

(A constituent unit of MAHE, Manipal)

V SEMESTER B. TECH (MECHANICAL AND INDUSTRIAL AND PRODUCTION ENGINEERING) END SEMESTER EXAMINATIONS, DECEMBER 2019

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.

1 A .	List the recording techniques used in Method study.	(02)
1B.	Write a note on Relaxation allowance and Contingency allowance.	(03)
1C.	Define productivity. Explain the factors responsible for reducing the productivity.	(05)
2A.	Write a note on Standard data.	(02)
2B.	Explain Micro motion study, Cyclograph and Chronocyclegraph.	(03)
2C.	Draw a Flow process chart for the following activities and identify its type: A batch of twenty castings are moved from foundry shop near to a lathe machine in machine shop (4 min, 65 m). It remains there for 15 min. The facing, rounding the edge and internal threading operations take 60 minutes per casting including machine set up. The batch is then taken to drilling machine (2 min, 20 m) where 8 holes are drilled on each casting taking 30 minutes per casting. The batch is then transported to the stores (4 min, 65 m). Dimensions are checked at the end of lathe work and drilling machine work taking 2 minutes per casting.	(05)
3A.	Write a note on Ergonomics.	(02)
3B.	With a sketch explain the components of a Pump diagram.	(04)

3C. Explain the classification of elements in Time study with an example to each.(04)

4A.	Discuss the human factor in the application of Work study.	(03)
4B.	Explain the factors to be considered while selecting the job for Method study.	(03)
4C.	Differentiate between Simultaneous motion cycle chart and Two handed process chart.	(04)
5A.	How Personal need allowance and Fatigue allowance are computed in restricted work?	(02)
5B.	List the general rules and explain the necessity for breaking the job into elements in Stop watch time study.	(03)

5C. Construct a Man-machine chart for the best sequence for the following activities performed by an operator in charge of one machine. Calculate the percentage utilization of resources.

SI.No.	Element description	Time (hour)	_
1	Picks up casting from the box and walks to the		-
	machine.	0.10	
2	Positions and fastens castings in the machine.	0.12	
3	Starts the machine and engages feed.	0.09	
4	Casting is machined (unattended by the		
	operator).	0.30	
5	Stops the machine.	0.05	
6	Unfastens and removes the casting.	0.12	
7	Walks back to the box and deposits the casting.	0.10	_ (05)

(03)