

**337615(37)**

**B. E. (Sixth Semester) Examination, 2020**

**(Old Scheme)**

**(Mech., Mechatronics Branch)**

**INDUSTRIAL ENGINEERING**

***Time Allowed : Three hours.***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Part (a) of each question is compulsory. Attempt any two parts from (b), (c) and (d) of each questions.***

**Unit-I**

1. (a) Define Ergonomics. 2
- (b) What are the factors that influence the selection of location for a plant? 7

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- (c) What are the principles of plant layout? 7
- (d) Write short notes on :
- (i) Process Layout 3.5
- (ii) Product Layout 3.5

**Unit-II**

2. (a) Define Work study. 2
- (b) Work study is a powerful tool for improving productivity. Explain. 7
- (c) What are Therbligs? Give any five therbligs with symbols. 7
- (d) A work study was conducted in a machine shop. The data has been recorded.  
Total number of observations = 2000  
No activity = 500  
The ratio between manual to machine = 3 : 1  
Portion of activities  
Average performance rating = 85%  
Total number of pieces produced during study = 120  
Duration of the study = 60 hours  
Calculate the standard time/piece assuming 15% relaxation allowance. 7

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**Unit-III**

3. (a) What is Job Evaluation? 2
- (b) Explain procedure of Job Evaluation. 7
- (c) Explain the factors that influence payment of wages to the employees. 7
- (d) What is Incentive? What are the different types of incentive? 7

**Unit-IV**

4. (a) Define Business Process Re-Engineering. 2
- (b) Difference between Industrial Engineering and Re-engineering. 7
- (c) What are the characteristics of BPR? What are the advantages of Re-engineering? 3+4
- (d) Write short notes on : 3.5 each
- (i) Internet, Intranet and Extranet
- (ii) Globalization and IT

**Unit-V**

5. (a) Define Value Engineering. 2

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- (b) What are the maintenance objectives? 7
- (c) Explain Preventive Maintenance. What are its advantages & disadvantages? 7
- (d) Write short notes on : 3.5 each
- (i) Reasons for replacement of equipment
  - (ii) Value Engineering Vs. Value Analysis