

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

**CLASS: BE
BRANCH: PRODUCTION**

**SEMESTER : V
SESSION : MO/19**

SUBJECT: PE5007 WORKSTUDY AND ERGONOMICS

TIME: 3 HOURS

FULL MARKS: 60

INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
 2. Candidates may attempt any 5 questions maximum of 60 marks.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) Explain fully the meaning of “most economical way of doing work”. [2]
- Q.1(b) Define the term productivity and relate this term to work study. What are the various factors effecting productivity of an enterprise? [4]
- Q.1(c) The field of work-study and ergonomics has changed the industrial set up during the last fifty years. Describe some changes that have taken place during that period. [6]
- Q.2(a) What is method study? How will you determine the areas that need method study application in an industry? [2]
- Q.2(b) How could a company go about picking a location, which would be good over the years? Explain. [4]
- Q.2(c) Name and discuss the factors, which you need for the selection of a plant site. What are the advantages and disadvantages of town and country situation? [6]
- Q.3(a) What do you mean by micromotion study? Explain the procedure of making micromotion analysis. [2]
- Q.3(b) What is SIMO chart? What are its advantages and limitations? Explain the procedure of making SIMO chart with suitable example. [4]
- Q.3(c) What do you mean by cyclegraph and chronocyclegraph? What are their advantages and limitations? [6]
- Q.4(a) What is the purpose of work measurement? Explain its different application. [2]
- Q.4(b) Define time study. What are different equipments and forms used in time study? [4]
- Q.4(c) Define work sampling. Explain procedural steps of making work sampling. What are its advantages and disadvantages? [6]
- Q.5(a) What are the main benefits and limitations of job evaluation? [2]
- Q.5(b) What do you understand by merit rating? Explain its advantages and limitations. [4]
- Q.5(c) With the help of suitable example, explain the following methods of job evaluation: [6]
- (I) Simple ranking method
 - (II) Grade description method
 - (III) Factor comparison method
- Q.6(a) What do you mean by ergonomics? [2]
- Q.6(b) Explain the procedure of designing man - machine system with suitable example. [4]
- Q.6(c) Redesign an adjustable barber’s chair with built-in conveniences. [6]
- Q.7(a) “Material handling is a necessary evil” - Discuss. [2]
- Q.7(b) Explain the term material handling and discuss the objectives of good material handling system. [4]
- Q.7(c) ‘Flow of material in the plant determines the type of layout, cost of material, space needed and length of the production time’. Discuss. [6]

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