GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII • EXAMINATION - SUMMER • 2015

Subject Code: 172502 Date: 08/05/2015

Subject Name: Productivity Improvement Methods

Time:02.30pm-05.00pm 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. Briefly explain how use of work study leads to higher productivity in a manufacturing unit.
 - (b) What should the methods engineer bear in mind before starting an investigation in a picked up case of the method study.
- Q.2 (a) In the methods improvement study, it is often a critical decision as to 'where' and 'how' should man be used in the process. Discuss various considerations involved in this decision.
 - (b) In making a time study of a laboratory technician performing an analysis of processed food in a canning factory, the following times were noted for a particular operation.

	particular operation.								
Run	Operation Time (sec.)								
1	21	7	20	13	21	19	18		
2	21	8	19	14	18	20	19		
3	16	9	19	15	23	21	21		
4	19	10	20	16	19	22	20		
5	20	11	40	17	15	23	20		
6	16	12	19	18	18	24	19		

If the technician's performance has been rated at 120%, and the company policy for allowance stipulates 13%, Determine

(i) Normal time (ii) Standard time

Watch reading falling 50% above and 25% below the average may be considered as abnormal.

OR

(b) Given the following data, calculate the production standard (Pieces per hour), the standard labour cost per 100 pieces, and the standard hours per 100 pieces. The allowances are 6% for fatigue, 5% for unavoidable delays, 8% of normal time for personal needs. The operation is paid Rs.5 per hour. Performance rating = 95%

Reading (Minute)

Element	1	2	3	4
1	0.011	0.010	0.009	0.012
2	0.002	0.003	0.004	0.004
3	0.100	0.110	0.090	0.100
4	0.205	0.195	0.200	0.210

07

Q.3	(a)	What are the various techniques used to study the path of movement during a method study? Discuss application and limitations of each one of them.	07		
	(b)	What do you understand by allowances in the context of time study? What are the various allowances and how are they determined?	07		
		OR			
Q.3 (a)		What is a process chart and why is it used? What advantage is it to write down the steps in a job.			
	(b)	Enumerate the principles of motion economy pertaining to work place layout.	07		
Q.4	(a)	Give the general characteristics, advantages and limitations of the two most common methods of wage payment.	07		
	(b)	Discuss in brief the optimum locations of the following on equipment: (i) Visual displays (ii) Hand controls (iii) Foot controls.	07		
		OR			
Q.4 (a)	(a)	How will you establish a financial incentive scheme? Discuss the various factors. Describe the procedures available for carrying out the necessary check.			
	(b)	Define "Ergonomics" and discuss the ergonomics aspects of a four-wheeler dash board design.	07		
Q.5	(a)	Why do accidents occurs? Discuss the reasons as to why should employees and employers both be concerned about safety in industry.	07		
	(b)	Define Business Process Reengineering (BPR). State the advantages of BPR.	07		
		OR			
Q.5	(a)	Discuss the need for using personal protective equipment. Briefly describe the various types of such equipment.	07		
	(b)	Define the term 'Maintenance'. Distinguish between breakdown maintenance and Preventive maintenance.	07		
