Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/MBA/SEM-3(PT)/MB-204/2012-13

2012

PRODUCTIONS & 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 : $10 \times 1 = 10$

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.

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.

iv) Work measurement is done for a job by

a) fixing standard time for a job

b) streamlining the method

c) ensuring high productivity

d) none of these.

v) *ABC* classification of materials is based on

a) the annual consumption value of the materials

b) the self life of the materials

c) the frequency of consumption of the material

d) the importance of the materials during production stage.

vi) Which of the following is the measure of labour productivity ?

a) Ton

b) Ton per man per month

c) Ton per man

d) Ton per month.

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

a) Normal distribution b) Poisson distribution

c) Binormal distribution d) Bet distribution.

viii) 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.

ix) 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.

x) 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.

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

a) 50 b) 100

c) 200 d) 1000.

GROUP – B

(Short Answer Type Questions)

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

2. Explain clearly the differences between PERT and CPM.

3. Differentiate between *Q*-system and the *P*-system of inventory management.

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

5. 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 ?

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

GROUP – C

(Long Answer Type Questions)

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

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

   i) MRP II

   ii) Quality circle

   iii) TQM

   iv) Motion & time study

   v) Reordering level

   vi) *ABC* analysis.

8. a) What are the various steps for method study ?

   b) What are the differences between method study and work measurement ?

   c) The observed time for a job on a gear hobbing machine is recorded to be 20 minutes. The performance rating of the worker is 90. The following allowances as a percentage of basic time are recommended :

   Personal need and fatigue allowance — 15%

   Contingency work allowance — 5%

   Determine the basic time and standard time for the job.

   5 + 5 + 5

9. a) Define total float, free float and independent float for a network.

b) A small project is composed of time activities whose time estimates are given below :

Activity	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*
Optimistic time	2	2	4	2	2	3	2	5	3
Most likely time	2	5	4	2	5	6	5	8	6
Pessimistic time	8	8	10	2	14	15	8	11	15

Activities *A, B* and *C* can start simultaneously. Activity *D* follows activity *A* while *E* follows *B*. Activity *D* and *E* are followed by activity *G* while *F* is depended in *C*. *H* depends on *D* and *E*, while *I* depends on *F* and *G*.

i) Construct the network.

ii) Find the expected duration and variance of each activity.

iii) What is the critical path and expected project duration of the project ?

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

b) A factory uses annually 24000 units of raw material, which costs Rs. 1·25 per unit. Placing of each order costs Rs. 25 and carrying cost is 6% per year of the average inventory.

i) Find the economic order quantity and the total inventory cost including the cost of material and No. of orders to be placed for the above per year/or how frequency should the order be placed.

ii) The factory works for 320 days a year. If the procurement time is 10 days and the safety stock is 450 units, find the reorder point, the minimum, maximum and average inventory. 7 + 8

11. a) There are 5 jobs each of which must go 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 that total elapsed time.

b) State the criteria for a good plant layout. 9 + 6

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