

APJ Abdul Kalam Technological University  
Ernakulam II Cluster  
Second Semester M. Tech Degree Examination May 2017  
**05ME 6404 - WORK SYSTEM DESIGN**

Time: 3 hrs.

Max. Marks: 60

1. (a) Increased productivity leads to higher standard of living. Justify  
(b) What are the considerations in selecting a worker for time study?  
(c) Explain the principles of motion economy  
(d) Explain the procedure of micro motion study with examples (2+2+4+4= 12 Marks)
2. (a) What is rating in time study? Explain the different rating methods.  
(b) How do you determine the number of observations required or number of cycles to be timed?  
(c) Define incentives. What are the characteristics of a good incentive plan? Explain the Hasley wage incentive plan  
(d) Define work measurement and describe the techniques of work measurements.  
(2 + 2 +4 + 4 = 12 Marks)
3. (a) Define Ergonomics. What are the factors governing the performance of man- machine system?  
(b) Describe various methods to reduce musculo-skeletal stress through work place design.  
(c) Draw the plan of a suggested work place layout with typical dimensions and how does it helps in improving the productivity of the work place. (6 +6 +6 = 18 Marks)

**OR**

4. (a) What do you mean by posture? Explain the various poster evaluation tools that are used.  
(b) Define Anthropometry and show its importance. Explain the principles important for the application of anthropometric data to the design problem  
(c) What is fatigue and describe the methods of measurement of fatigue in work physiology?  
(6 +6 + 6 = 18 Marks)
5. (a) How does human body respond to vibration? Discuss the methods of protection against vibration.  
(b) Explain the physiological effects of heat & cold. Explain its remedies.

(c) What are the various displays used in a man-machine system? Discuss the functional requirement and criteria used for their design. (6 +6 +6 = 18 Marks)

**OR**

6. (a) Discuss the heat exchange process of human body with atmosphere.  
(b) Write a note on effect of cognitive load on human performance.  
(c) Explain the methods of measurement of fatigue in work physiology?

(6 +6 +6 = 18 Marks)