

APJ Abdul Kalam Technological University
Second Semester M.Tech Degree Examination, May 2016
Ernakulam II Cluster
Branch: Mechanical Engineering
Specialisation: Industrial Engineering And Management
05ME 6404 WORK SYSTEM DESIGN

Time: 3 Hours

Max. Marks: 60

Answer ALL questions

MODULE 1

1. (a) Define ineffective time. Which are the factors reducing productivity?
(b) Define 'Micro-motion' study. Explain the steps in micro-motion study.
(c) Explain various steps involved in method study, and how does it improve productivity.
(d) Define the method study. Discuss the following tools used for the purpose: (i) Operation process chart, (ii) Flow diagram, (iii) Travel chart (2+2+4+4= 12 marks)

MODULE 2

- 2 (a) What is Standard data? State its applications.
(b) Assuming that the total observed time for an operation of assembling an Electronic switch is 1.00 minute. If the rating is 120%, find the normal time. If the allowance of 10% is allowed for the operation, determine the standard time.
(c) Assume you are the supervisor. Work measurement is to be introduced into your department. How would you explain to your men the technique of work measurement and how it might affect them? (2+2+8 = 12marks)

MODULE 3

- 3 (a) Define Ergonomics. What are the factors governing the performance of man- machine system?
(b) Explain the methods of measurement of fatigue in work physiology?
(c) What is Anthropometry and explain principles used in application of anthropometric data. (6+6+6 = 18marks)

OR

4. (a) Mention the factors considered in ergonomic analysis.
(b) Explain some ways to reduce musculo-skeletal stress through work place design.
(c) Show the plan of a suggested work place layout with typical dimensions.

(6+6+6 = 18 marks)

MODULE 4

5. (a) Explain the role of physical environment on the human performance.
(b) Explain the physiological effects of heat & cold. Explain its remedies
(c) Write a note on Human sensory system.

(6+6+6 = 18 marks)

Or

6. (a) What are the various displays used in a man-machine system? Discuss the functional requirement and criteria used for their design.
(b) Write a note on effect of light and sound on human performance.
(c) Explain the effect of cognitive load on human performance. 6+6+6 = 18 marks)