estimate the EPE of the packaging. (2 Points)

- ○ 1.324
- ◉ 0.206
- ○ 0.052
- ○ -0.403

33. According to KDAM (Key Decisional Area Matrix), DHL transport services belongs to cluster (1 Point)

- ◉ Service project

- ◯ DIY service
- ◯ Service partnership
- ◯ Service factory

34. What are the "PROs" of leading strategy for capacity management? (1 Point)

- ◯ outbound cash flow, higher impact from overestimating demand, higher production costs
- ◯ lower impact of unforeseen events, high plant utilization, better delivery reliability
- ◯ lower impact of unforeseen events and underestimating demand, spare parts capacity, better delivery reliability
- ◉ lower production costs, lower impact from overestimating demand, high plant utilization

35. Calculate the revenues of an event, knowing it can hold up to 600 participants, Full Price = 250$, Discounted Price = 130$ PL= 300 and that 30% of full price participants will donate 50$ (1 Point)

- ◯ R= 300*250+(600-X)*130+250*50*0,3
- ◯ R=X*250+(600-300)*130
- ◯ R=X*250+(600-300)*130+50*0,3
- ◉ R= X*250 + (600-300)*130+0,3*50*X

36. In a supermarket the cashier is able to serve 4 people every 10 minutes. The arrival rate of clients is 15 people every hour. Estimate the saturation of the cashier (1 Point)

- ◯ 0.1
- ◯ 0.5
- ◉ 0.625
- ◯ 0.33

37. An apparel shop wants to determine by yield management the number of dresses to be ordered for next spring-summer collection. consider that dresses ordered but not sold at the end of the season are all sold by lowering the selling price by 50%, from 400€/u to 200€/u (the purchase cost is 250 euro per unit), which value is P(X<S)? (2 Points)

- ◯ 0.33
- ◯ 0.67
- ◉ 0.75
- ◯ 0.5