Section 1: General

1. The conditions when the economic order quantity model results in periodic ordering are: a) Fixed lead time b) Variable lead time c) Fixed Demand rate d) Variable demand rate
   a. c and d
   b. a and b
   c. a and c
   d. b and d

c

2. The sum of the weights in a weighted moving average forecast must
   a. Equal the number being averaged
   b. EQUAL 1.00.
   c. Be Greater Then 1.00.
   d. Be Less Then 1.00.

b

3. Which of the following topics related to O&SCM was not covered in the course in detail:
   a. Inventory
   b. BWE
   c. Production PJanning
   d. SPC
4. The demand for an electronic component is normally distributed with an average daily demand of 500 units and a standard deviation of 50. The lead-time for the component is 9 days.2. If a service level of 95% is desired, then the company's safety stock for this component is approximately
   a. 740 units
   b. 247 Units
   c. 150 Units
   d. 336 units

b

5. In supply chain management, what does the term "capital intensity" refer to?
   a. The cost of raw materials and inventory
   b. The level of financial investment in production equipment and technology
   c. The expenses associated with employee salaries and benefits
   d. The amount of money required for marketing strategies

b

6. The sum of the weights in a weighted moving average forecast must
   a. Be Less Then 1.00.
   b. Be Greater Then 1.00.
   c. EQUAL 1.00.
   d. Equal the number being averaged

c

7. BWE manifests as distortions in _____of the demand signal as it propagates upstream:
   a. Phase Angle
   b. Amplitude
   c. Both
   d. None

c

8. How many feedback loops are there in the flowchart of the forecasting process:
   a. 0
   b. 1
   c. 2
   d. 3

c

9. If the limits of the control chart are set at 3.1 sigma on either side of the centre line and the distribution of the variable being monitored is normal, the probability of type I error is

c => 0.0019

a. 0.0027
b. 0.00006
c. 0.0019
d. can't say

10. An order winner is a set of screening criteria that permits a firm's products to be considered as possible candidates for purchase. b
    a. True
    b. False
11. Which of the following is not a forecasting method a
    a. Back casting
    b. Associative
    c. Time series
    d. Technology diffusion curves
12. The Sales and Operations planning falls in which of the following categories
    a. Tactical Planning
    b. Strategic planning a
    c. Operational planning
    d. None of the above
13. The sum of weights in exponential smoothing is
    a. EQUAL to e d
    b. Equal to 1/e
    c. Greater then e
    d. Equal to 1
14. Which of the following statements is true for demand per period which is independent and normally distributed a => variance and mean are additive
    a. The variance for the aggregate demand during the lead time is the sum of the demand per period.
    b. The variance for the aggregate demand during the lead time is the product of the demand per period.
    c. The standard deviation for the aggregate demand during the lead time is the product of the demand per period.
    d. The standard deviation for the aggregate demand during the lead time is the sum of the demand per period.
15. Which of the following statements are not true about variation in business processes:
    a. Random variation and common cause variation refer to same phenomena.
    b. Variation in demand is structural
    c. Common cause variation is said to be prevalent when an attributable cause can be identified. c
    d. Special cause variation is same as Assignable cause variation
16. The demand for an electronic component is normally distributed with an average daily demand of 500 units, and a standard deviation of 50. The lead time for the component is 9 days. If the company sets a reorder point of 4,650 for this component then its service level is approximately b
    a. 92 percent
    b. 84 percent
    c. 50 percent
    d. 98 percent
17. For the demand values and the January forecast shown in the table below the exponential smoothing forecast for March using alpha = 0.30 is Period, Demand, Forecast, January 500 480 February 476 (Demand)
    March 503 (Demand) April———————
    a. 480
    b. 483 F b
    c. 489
    d. 486

18. Which of the following statements about the ABC classification system are true: a) It is a method for classifying inventory based on the percentage of total value and the percentage of total quantity. b) Class A items in the ABC classification system require less monitoring and control than Class C items. c) It is useful in rationing monitoring capability. d) It is useful in determining EOQ. d

a. b and d
b. c and d
c. a and b
d. a and c

19. The demand for an electronic component is normally distributed with an average daily demand of 500 units and a standard deviation of 50. The lead-time for the component is 9 days.If a service level of 95% is desired then the company's reorder point for this component is approximately b

a. 3785 Units
b. 4747 units
c. 4500 Units
d. 4627 units

20. The extent to which the firm will produce the inputs and control the outputs of each stage of the production process is known as: c

a. capital intensity.
b. process planning
c. vertical integration
d. process flexibility

