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Manipal Institute of Technology, Manipal



V SEMESTER B.TECH (INDUSTRIAL AND PRODUCTION ENGINEERING) END SEMESTER (MAKE UP) EXAMINATIONS, DEC 2015/JAN 2016

SUBJECT: WORK SYSTEMS ENGINEERING [MME 325]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ANY FIVE FULL** the questions.
- ❖ Missing data may be suitably assumed.

- 1A. Define Work study. Why it is valuable? (02)
- 1B. Explain the critical examination phase of Method study. (04)
- 1C. Explain the management techniques for reducing the excess work content and ineffective time. (04)
- 2A. Explain the Work cycle and Load factor. (02)
- 2B. Define Method study. Explain the steps involved in Method study. (03)
- 2C. The following observations were made in a Method study on an operator in charge of one machine :

Description of events	Time (min)
Preparation of job	2
Putting away finished job	1
Stopping and unloading of machine	5
Loading and starting of machine	7
Automatic processing by the machine	38

Draw a multiple activity chart with proportionate time scale for the best sequence and compute the percentage utilization of resources. If the operator is paid Rs 14/- per hour and machine costs Rs 32/- per hour, compute the cost per piece.

(05)

- 3A. Explain the Qualified worker. (02)
- 3B. Explain the principles of motion economy with regard to arrangement of work place and design of tool and equipment. (04)
- 3C. Write a note on Work sampling. (04)

- 4A.** Explain the classification of recording techniques employed in Method study. **(02)**
- 4B.** Explain the Relaxation allowance and Special allowances used in standard time computation. **(03)**

- 4C.** Draw a Flow process chart for the following activities and identify its type:

A requisition is written by a supervisor (one copy). It lies on the supervisor's desk awaiting the messenger. It is taken by the messenger to the superintendent's secretary (25m). It lies on the secretary's desk awaiting typing. Requisition is typed (original requisition copied) by the secretary and transferred to the superintendent (6m). It remains on the superintendent's desk awaiting approval. Requisition is examined and approved by the superintendent. It lies on the superintendent's desk awaiting the messenger. It is moved to purchasing department (8m). It remains on the purchasing agent's desk awaiting approval. Requisition is examined and approved. It lies on purchasing agent's desk awaiting the messenger. Requisition is moved to typist's desk (3m) for preparing the purchasing order.

(05)

- 5A.** Explain the uses of Outline process chart. **(02)**
- 5B.** Distinguish between Travel chart and String diagram. **(04)**
- 5C.** Five 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 $\pm 10\%$ precision.

Time in decimal min.

9
6
8
8
7

(04)

- 6A.** Discuss Micro motion study. **(02)**
- 6B.** Explain: (i) Performance rating (ii) Synthetic rating (iii) Objective rating **(03)**
- 6C.** With a neat sketch explain the components of a Pump diagram. **(05)**