

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(MID SEMESTER EXAMINATION)**

**CLASS: BE  
BRANCH: PROD.**

**SEMESTER: V  
SESSION : MO/2019**

**SUBJECT : PE5007 WORK STUDY AND ERGONOMICS**

**TIME: 1.5 HOURS**

**FULL MARKS: 25**

**INSTRUCTIONS:**

1. The total marks of the questions are 30.
  2. Candidates may attempt for all 30 marks.
  3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. The missing data, if any, may be assumed suitably.
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- Q1 (a) Define work study. What are its objectives? [2]  
(b) Define ergonomics. Discuss the role of various disciplines which has made it interdisciplinary in character. [3]
- Q2 (a) How work study and ergonomics enhances industrial productivity? [2]  
(b) Define method study. How can you recommend a task as a suitable candidate for method analysis? [3]
- Q3 (a) Differentiate between operation process chart and flow process chart. [2]  
(b) Draw a suitable chart to establish a number of machines to be assigned to one operator. Also discuss the advantages of the chart. [3]
- Q4 (a) State and explain the procedure of critical examination with the help of a suitable example. [3]  
(b) State the principles of motion economy related to the design of work place. [2]
- Q5 (a) Four components are arranged in different bins in a line as shown below. [3]
- |   |   |   |   |   |
|---|---|---|---|---|
| E | D | C | B | A |
|---|---|---|---|---|
- Bin A contains ring washer, bin B contains steel washer, bin C contains leather washer, Bin D contains bolt. All the washers in sequence from A,B, and C are to be assembled with bolt and the assembled item has to be placed in the bin E. By using the principles of motion economy design a suitable arrangement for this task. Also state the related principles of motion economy.
- (b) Explain the use of THERBLIG with the help of a suitable example. [3]
- Q6 (a) Enumerate the list of therbligs in terms of effective and non-effective therbligs? [2]  
(b) Explain SIMO chart with the help of suitable example. What are its application possibilities? [3]

::: 23/09/2019 :::E