

**M.PROD. E. EXAM., 2017**

(1-st Sem.)

**INDUSTRIAL ERGONOMICS**

T: 3 Hrs.

FM:100

Use separate Ans. Script for each part.

**PART -I (60 Mks.)**

Ans. any 3 Q-s.

- |  |       |
|--|-------|
| 1.a) What is the difference between reflexes & skills?   | 5     |
| b) Discuss practical guidelines for work layout.   | 10    |
| c) What is the difference between somatic & autonomic nervous system?  | 5     |
| 2.a) Explain: basal metabolism, leisure calories & work calories.  | 4+4+3 |
| b) What is slipped disc? How does it occur? Why bending the back while lifting loads is to be avoided?   | 6     |
| c) For a skilled work, how is the skill acquired?  | 3     |
| 3.a) Discuss heart rate as a measure of work load. Also discuss blood system & respiration, vasomotor adaptation, rise in blood pressure, increased supply of sugar (glucose). | 12    |
| b) State & briefly explain the golden rules for office chair.  | 8     |
| 4.a) Outline the rules for maximum skill.  | 10    |
| b) List the recommended rules to be followed while lifting loads.  | 7     |
| c) Discuss Seat angles for general purpose & easy chairs.  | 3     |
| 5.a) Discuss with neat sketch the maximum pushing & pulling force while standing (as % of body weight)   | 5     |
| b) What is the difference between  |       |
| i) Sensory nerves & motor nerves   |       |
| ii) Dynamic (rhythmic) effort & static (postural) effort.  | 2+3   |
| c) Briefly discuss the concepts of man-machine system in Ergonomics.   | 4     |
| d) Discuss limiting values for lifting loads   |       |
| i) occasionally, ii) frequently.   | 4     |
| e) Discuss: feeding the intervertebral discs.  | 2     |

**MASTER OF PRODUCTION ENGINEERING EXAMINATION, 2017**

(1<sup>st</sup> Semester)

**INDUSTRIAL ERGONOMICS**

Time: Three hours

Full Marks: 40

Use separate Answer-script for each part.

**PART- II**

Answer any TWO questions.

6.(a) Define the man-machine system and explain how it works. What are its components? 7

Explain the following terms:

(b) (i) Acuteness of vision, (ii) Sensitivity of contrast, (iii) Speed of perception. 6

(c) How ergonomics can be applied to design of instruments and display units? 7

7.(a) What are the sources of noise? Discuss the psychological effects of vibration on human visual perception, psychomotor performance and visibility. 5+5

(b) Describe the methods of protection against noise in a manufacturing environment. 10

8.(a) Explain information processing as a part of man-machine system. Discuss about the memory and sustained alertness. 10

(b) Explain the process of heat exchange between the human body and surroundings. 10

