Seat No.:	Enrolment No.
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# **GUJARAT TECHNOLOGICAL UNIVERSITY**

BE - SEMESTER-VII (NEW) - EXAMINATION - SUMMER 2017

Subject Code: 2172502 Date: 29/04/2017

**Subject Name: Productivity Improvement Methods** 

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) State the factors affecting Productivity. Explain each factor and its effect on productivity in brief.
  - (b) Compare and contrast Flow process chart and Two handed process chart in context of construction, usage and symbols used.
- Q.2 (a) What are Therbligs? Sketch any six Therblings with symbols with their meaning and application. 07
  - (b) Time study has been carried out for a job having seven elements through cumulative timing method. From the study, following observations have been made.

Element	1	2	3	4	5	6	7
No.							
Observed time in sec	17	52	235	291	357	397	420
Rating,%	105	115	90	100	85	120	80

Determine the standard time of a job considering relaxation and contingency allowances as 12% and 8% respectively of the basic time.

### OR

(b) The continuous time readings in centiminutes, ratings and allowances for four elements of an operation are as follows:

Element -	1	2	3	4
Observation <b>→</b>	130			
1	138	43	56	59
2	67	72	85	88
3	98	204	18	21
4	28	33	46	49
5	57	62	76	79
6	87	93	306	09
Average Rating	110%	120%	105%	120%
Allowance	15%	20%	15%	20%

## Calculate:

- 1) Standard time for each element and for the work cycle.
- 2) Determine the number of workers required if 10,000 pieces of the above job are required per shift of 8 hours.
- Q.3 (a) What is meant by "Ergonomics"? State how it can be useful in industry to 07 improve productivity.
  - (b) What is incentive? How financial and non financial incentives play an 07 important role in efficiency of workers?

		OR	
Q.3	(a)	Enlist the environmental factors affecting the performance of worker and explain them.	07
	<b>(b)</b>	Discuss the concept of wage. Is it different from 'real wage'? What are the essential characteristics of a good wage plan?	07
Q.4	(a)	What is productivity index? Explain the different kinds of productivity measurement.	07
	<b>(b)</b>	Classify the Multiple activity charts. Explain any one of them with suitable illustration.	07
		OR	
Q.4	(a) (b)	Define various types of elements and give one example of each type. Briefly explain the importance of flow diagram and string diagram.	07 07
Q.5	(a) (b)	State the objectives and applications of Business Process Reengineering. List different techniques for work measurement. Explain PMTS in detail.	07 07
		OR	
Q.5	(a) (b)	Discuss the implementation methodology of Business Process Reengineering. Explain in brief about the activities of National Productivity Council and other organizations.	07 07

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