Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – VI (OLD).EXAMINATION – WINTER 2016

Subject Code: 161907 **Date: 26/10/2016**

Subject Name: Industrial Engineering

Time: 02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Define productivity. Discuss different types of partial productivity. **07**

(b) Explain the factors to be considered for selection of location for the plant. **07**

Q.2 **(a)** How does the multiple activity charts help to reduce the idle time of men and machine? Explain with suitable example and chart. **07**

(b) Differentiate between product layout and process layout. **07**

OR

(b) State the relationship between productivity and work study. Explain various tools for increasing productivity. **07**

Q.3 **(a)** Explain in brief any TWO of the following recording techniques: **07**
1.Flow diagram 2.Travel Chart 3.Two handed process chart

(b) Explain the importance of motion economy and its principles related to the use of human body. **07**

OR

Q.3 **(a)** What is Work measurement? Explain the various techniques of work measurement in brief. **07**

(b) An industrial operation consists of five elements with following observed time and the performance ratings. Assume personal allowance as 12% and contingency allowance as 4% of the basic time. Calculate standard time per piece. **07**

Elements	Observed time	Rating (%)
1	0.15	80
2	0.20	85
3	0.10	90
4	0.12	75
5	0.25	80

Q.4 **(a)** Discuss different methods of sales forecasting. **07**

(b) Define PPC. Discuss the phases of production planning and control. **07**

OR

Q.4 **(a)** What is statistical quality control? Explain assignable and common causes. **07**

(b) Explain operating characteristics curves for acceptance sampling. **07**

Q.5 **(a)** What is job evaluation? Discuss any one method of job evaluation. **07**

(b) Explain the following in connection with the time study: **07**

1.Selection of job 2.Breaking the job in to elements 3.Qualified worker

OR

Q.5 **(a)** In a factory producing spark plugs the number of defectives found in inspection of 20 lots of 100 each is given below: **07**

Lot No.	No. of defective	Lot No.	No. of defective	Lot No.	No. of defective	Lot No.	No. of defective
1	5	6	4	11	4	16	4
2	10	7	6	12	7	17	5
3	12	8	3	13	8	18	8
4	8	9	3	14	2	19	6
5	6	10	5	15	3	20	10

Construct appropriate control chart and state whether the process is under control or not.

(b) The following table shows the number of defects observed in 25 similar castings. **07**

1. Find C bar
2. Compute trial control limits
3. What value of C bar can you suggest for subsequent period eliminating observations lying beyond control limits?

Casting No.	No. of defects	Casting No.	No. of defects	Casting No.	No. of defects	Casting No.	No. of defects
1	7	8	11	15	14	22	11
2	14	9	20	16	9	23	7
3	14	10	12	17	9	24	26
4	18	11	22	18	11	25	8
5	8	12	15	19	10		
6	14	13	8	20	8		
7	8	14	24	21	9		

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