Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

A Constituent Institute of Manipal University, Manipal

V SEMESTER B.TECH. (MECHANICAL AND INDUSTRIAL AND PRODUCTION ENGINEERING) END SEMESTER MAKEUP EXAMINATIONS, DECEMBER 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. Distinguish between Total productivity and Partial productivity. **(02)**

1B. Define Method study. Explain the steps involved in Method study. **(03)**

1C. Define Basis work content. Explain the factors responsible for Excess work content and Ineffective time. **(05)**

2A. Explain Machine interference and Interference allowance with regard to multiple machine work. **(02)**

2B. Explain any three rating methods. **(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 min 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 min 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 min per casting. **(05)**

3A.	How the sample size is determined in Stop watch time study?	**(02)**
3B.	Discuss the human factor in the application of Work study.	**(03)**
3C.	Explain the principles of motion economy.	**(05)**
4A.	Define Work sampling. Explain the procedure for Work sampling.	**(03)**
4B.	Explain the general rules for breaking the job into elements in Time study.	**(03)**
4C.	With a neat sketch explain the SIMO chart.	**(04)**
5A.	Distinguish between Flow diagram and String diagram.	**(03)**
5B.	Explain Continuous, Fly back and Differential methods of timing the elements.	**(03)**
5C.	With a neat sketch explain the components of Pump diagram.	**(04)**