



Name :

Roll No. :

Invigilator's Signature :

CS/MBA (NEW)/SEM-2 (FT)/MB-204/2010

2010

PRODUCTION & OPERATION MANAGEMENT

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

- i) Day to day planning to operations is called
 - a) Scheduling
 - b) Dispatching
 - c) Expediting
 - d) Loading.

- ii) PERT method of project scheduling is suitable to
 - a) construction of a chemical plant
 - b) installation of a computerised system in an organisation.
 - c) a spacecraft development project based on research
 - d) turnkey project on BOT basis.



iii) The mostly useful probability distribution chosen for PERT is

- a) Normal distribution b) Poisson distribution
- c) Beta distribution d) Binomial distribution.

iv) Forward scheduling is used in which of the following ?

- a) Mass production
- b) Intermittent production
- c) Cellular production
- d) Assembly line production.

v) If annual requirement is 24,000 units for an item ordering cost is Rs. 200 per order and EOQ= 2000 units with price per unit of the item is Rs. 20, then the annual carrying cost per unit is

- a) 10% b) 12%
- c) 20% d) None of these.

vi) Which of the following material handling equipment operates on a fixed path ?

- a) Lift truck b) Belt conveyor
- c) Hand trolley d) Pallet.



- vii) The main objective of assembly line balancing is
- to reduce the total number of operations
 - to reduce the balance delay of the time
 - to shorten the work element time
 - to reduce the machine load.
- viii) A produce-lot of goods in acceptance sampling is considered of inferior quality, if the per cent-defective value of the lot is
- equal to AQL
 - equal to LTPD
 - more than or equal to LTPD
 - less than or equal to AQL.
- ix) SIMO chart is used in
- Machine loading
 - Project scheduling
 - Quality control
 - Method study.
- x) Criteria of VED analysis is
- unit price of items
 - annual consumption value
 - criticality of item
 - none of these.
- xi) Johnson's Rule in priority sequencing of jobs to process is based on
- COVERT rule
 - FCFS rule
 - SPT rule
 - Due-date rule.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Differentiate between product layout and process layout.
3. What is operating characteristics curve (OC) ?
4. Explain briefly the principles used in material handling. What do you mean by MRP – II ?
5. Differentiate between P-system and Q-system of inventory control. Explain Reorder Level (ROL) and safety stock.
6. A factory uses annually 24,000 units of rawmaterial, costing Rs. 1.25 per unit. Placing an order costs Rs. 25 per order carrying cost is 6% per year of the average inventory. If the factory works for 320 days a year and procurement time is 10 days, find the maximum inventory level and ROL. Assume safety stock 450 units.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. State the objectives of vendor rating. Mention the usual criteria or factors on the basis of which vendors are assessed. Give one quantitative technique by which vendor rating can be performed. $4 + 5 + 6$



8. a) What is operation process chart ?
- b) One of the industrial jobs involved the following activities :
- i) Components was brought from stores about 10 metres away from the machine.
 - ii) It waited near the machine for the operator to be free from his previous job (40 minutes).
 - iii) It was loaded on the machine (30 minutes).
 - iv) It was machined on the surface (60 minutes).
 - v) It was unloaded from the machines (30 minutes).
 - vi) The component was then taken to the inspection bench, 20 metres away from the machine.
 - vii) The component's accuracy was checked (60 minutes).
 - viii) It was then moved to work distribution centre, 10 metres away from the inspection bench.
 - ix) It was finally placed in the appropriate rack awaiting picking up by another operator for the next operation.

Prepare flow process chart (materials) to record total Operation time, Inspection time, Distance covered under transport.

3 + 12



9. The R&D department is planning to bid on a large project for the development of a new communication system for commercial planes. The following table shows the activities, times and sequences required.

Time Estimates (weeks)

| ACTIVITY | Immediate Predecessor | Optimistic | Most likely | Pessimistic |
|----------|-----------------------|------------|-------------|-------------|
| A | — | 1 | 2 | 3 |
| B | A | 1 | 4 | 7 |
| C | A | 1 | 3 | 5 |
| D | A | 1 | 2 | 3 |
| E | C | 1 | 2 | 3 |
| F | D | 2 | 4 | 6 |
| G | B | 1 | 2 | 9 |
| H | G | 5 | 7 | 9 |
| I | E, H | 3 | 5 | 7 |
| J | F | 2 | 3 | 4 |

- i) Draw the network diagram.
- ii) Calculate the expected time and variance for each activity.
- iii) Find the critical path and expected project completion time. 5 + 5 + 5



10. a) A group of 10 workmen working 8 hours per day (one shift) on a group of engine lathes produced 320 pieces of a component. During the study, it was observed that workmen were idle for 20% of the total available time and 80% of the time they worked at an average performance of 75%. Calculate standard time for the job assuming
- i) the operation to be completely manual.
 - ii) the workmen are entitled to 20% allowance for this type of work.
- b) A publishing house purchase 2,000 units of particular item per year at a unit cost of Rs. 20, the ordering cost per order is Rs. 50 and the inventory ordering cost is 25%. Find the optimal order quantity and the minimum total cost including purchase cost.

If a 3% discount is offered by the supplier for purchase in lots of 1, 000 or more, should the publishing house accept the order.

$$8 + 7$$

11. Write short notes on any *two* of the following : $2 \times 7 \frac{1}{2}$

- i) ABC analysis
- ii) Time study.
- iii) Six sigma.
- iv) Quality circle.

