## GUJARAT TECHNOLOGICAL UNIVERSITY M. E. - SEMESTER – I • EXAMINATION – WINTER 2012

## Subject code: 714604 Subject Name: Production Management Systems Time: 02.30 pm – 05.00 pm Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) Explain production system facilities and manufacturing support 07 systems with example.
  - (b) Define method study. Explain the objectives of method study. Enlist 07 the pre-requisites for method study.
- Q.2 (a) Define micro motion study. Explain its benefits with suitable example. 07 What are the steps in micro motion study?
  - (b) Explain performance rating and computation of standard time. 07 In a time study job, at the preliminary level 5 observations are made with the individual observations being 6, 6, 7, 5, 7 units of time. Calculate sample size (no. of observations required for 95% confidence level and the accuracy desired is 10%, 5%.

## OR

(b) An operator working on a drilling machine performed the following 07 elements for which observed times and ratings are given below:

Element	Observed	Ratin	Relaxation	
	time, minute	g	Allowance	
Position job into a drill jig.	0.22	85	13%	
Switch on m/c & lower the	0.07	100	10%	
drill				
Drill hole.	1.50	95	12%	
Raise drill & switch off m/c.	0.06	90	11%	
Remove job from jig.	0.11	110	10%	

Calculate normal time of each element, normal time of the job and standard time of the job.

- Q.3 (a) Define "Production Planning and Control". State its objectives. 07
  - (b) Differentiate between Production Planning and Production Control 07 with examples.

## OR

- Q.3 (a) Define routing. Describe rout sheet with suitable example.
  (b) Write short note on dispatching and machine loading.
  07
- Q.4 (a) What is material requirement planning (MRP)? Discuss its usefulness 07 and limitations in batch production industry.
  - (b) Explain the various inputs of MRP. What is MRPII? 07

Date: 12-01-2013

**Total Marks: 70** 

- Q.4 (a) Define JIT. Describe characteristics and goals of JIT.
  - (b) Explain (i) Kanban and (ii) Benefits and limitations of JIT.

Q.5 (a) The following is the single machine scheduling problem with weights. 07

Job (j)	1	2	3	4	5
Processing time $(t_i)$	14	5	4	13	7
Weight (w <sub>j</sub> )	2	1	2	1	3

Determine the sequence which will minimize the weighted mean flow time of the above problem. Also find the weighted mean flow time.

(b) Consider the following 2 machines and 5 jobs flow shop scheduling 07 problem. Using Johnson's algorithm, obtain the optimal sequence which will minimize the make span.

Job i	Machine 1	Machine 2		
1	7	8		
2	1	4		
3	15	12		
4	8	5		
5	11	6		
OR				

- Q.5 (a) Define flow time, lateness and tardiness. Distinguish between single 07 machine scheduling and flow shop scheduling.
  - (b) What is value engineering? What are the different types of values? 07 Discuss various fields of application of value engineering.

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