

II Sem. M.E. (Day) Degree Examination, Sept/October 2003  
(New Scheme)  
MANAGEMENT  
(Paper - 2.5) Production and Operations Management

Time: 3 Hours

Max. Marks: 75

## SECTION - A

Answer any six questions:

(6×2 = 12)

1. What is operations management ?
2. Distinguish between loading and scheduling.
3. Distinguish between Operations Process chart and Flow Process chart.
4. What is acceptance sampling ?
5. What is meant by CAM ?
6. What is aggregate planning ?
7. What is pull vs push system ?
8. What are the various CAD versions presently used in Industries ?
9. What is job design ?

## SECTION - B

Answer any four questions.

(4×5 = 20)

10. What are principles of Good Vendor/Vendee Relations ? How a Vendor is evaluated ?
11. What is productivity ? How is it measured ?
12. What are the various M's considered for Locating a Plant ? How do you decide the layout after locating the plant.
13. What do you understand by product development ? What factors do influence product development ?
14. What is  $\bar{X}$   $\bar{R}$  chart ?

Draw a control chart for mean and range of data relating to 20 samples each of size 5.  
Fix UCL and LCL for 3 sigma.

P.T.O.

– sum of all means of all samples = 580 ( $\sum \bar{X}$ )

– sum of the ranges of all samples = 410 ( $\sum R$ )

Value of  $d_2 = 2.33$ ;  $D_4 = 0.8$ ;  $D_3 = 0$

15. Seven jobs are performed first on Machine A and then on Machine B. The time taken (in hours) by each job on each machine is given below:

Job	1	2	3	4	5	6	7
Time on Machine A	5	3	2	10	12	6	8
Time on Machine B	3	2	5	11	10	7	3

Determine the optimum sequence of jobs that minimizes the total elapsed time to complete the jobs. Also compute the minimum time.

SECTION - C

Answer any three questions:

(3×10 = 30)

16. A company uses annually 48,000 units of a raw material costing Rs. 1.25 per unit. Placing each order costs Rs. 45.00 and carrying cost is 15% of the average inventory. Find the economic order quantity.

Suppose the company follows EOQ purchasing policy and it operates for 300 days a year and the procurement time is 12 days with safety stock of 500 units, find the re-order point, the maximum, minimum and average inventory.

17. How does CPM differ from PERT in project planning. Schedule the following problem to get the same done @ the lowest cost. i.e obtain an optimal crashing plan.

Activity	Time in weeks		Cost (Rs.)	
	Normal	Crash	Normal	Crash
1 - 2	6	4	10,000	14,000
1 - 3	4	3	5,000	8,000
2 - 4	3	2	4,000	5,000
3 - 5	8	6	9,000	12,000
4 - 5	7	4	7,000	8,000

18. a) What is Line Balancing? What are the two approaches in balancing the line?

b) There are only four special purpose machines within which the following jobs/ Operations to be completed. Presently it is done in 9 m/s.

1<sup>st</sup> Operation takes 3 m/s

2<sup>nd</sup> Operation takes 1.8 m/s done after 1<sup>st</sup> operation

3<sup>rd</sup> operation takes 6 m/s done after 2<sup>nd</sup> operation .

4<sup>th</sup> operation takes 2.1 m/s done after 3<sup>rd</sup> operation

5<sup>th</sup> operation takes 3.6 m/s done after 2<sup>nd</sup> operation

6<sup>th</sup> operation takes 6 m/s done after 5<sup>th</sup> operation

7<sup>th</sup> operation takes 4.2 m/s done after 6<sup>th</sup> operation

8<sup>th</sup> operation takes 2.7 m/s done after 4<sup>th</sup> operation

9<sup>th</sup> operation takes 3.0 m/s done after 7<sup>th</sup> and 8<sup>th</sup> operations

Find the line efficiency after balancing the above operations with four special purpose m/cs.

19. What is selective inventory control ? Explain ABC analysis in brief.

20. Write notes on:

- a) FMS                      (b) Cellular layout

SECTION - D

(1×13 = 13)

(Compulsory)

21. NEELACHAL AUTO LTD

Established in 1990, Neelachal Auto is a premier OE auto component's manufacturer of the country. It is using high technology production methods. The company's products include precision Gear Box and Propeller shaft components. In view of the stringent product quality parameters required and the company's overall devotion for quality, Neelachal Auto decided to seek ISO 9002 certification. The acquisition of this valued certificate in 1994 is reflective of Neelachal Auto's commitment for quality. Its employees are fully involved and the environment in which it operates is highly conducive for obtaining totality in quality. The company is striving hard to implement TQM in the near future.

Most importantly, Neelachal Auto can now affirm and endorse the fact that all its elements confirm to a world class system. The obsession with quality is integral to its strategic business plans. The key motivational factors towards its ultimate goal of TQM implementation has been identified. This is better reflected in the words of its Managing Director, R. K. Bahera: "The ISO: 9002 certification is not the end in itself rather a stepping stone for the larger goal of TQM, and is an indicator of the company's perception of customer satisfaction."

Discussion questions:

- 1) What are the major objectives of this company ?
- 2) What are the main products of Neelachal Auto ?
- 3) Which quality system has the company obtained ? Why ?
- 4) What efforts are being made in the direction of TQM implementation ?
- 5) What suggestions can you make to the company for TQM implementation ?