BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

December, 2011 01053

BME-013 : PRODUCTION MANAGEMENT

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt **any seven** questions. All questions carry **equal** marks. Use of **calculator** is permitted.*

1. (a) Explain the concept of supply chain management. What advantages do you foresee if production system is analysed in this way ? 5

   (b) A company is producing certain type of circuit breakers. The fixed cost of land building etc. is Rs. 40,000/-. The variable cost is Rs.10/- per unit production. If the sales price of the product is Rs. 20/- per unit, what should be the minimum production level ? If the firm is operating at present so that production is 8000 units, what is the firm's profit ? 5

2. (a) Discuss with suitable examples, the process of launching a new product in the market. Explain with the help of suitable examples. 5

(b) Product A consists of three B type sub-assemblies and one C type sub-assembly. The sub-assembly B consists of one D, one E sub-assembly and one F. The sub-assembly C consists of a G and an F. The sub-assembly E consists of a D and a K. 5

(i) Prepare a product tree

(ii) Prepare the Bill of Materials

(iii) Determine the number of each sub-assembly/components required to produce fifty units of item A.

3. (a) A principal feature of JIT and TQM is large scale employee involvement and employee empowerment. What do these concepts mean ? Explain with suitable examples. 5

(b) A time study of a restaurant activity yielded a cycle time of 2.00 minutes, and the waitress was rated at PR=96 percent. The restaurant chain has a 20 percent allowance factor. Find the standard time. 5

4. (a) Discuss the difference between centralised and decentralised maintenance staff. What are the reasons for decentralising the maintenance function ? 5

(b) The following are 3 months of demand data for emergency room service at a hospital. Using $\alpha = 0.2$ and a forecast of 706 for the first month, calculate the exponentially smoothed forecasts for the demand in months 2 through 4. 5

Month	Actual
1	721
2	816
3	671

5. (a) Explain different types of maintenance giving suitable example. 5

(b) The R and D department is planning to bid on a large project for the development of a new communication system for commercial plannes. The accompaning table shows the activities, times and sequences required. 5

Activity	Immediate Predecessors.	Estimated Duration (Months)
A	-	6
B	A	2
C	A	5
D	A	7
E	A	1
F	B	2
G	C, D, E	3
H	F	6
I	G	7
J	H	8
K	I, J	4

(i) Draw the network diagram

(ii) Find the critical path

(iii) Find the project completion time.

6. (a) Why is R and D a key factor in productivity improvement ? Name some ways R and D contributes to productivity improvements. 5

(b) Processing times (including setup times) and due dates for five jobs waiting to be processed at a work centre are given in the following table. Determine the sequence of jobs, the average flow time, average job lateness and average of jobs at the work centre, for each of these rules : 5

(i) S P T and

(ii) E D D.

Job	Processing Time (days).	Due Date (days)
A	12	15
B	6	24
C	14	20
D	3	8
E	7	6

7. (a) What is the purpose of large-range resource planning ? What information is needed for such planning ? 5

(b) A Local distributor for a national tyre company expects to sell approximately 9600 steel belted radial tyres of a certain size and tread design next year. 5

Annual carrying costs are Rs. 16 per tyre, and ordering cost are Rs. 75. The distributor operates 288 days a year.

(i) What is the EOQ ?

(ii) How many times per year does the store reorder ?

(iii) What is the length of an order cycle ?

8. (a) What factors should be taken into account when taking make-or-buy decision ? Illustrate your answer with examples from both a manufacturing and service organisation. 5

(b) A group of six jobs are to be processed through a two - step operation. The first operation involves cleaning and the second involves painting. Determine a sequence that will minimize the total completion time for this group of jobs. Processing times are as follows : 5

Job	Processing Time (Hours)	
	Work Centre-I	Work Centre-II
A	20	27
B	16	30
C	43	51
D	60	12
E	35	28
F	42	24

9. (a) "Manufacturers locate near their resources while retailers locate near their customers". Justify this statement with suitable examples. 5

(b) What are the reasons for the successful application of robots in manufacturing industries ? 5

10. Write short notes on ***any five*** of the following : **5x2=10**

(a) Manufacturing Resource Planning(MRP-II)

(b) Role of computer in operations

(c) Job enrichments

(d) Zero defects

(e) Vendor Rating

(f) Pareto Analysis

(g) Cellular Manufacturing

(h) Balanced score card.