21. The exponential smoothing model produces a naïve forecast when the smoothing constant, alpha, is equal to a

a. 1.00
b. 0.50
c. 0.00
d. 2.00

22. Given the demand and forecast values below, the naïve forecast for September is: Period Demand Forecast April 100 97 May 105 103 June 97 98 July 102 105 August 99 102 September ——— a

a. 99
b. Can not be determined
c. 100.6
d. 102.0

23. Which of the following statements is not correct: c

a. Upper and lower limits on the tracking signal chart are fixed numbers and not multiples of its standard deviation.
b. Tracking signal is used to monitor forecasts
c. Upper and lower limits on the control chart are fixed numbers and not multiples of standard deviation of the error.
d. Control chart is used for monitoring of forecasts

24. If the limits of the control chart are set at 3 sigma on either side of the centre line and the distribution of the variable being monitored is normal, the probability of type II error is d

a. 0.027
b. 0.0027
c. 0.27
d. Can't say

25. Which of the following statement is incorrect: b
    a. Load leveling is done to even out the utilization.
    b. Efficiency and utilization are the same thing
    c. Scheduling aims to maximize the utilization.
    d. Efficiency is the ratio of output and input.

26. Which of the following represents the primary objective of aggregate production planning? b
    a. Maximizing customer satisfaction
    b. Minimizing total production costs
    c. Maximizing production efficiency
    d. Minimizing workforce turnover

27. What is the correct hierarchy of the planning activities in descending order of planning horizon:
    a. Aggregate Production Planning, Capacity Expansion, Capacity Requirement Planning, Scheduling.
    b. Scheduling, Capacity Expansion, Aggregate Production Planning, Capacity Requirement Planning. c
    c. Capacity Expansion, Aggregate Production Planning, Capacity Requirement Planning, Scheduling.
    d. Capacity Requirement Planning, Capacity Expansion, Aggregate Production Planning, Scheduling.

28. Select the correct order of steps involved in ABC Classification given below: i. Evaluate cumulative %age value and quantity across rows ii. Sort in descending order the table along the column containing the total value iii. List the inventories items, their cost and quantity iv. Evaluate %age of total value and total quantity for each row c
    a. ii, iv, i, iii
    b. i, ii, iii, iv
    c. iii, ii, iv, i
    d. iii, i, iv, ii

29. Which of the following is not an assumption of the EOQ model?
    a. order quantity is received all at once
    b. demand rate is known and constant
    c. shortages are allowed c
    d. lead time is constant

30. Fundamental problem of O&SCM is a) Demand and supply are not collocated b) Demand and supply are coincidental in time c) Demand and supply are not coincidental in time d) Demand and supply are not relevant a
    a. a and c
    b. c and d
    c. All Of The Above
    d. b and d

31. The underlying rational for ABC classification scheme for inventory control is (Choose only 1 option) b
    a. Speed
    b. Rationing of monitoring capability
    c. Redundancy
    d. Excellence

32. The demand for an electronic component is normally distributed with an average daily demand of 500 units and a standard deviation of 50. The lead-time for the component is 9 days.If a service level of 95% is desired then the company's reorder point for this component is approximately c
    a. 4627 units
    b. 4500 Units
    c. 4747 units

d. 3785 Units

33. The closer the smoothing constant, alpha, is to 1.0 the
    a. greater the dampening, or smoothing, effect.
    b. greater the reaction to the most recent demand.
    c. more accurate the forecast.
    d. less accurate the forecast.

