Name : ...................................................................

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Invigilator's Signature : ...........................................

## CS/MBA (N)/SEM-3(PT)/MB-204/2011-12
# 2011
# 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)  Measure of efficiency of a productive system is also known as

        a)  utility                   b)  efficacy

        c)  effectiveness             d)  productivity.

    ii) Batch production system is adopted when

        a)  volume is very large and variety is less

        b)  volume is small and variety is large

        c)  both volume and variety are medium

        d)  none of these.

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iii) The objective of plant maintenance is to

    a)    increase the availability of the equipment and facilities

    b)    increase the utilization of machine and equipment

    c)    upgrade machines and equipment

    d)    none of these.

iv) Work measurement is done for

    a)    fixing standard time for a job

    b)    streamlining the method

    c)    ensuring high productivity

    d)    none of these.

v) The most befitting probability density function chosen for PERT is the

    a)    Normal distribution    b)    Poisson distribution

    c)    Binomial distribution    d)    Beta distribution.

vi) If annual requirement is 1200 number of items, ordering cost is Rs. 20 per order and EOQ = 15, then the annual procurement cost is

    a)    Rs. 2400    b)    Rs. 1600

    c)    Rs. 1800    d)    Rs. 20.

vii) For an integrated steel plant, the plant location decision will be chiefly influenced by the consideration of

    a)    proximity to the market

    b)    availability of electricity

    c)    proximity to the raw material supply source

    d)    none of these.

viii) An effective quantity control operation starts from

    a) the inspection of input materials at the beginning of the production process and continues as per the inspection schedule

    b) inspection at the end of the process

    c) as and when the inspection is called for defective materials arising out of production

    d) none of these.

ix) Standard performance on the performance ranking scale is considered as

    a) 50                   b) 100

    c) 200                d) 1000.

x) What is the difference between PERT and CPM ?

    a) CPM takes less time than PERT

    b) PERT is probabilistic, but CPM is not

    c) crashing can be done in CPM, but not in PERT

    d) all of these.

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

    a) Mass production

    b) Intermittent production

    c) Cellular production

    d) Assembly line production

xii) 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.

## GROUP – B

### ( Short Answer Type Questions )

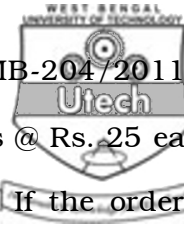Answer any *three* of the following.          3 × 5 = 15

2. Explain clearly the differences between PERT and CPM.

3. Explain briefly the scope of maintenance management. Distinguish between breakdown and preventive maintenance and overhauling.

4. As a production manager state the reasons why you need a good plant location. What factors should be considered while selecting a suitable location of a plant ?

5. What is productivity ? What is the difference between production and productivity ? What are the different methods of increasing productivity ?

6. Examine the principles used in material handling. What do you mean by MRPII ?

### GROUP – C

### ( Long Answer Type Questions )

Answer any *three* of the following.      3 × 15 = 45

7. a) What are the various costs associated with inventory management ? Explain why ordering costs decrease with increase in inventory.                                   6

b) An auto industry purchases spark plugs @ Rs. 25 each. The annual requirement is 18000 nos. If the ordering cost is Rs. 250 per order and carrying cost is 25% per annum, what would be the EOQ ? If the supplier of the spark plugs offers a discount of 5% per each order quantity of 3000 numbers or more, would you advise the acceptance of this offer and orders placed in lots of 3000 only ?                                             9

8. a) There are 5 jobs each of which must go through 2 machines A and B :

| Job | 1 | 2 | 3 | 4 | 5 |
|-----|---|---|---|---|---|
| Machine A | 5 | 1 | 9 | 3 | 10 |
| Machine B | 2 | 6 | 7 | 8 | 4 |

Determine a sequence for 5 jobs that will minimize the total elapsed time.                                             6

b) When will you use statistical methods of quality control ? What are the advantages of SOC ? What do you understand by the term "Acceptance Sampling" ? Explain the terms AQL & LTPD. What is the difference between Producers' Risk and Consumers' Risk ?            9

9.  a)  Explain why purchasing is considered to be a very important function of production and operations management.                                                 3

    b)  Distinguish between a limited tender and an open tender.                                                               3

    c)  Describe the purchase procedure of a medium size engineering enterprise starting from the placement of requisition for materials to the release of payment.     9

10. 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.                             5

    ii)  Calculate the expected time and variance for each activity.                                               5

    iii) Find the critical path and expected project completion time.                                                 5

11. Write short notes on any *three* of the following : 3 × 5

    a)    TQM

    b)    Time & Motion study

    c)    Reordering level

    d)    Six sigma

    e)    Operating characteristics curve.

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