

337813 (37)

BE (8th Semester)

Examination, April - May, 2013

Branch : Mechanical

PRODUCTION MANAGEMENT

Time Allowed : Three Hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Answer all the questions. Part (a) of each question is compulsory. Attempt any two from parts (b), (c) and (d).

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Q. 1. (a) Distinguish between product design and product development. 2

(b) Give a comparison (in a tabular form) among the different types of production system on following points : layout consideration, machine selection, flexibility, manpower requirements, planning and scheduling, quality control and inspection, fields of applications. 7

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(c) Discuss the various elements of cost and further explain the different types of expenditures (expenses). 7

(d) A company has the following data : 7

Fixed cost Rs. 6,00,000/-, selling price Rs.

10 per unit, contribution margin 15%, and the

company wants to make a profit of Rs.

2,70,000/-.

Calculate the following :

- (i) Break even sales in Rupees with 15% contribution margin

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(ii) Number of units to be produced to have a contribution margin of 15%.

(iii) Total sales in Rupees to make a profit of Rs. 2,70,000/-

(iv) Number of units to be produced to make a profit of Rs. 2,70,000/-

(v) Variable cost at break even point

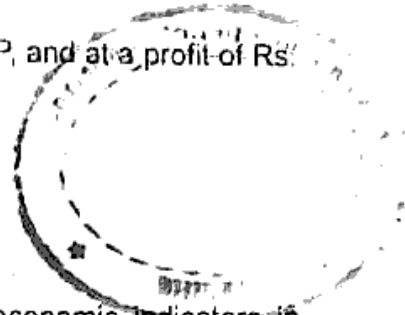
(vi) Variable cost to make profit of Rs. 2,70,000/-

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(vii) Total cost at BEP, and at a profit of Rs.

2,70,000/-



Q. 2. (a) What is the use of economic indicators in sales-forecasting ? 2

(b) Discuss Delphi method of forecasting. What are the merits and demerits of this technique? What precautions must be observed while carrying out Delphi? 7

(c) XYZ Industries Limited has observed that the demand for its one of the product has been

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rising rapidly. The following data are noted

Fit a linear regression to the data and

forecast the demand for the years 2012 and

2013 : 7

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
Demand (in'000)	13	20	20	28	30	32	33	38	43

(d) (i) What are the advantages of exponential smoothing method of forecasting over other methods? 2

(ii) A restaurant had a demand of 500 sweets packets in January and 600

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sweet packets in February. The restaurant manager used average monthly demand to forecast for each month of the next year, and it was 400 packets. Using 400 sweet packets as the January forecast and 0.8 smoothing coefficient, estimate the recent demand in February and calculate the forecast for the month of March for the same year.

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- Q. 3. (a) What is meant by "unit load" in material handling system? 2
- (b) What is aggregate planning? What are its various elements? Discuss the relationship between the various elements of aggregate planning with the help of a flow diagram. 7
- (c) Define scheduling and further critically comment on the following statements 7

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(i) Scheduling is an effective tool for cost reduction.

(ii) Scheduling leads to better customer satisfaction.

(iii) Scheduling improves the efficiency of the system.

(d) What is Gantt chart? What are its main benefits? Prepare the Gantt chart for following activities involved in the repair of an electric motor:

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Sl. No.	Task	Major Activities	Duration (Hrs.)		Analysis
			Planned	Actual	
1	A	Motor testing with magnet	1	1	start
2	B	Dismantle motor & its cleaning	2	1	depends on A
3	C	Remove bearings from motor shaft	1	1	depends on B
4	D	Collect winding materials	1	6	depends on A
5	E	Rewinding of motor	8	6	depends on B, C, D
6	F	Re-install the new bearings	1	1	depends on E
7	G	Assembling of motor	2	1	depends on F
8	H	Installation & testing of motor	1	1	depends on G

Q. 4. (a) Explain the term "Inventory" precisely in context with materials management. 2

(b) Discuss the various factors for considerations in the Make or Buy Decision process. 1

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(c) Discuss the various storekeeping operations

involved in the management of tools, surplus

materials and scrap materials. 7

(d) What is economic order quantity? Derive the

expression for determining economic order

quantity giving complete explanations of the

symbols and notations used in it. Also show

the graphical representation of economic

order quantity. 7

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Q. 5. (a) Draw O.C. curve for a sampling plan and

clearly label all the elements of the curve in

it. 2

(b) What is C control chart? What information

can be obtained from C chart? 2

Draw C control chart for the following data:

Sample No.	1	2	3	4	5	6	7	8	9	10	11	12
No. of defects	5	3	6	4	2	7	8	4	5	6	3	7

Give your opinion and comments for the

above. 5

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(c) \bar{x} and R values of four subgroups of five

readings are given below

$\bar{x} = 10.2, 10.8, 12.1, 10.6$

$R = 1.1, 1.4, 0.9, 0.7$

The specification limits for the component

are 10.6 ± 0.2 . Establish the control limits for

\bar{x} and R chart. Take $A_2 = 0.57$, $D_4 = 2.12$ and

$D_3 = 0.00$.

(d) Explain the importance of the following with

respect to quality control management (any

two):

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(i) Six Sigma

(ii) Kanban

(iii) Just in Time