b

27-66

34. Which of the following is not an assumption of the EOQ model?
    a. shortages are allowed
    b. lead time is constant
    c. demand rate is known and constant
    d. order quantity is received all at once

a

28-66

35. The smoothing constant, alpha, in the exponential smoothing forecast
    a. should be equal to the time frame for the forecast
    b. must always be a value less than 0.10.
    c. must be a value between 0.0 and 1.0.
    d. must always be a value greater than 1.0

c

29-66

36. Which of the following is not a variable in production planning:
    a. Inventory
    b. Sub-Contracting
    c. Capital Investment
    d. Overtime

c => variable in strategic processes

30-66

37. Generally, which of the following O&SC processes add the highest value a) Marketing and Branding b) Manufacturing c) Design d) Assembly
    a. d
    b. b
    c. c and a
    d. a and b

c

31-66

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38. The daily demand for a product is normally distributed with a mean value of 100 and the variance of 25, what is the probability that on any given day the demand would be greater than 105
    a. 0.27
    b. 0.158
    c. 0.33
    d. 0.15

b

32-66

$\frac{105-100}{5} = 1$

Section 2: Aggregate Production Planning

The Wetski Water Ski Company is the world's largest producer of water skis. As you might suspect, water skis exhibit a highly seasonal demand pattern, with peaks during the summer months and valleys during the winter months. Given the following costs and quarterly sales forecasts, use the transportation method to design a production plan that will economically meet demand. As per typical practice the inventory costs are to be accounted in the period of usage. It's stacked in the increasing cost order and drawn in the reverse order, i.e. cheapest first.

Inventory carrying cost:	$3.00 per pair of skis per quarter
Production per employee:	1000 pairs of skis per quarter
Regular workforce:	50 workers
Regular capacity:	50,000 pairs of skis
Overtime capacity:	50,000 pairs of skis
Subcontracting capacity:	40,000 pairs of skis
Cost of regular production:	$50 per pair of skis
Cost of overtime production:	$75 per pair of skis
Cost of subcontracting:	$85 per pair of skis

k= thousands

1. What is the cost of the plan of period 1?
a) 2500k b) 3500k c) 4500k d) 5500k

2. What is the cost of the plan of period 2?

a) 10130k b) 10140k c) 10150k d) 10160k

3. What is the cost of the plan of period 3?
a) 14890k b) 14990k c) 14980k d) 19490k

4. What is the cost of the plan of period 4?
a) 2620k b) 2630k c) 2640k d) 2650k

5. What is the Total cost of the plan?
a) 30290k b) 31290k c) 32290k d) 33390k

Section 3: Inventory

A manufacturer uses Rs. 10,000 worth of an item during the year. He has estimated the ordering costs as Rs.25 per order and carrying costs as 12.5% of the average inventory value.

Q1. The optimal order size is.....
a) 2500 b) 3000 c) 1500 d) 2000 — d

Q.2 Number of orders per year
a) 15 b) 10 c) 5 d) 7 — c

Q.3 Time period per order?
a) 37 days b) 53 days c) 73 days d) 83 days — c

Q.4 Total Variable cost in rupees .....?
a) 200 b) 250 c) 300 d) 400 — b

Q.5 Which one of the following is not a carrying cost?
a) Storage Charges b) Material Handling cost c) Transportation cost d) Store staffing — c

Section 4: Forecasting

Data in table below pertains to actual and forecast demand for 10 time periods n the past. Compute the measures of forecast accuracy

Time period	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Actual Demand	120	114	130	124	97	95	100	110	109	123
Forecast demand	109	118	132	110	110	105	98	95	104	110

1. Calculate the mean absolute deviation .....
a) 9.8 b) 10.8 c) 7. 9 d) 8.9 — D

2. The value of the Mean Square error for the above data is.....
a) 100.00 b) 103.00 c) 102.9 d) 102.8 — 114.3333 ; for n, it will be 102.9

3. Mean Absolute percent error?
a) 8.22 b) 8.022 c) 8.002 d) 8.0 — b

4. ..... has fair to very good accuracy for short and long-term forecast?
a) Judgemental Technique b) Prior knowledge c) Trend line d) Delphi Technique — d

Section 5: Forecasting II

A local building products store has accumulated sales data for 2*4 lumber and the number of building permits in its area for the past 10 quarters

Quarter	Permits	Lumber sales
1	8	12.6
2	12	16.3
3	7	9.3
4	9	11.5
5	15	18.1
6	6	7.6