

Total No. of Questions : 12]

SEAT No. :

P781

[Total No. of Pages : 3

[4659] - 137

B.E. (Production Engg.) (Semester - I)
Ergonomics and Human Factors in Engineering
(2008 Pattern) (Elective - II (a))

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) Answer three questions from Section - I & three questions from Section - II.*
- 2) Answers to the two sections should be written in separate answer books.*
- 3) Neat diagrams must be drawn wherever necessary.*
- 4) Figures to the right indicate full marks.*
- 5) Use of electronic calculator is allowed.*
- 6) Assume suitable data, if necessary.*

SECTION - I

Unit - I

- Q1)** a) What are Human Machine systems? Explain its types. [6]
- b) Discuss features of human body & explain measures of physiological functions. [6]
- c) Discuss Design of MMH Task. [6]

OR

- Q2)** a) Discuss the objectives of “Human Factors in Engineering”. [6]
- b) Discuss characteristics of Human Machine systems. [6]
- c) Explain various types of movements of human body members. [6]

P.T.O.

Unit - II

- Q3)** a) Discuss the considerations in designing a STANDING workplace. [8]
b) Discuss use of anthropometric data in designing of interior of passenger car for four persons. [8]

OR

- Q4)** a) What is Anthropometry and explain principles used in application of anthropometric data? [8]
b) Discuss principles of arrangement of components in various working conditions. [8]

Unit - III

- Q5)** Write short note on (any TWO): [16]
a) Hand tool design.
b) Functions of controls.
c) Concept of visibility.

OR

- Q6)** Discuss arrangement of following components at work place (any FOUR): [16]
a) Visual displays.
b) Control on panels.
c) Hand controls.
d) Two hand controls.
e) Foot controls.
f) Controls that require force.

SECTION - II

Unit - IV

- Q7)** a) Discuss the system of measurement of light. Also explain use of lamps & luminaries. [9]
b) Discuss the physiological effects of heat & cold. Explain its remedies. [9]

OR

- Q8)** a) What is Wet Bulb Globe Temperature? How do you calculate it? Explain its utility in hot humid conditions. [9]
- b) Discuss Discomfort glare & Disability glare. [9]

Unit - V

- Q9)** a) Discuss in detail Requirement of rest allowances in work and co-relate it with energy expenditure. [8]
- b) Discuss manual material handling capacity is determined considering various human factors. [8]

OR

- Q10)** Discuss effect of following conditions on energy expenditure: [16]
- a) Extreme Heat.
- b) Extreme cold.
- c) High humidity.

Also discuss measures to overcome effects of these environmental conditions.

Unit - VI

- Q11)** a) What are the characteristics of system design? How human factors are applied in system design? [10]
- b) Discuss the significance of ergonomic safety. [6]

OR

- Q12)** a) Discuss the term Accident. Explain its relationship with human errors. [8]
- b) Discuss perception of risk & describe risk evaluation process. [8]

