

V SEMESTER B.TECH. (MECHANICAL AND INDUSTRIAL AND PRODUCTION ENGINEERING) END SEMESTER EXAMINATIONS, NOVEMBER 2017

SUBJECT: WORK SYSTEMS ENGINEERING [MME 4038]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ALL the questions.
- Missing data may be suitably assumed.

1A.	Define productivity. How it influences standard of living?	
1B.	Explain the Relaxation allowance and Contingency allowance.	(03)
1C.	How the total time of a job is made up? Explain the management techniques available for reducing the excess work content and ineffective time.	(05)
2A.	Explain Work cycle and Load factor.	(02)
2B.	Define Work study. Explain the steps involved in Work study.	(03)

2C. The following observations were made in a Method study on an operator in charge of two identical machines A and B:

Description of events	Time (min)
Cleaning and checking finished job.	3
Preparing a job for machining.	4
Stopping and unloading a machine.	4
Loading and starting a machine.	6
Automatic processing by a machine.	25

Draw Man-machine chart for the best sequence. Find the percent utilization of operator and machines.

(05)

- 3A. How the Standard time is computed in Time study?
- **3B.** Six observations taken for an element in a Time study are as follows. Find out whether the number of observations are sufficient considering 95% confidence level and $\pm 5\%$ precision.

Time in decimal min.

6 4 6

- 6 5 5 (03) 3C. Define Therbligs. List any twelve types of Therbligs along with their symbols (05) and abbreviations. 4A. Write a note on Ergonomics. (02) 4B. Explain the classification of elements in Time study with an example to each. (04) 4C. With a neat sketch explain the Outline process chart. (04)
- 5A. Discuss the resources at the disposal of an enterprise. (02)
- **5B.** Explain the questioning technique employed in Method study. **(03)**
- **5C.** Calculate the standard time from the data given below and represent the various components in a Pump diagram.

Elomonto	Average observed time	Pating (9/)
Liements	Average observed time	Rating (70)
	(in decimal units)	
Element A (outside work)	160	80
Element B (outside work)	80	120
Element C (inside work)	120	90

Machine controlled time = 450 decimal units.

P.N.A = 15 %, F.A. = 5 %

(1 min = 100 decimal units)

(05)