

Q1. Find the maximum value of the objective function

$$Z = 4x + 6y \text{ where } x \geq 0, y \geq 0$$

Subjected to constraints

$$-x + y \leq 11$$

$$x + y \leq 27$$

$$2x + 5y \leq 90$$

- (a) 118                      (b) 116  
(c) 132                      (d) 66

Q2. Distribution of lead time demand for an item is given as

Lead time demand	Probability
80	0.2
100	0.25
120	0.30
140	0.25

Find Reorder level if safety stock is to be kept 50.

- (a) 112                      (b) 142  
(c) 162                      (d) 182

Q3. A firm uses 3000 units in cycle time of 30 days. If lead time demand is 200 units, find lead time

- (a) 1 day                      (b) 2 days  
(c) 3 days                      (d) 4 days

Q4. Forecast for April was 100 units with smoothing constant 0.2. Find forecast for July

Month	Actual demand
April	200
May	50
June	150

- (a) 170                      (b) 115  
(c) 140                      (d) 150

Q5

Month	1	2	3	4	5	6	7
Demand	585	611	656	748	863	914	964

Find the forecast for 8<sup>th</sup> month using five months moving average

- (a) 911                      (b) 1026  
(c) 829                      (d) 870

Q6.

Yrs	1	2	3	4	5	6	7	8	9	10
Units	124	135	145	150	167	157	161	170	187	168

Find the trend line for this data

- (a)  $y = 104 + 6x$                       (b)  $y = 54 + 7x$   
(c)  $y = 126 + 5.5x$                       (d)  $y = 141 + 2x$

**Common data for (7) & (8) & (9)**

Activity	Predecessor Activity	Optimistic time	Pessimistic time	Most likely time
A	-	1	5	3
B	-	2	4	3
C	-	3	5	4
D	A	2	10	9
E	C	4	6	5
F	B,D,E	5	13	6
G	A	2	6	4
H	G,F	0	6	3

Q7. Which is critical path

- (a) A B F H      (b) A D F H  
(c) A D G H      (d) C E F H

Q8. Find critical time

- (a) 19 units      (b) 20 units  
(c) 21 units      (d) 22 units

Q9. What is total float on activity E

- (a) 1              (b) 3  
(c) 4              (d) 2

Q10. A dealer for washing machine forecasts the demand at rate of 600 units per month for next four months. Actual demand are found to be 500, 680, 800, 900 units. Find mean absolute deviation (MAD) & Bias

- (a) 170,120      (b) -120,170  
(c) 340,-240      (d) -240,340