

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VII Examination-Nov/Dec.-2011

Subject code: 172502

Date: 22/11/2011

Subject Name: Productivity Improvement Methods

Time: 10.30 am-01.00 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) Explain the meaning of Productivity with suitable example. Explain the importance of productivity. State the relationship between productivity and standard of living. **07**

(b) A company produces 160 kg of plastic moulded parts of acceptable quality by consuming 200 kg of raw materials for a particular period. For the next period, the out put is doubled (320 kg) by consuming 420 kg of raw materials and for the third period, the out put is increased to 400 kg by consuming 400 kg of raw materials. Calculate the productivity of each period. Comment on the result. **07**

Q.2 (a) Explain the following factors in connection with selection of work for method study. **07**

(i) Economic consideration. (ii) Human consideration

(b) How does the work content added by poor design of the product or improper utilization of materials? Explain with the aid of suitable example. **07**

OR

(b) What do you understand by ineffective time added which is within the control of workers? How does the management reduce this ineffective time? **07**

Q.3 (a) 'Critical examination is a motive force to develop a new method' – Evaluate the statement. **07**

(b) Make a two handed process chart for the assembly of a electrical tester, consisting of a five components. **07**

(i) Barrel (ii) Filament bulb (iii) Resister (iv) Clip & (v) Cap

OR

Q.3 (a) How does a string diagram differ from a flow diagram and a travel chart? Compare and contrast flow diagram, string diagram and travel chart. **07**

- (b) A machinist has to attend two machines. The actual time taken by both machines are as follows: 07

	Minutes
# Stopping the machine and unloading.....	2
# Actual machining time (automatic feed).....	10
# Loading the job	2
# Inspection of the job	2

Prepare a man-machine chart yielding the highest efficiency

- Q.4 (a)** Describe the various stop watches used in time study. State the uses and limitations of each of them. 07
- (b)** What guides will a time study analyst adhere to when breaking a job down into its elements? What rational underlies each of these guides? 07

OR

- Q.4 (a)** What is rating? Why is it used in time study? How does overall performance rating differ from elemental performance rating? 07
- Q.4 (b)** Following observations were recorded during the time study of an operation having four elements. 07

Observations	Continuous readings in centiminutes			
	1	2	3	4
1	8	12	33	44
2	54	58	70	80
3	88	94	105	16
4	26	31	42	52
5	60	65	76	88
6	95	201	12	25
7	31	35	51	63
8	70	76	94	311
9	18	23	36	47
10	55	65	80	91
Average Rating	100 %	100 %	95 %	90 %

- (i) Calculate basic time for each element in minutes.
- (ii) Determine the standard time of a job considering relaxation and contingency allowances as 15 % and 12 % respectively of the basic time.
- (iii) If 25 operators work for 8 hours per day, how many days will be required to make 10000 pieces?
- Q.5 (a)** Explain briefly the concept of work sampling with suitable example. 07
- (b)** Define Business Process Reengineering (BPR). State the advantages of BPR. 07

OR

- Q.5 (a)** What is meant by incentives? What do you understand by negative incentives plans? 07
- (b)** What is meant by Ergonomics? State how it can be useful in Industry. 07
