

**B.Tech. – VIEP – MECHANICAL ENGINEERING
(BTMEVI)**

Term-End Examination

00703

June, 2018

BIMEE-018 : INDUSTRIAL ERGONOMICS

Time : 3 hours

Maximum Marks : 70

Note : Answer any *five* questions. All questions carry equal marks.

1. (a) Define Ergonomics. Discuss the importance of occupational ergonomics used in our day-to-day activities. 7
- (b) Describe the factors that will contribute in developing back troubles among the industrial workers. 7
2. (a) How does ergonomics help to analyse the man-machine system ? Discuss how this study improves the workstation layout. 7
- (b) Define musculo-skeletal disorders (MSD) and discuss their causes and remedies.

3. (a) Explain the various methods used for assessment of energy consumption of the workers during heavy work. 7
- (b) Describe the effect of cold and heat on human performance in the context of industrial tasks. 7
4. (a) Differentiate between hand, arm and whole body vibration. Assign numerical values for dangerous, quite uncomfortable, uncomfortable and no vibration. 7
- (b) Discuss the ergonomic design of loading and unloading system to reduce physical stress on the back of the workers. 7
5. (a) What do you mean by anthropometry ? Discuss the role of anthropometric data in design of work-stations. 7
- (b) Describe the ergonomic principles related to the arrangement and design of displays and controls. 7
6. (a) Describe the various physiological effects of noise on workers' health. 7
- (b) Explain the system of measurement of light. Discuss the effect of light intensity on work performance. 7

7. Write short notes on any *four* of the following : $4 \times 3 \frac{1}{2} = 14$

- (a) Bio-Mechanical Models of Lower Work
 - (b) Indoor Air Quality
 - (c) Thermo-Regulation in Human Body
 - (d) Design of Tools and Equipments for Skilled Work
 - (e) Eye Movements Visual Capacity
 - (f) Physiology of Reading
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