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SF-7167

B. E. - III (Sem. VI) (Mech.) Examination

May / June – 2011

Industrial Engineering

Time : Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. - III (Sem. VI) (Mech.)**

Name of the Subject :

☛ **Industrial Engineering**

☛ Subject Code No. : **7 1 6 7** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Attempt all questions.
(3) Use of graph paper is allowed.
(4) Assume suitable data, if required.

1 (a) Answer in brief : **10**
(1) What is standard data ?
(2) What is motion study ?
(3) What are the objectives of Ergonomics ?
(4) Draw the various symbol used in making of chart.
(5) Explain the rating factor.

(b) Answer the following. (Any two) **10**
(1) Compare MTM and work factor system.
(2) Compare cycle graph and chronocycle graph.
(3) Enlist the principles of motion economy related to design of tool and equipment.

2 Attempt any three : **30**
(a) In manufacturing a product, the following times have been estimated.
(1) loading piece into the machine=0.3 mins.
(2) Setting the machine and engaging feed lever = 0.2 mins.

(3) Running time (Auto Stop) = 0.5-0 mins.

(4) Unloading component = 0.25 mins.

(5) Packing in box = 0.1 mins.

Draw man and machine chart. Calculate cycle time, idle time and % utilization of man and machine.

(b) An analysis of company revels the following information.

Cost elements	*Variable* cost	*Fixed* cost
Direct material	32.8	–
Direct labour	28.4	–
Factory overhead	12.6	1,89,900
Distribution overhead	4.1	58,400
General administrative overhead	1.1	66,700
Budgeted sales	–	18,50,000

Determine :

(1) Break-even sales volume.

(2) The profit at budgeted sales volume.

(3) The profit if the actual sales

(a) drop by 10%

(b) Increased by 5 % from the budgeted sales.

(c) Answer the following :

(a) What is anthropometry ? How it is used in design?

(b) Production study.

(d) The time recorded on time study sheet of snap back method for a single manual work element indicates the following times in decimal minutes :

0.14, 0.15, 0.20*, 0.15, 0.2, 0.18, 0.17, 0.17, 0.17, 0.18, 0.14, 0.19, 0.13, 0.15, 0.17, 0.19*, 0.14, 0.17, 0.18, 0.16, 0.14, 0.16, 0.13, 0.19, 0.13, 0.14, 0.17, 0.12, 0.13, 0.14, 0.18*, 0.14.

* indicate that the job got struck to fixtures. The rating was judged as 80 on a 60 normal scale.

Determine the no. of observation required to give a desired precision of $\pm 5\%$ with 95% confidence level.

3 Answer the following question. 14

(a) What are the objectives of inventory control ?

(b) Define :- ordering quantity.

(c) List out different types of forecasting and explain in brief.

(d) List the advantages of value analysis.

(e) What is the difference between batch shop and continuous production system ?

(f) Define : Industrial Engineering. Give one example.

(g) What do you mean by lead time ? Give approximate lead time if you want to a purchase Dell laptop as per your specification.

4 Write the short note on following (Any three). 18

(a) production control.

(b) Different ways of measuring forecasting accuracy.

(c) Typesof inventories.

(d) Productivity and ways to improve it.

5 Answer the following question (any two). 18

(a) Which forecasting method (the Ap=3 moving average or the ∞=.25 exponential smoothing) is preferred, based on the MAD over the most recent 9 days ? (Assume that the exponential smoothing forecast for Day 3 is the same as the actual call volume.)

Day	4	5	6	7	8	9	10	11	12
Calls	161	173	157	203	195	188	168	198	159

(b) What do you mean by value analysis ? Discuss various phases of value analysis.

(c) The production department for a company requires 3600 kg of raw material for manufacture of a particular item per year. It has been estimated that the cost of placing on order is Rs. 36 and the inventory carrying cost is 25% of the investment in inventories. The price of Rs. 10/kg. The purchase manager wished to determine an ordering policy of raw material.
