

Roll No.....

Total No. of Questions : 08]

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Paper ID [IE505]

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M.Tech.

METHOD ENGINEERING AND ERGONOMICS (IE - 505)

Time : 03 Hours

Maximum Marks : 100

Instruction to Candidates:

- 1) Attempt any **Five** questions.
- 2) All questions carry equal marks.

- Q1)** (a) Discuss Two handed process chart.
(b) What is string diagram? Discuss its construction , advantages and disadvantages.
(c) What is S.I.M.O chart? Construct S.I.M.O chart with suitable example.
- Q2)** (a) Discuss principles of motion economy in detail.
(b) List various Therbligs along with their definition, symbols and colours.
(c) A work sampling study was conducted to estimate the time for which the laborers at a service company remain idle. A total of 730 observations were made of these laborers. Forty seven of these observations were made when a laborer was idle. What is the accuracy of the current estimate of the proportion of time consumed by idleness. if the confidence level is 68%?
- Q3)** (a) Define 'standard time' of an operation. Briefly describe the method used to obtain time standards.
(b) What is meant by analytical estimating of time standard? What is the area of application? Also give step-by-step procedure of analytical estimation of time of any job.
- Q4)** (a) Define glare. What is Glare Index and on what factors does it depend? Give the values of limiting Glare Index for some common industrial work stations.

(b) Explain the guiding principles for location of components in a work station. what are the criteria of deciding whether a layout is good or bad from ergonomics point of view?

Q5) (a) What are productivity measurement approaches at the enterprise level.

(b) Define 'Labour productivity' and 'Capital productivity'. Also list factors contributing to productivity improvement?

Q6) (a) Define following terms:-

(i) Activity Sampling.

(ii) Basic time.

(iii) Check time.

(iv) Chronocyclegraph.

(v) Machine utilization index.

(b) Discuss effect of Noise and vibration on human body.

Q7) How principles of work study is applied in (a) agriculture (b) Building industries? Discuss.

Q8) Write short note on:

(a) Factors by which man - machine system can be differentiated from non man-machine systems.

(b) Ergonomic recommendations regarding length of scale unit, scale division and scale marks, numerical progression, colour contrast, pointer.