

# Question Paper

Exam Date & Time: 27-Apr-2018 (09:30 AM - 12:30 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

### INTERNATIONAL CENTRE FOR APPLIED SCIENCES

**SECOND SEMESTER B.S (ENGG)**

### END-SEMESTER THEORY EXAMINATIONS APRIL - 2018

**DATE : 27 APRIL 2018**

**TIME : 9:30AM TO 12:30PM**

### Human Factors in Engineering and Design [HS 121]

**Marks: 100**

**Duration: 180 mins.**

**Answer 5 out of 8 questions.**

**Missing data, if any, may be suitably assumed.**

**Neat sketches should accompany wherever necessary.**

- 1) Explain the costs of neglecting Ergonomics. (6)
  - A)
  - B) What is the definition of human error? What is the leading human error cause of accidents? (8)
  - C) What is Anthropometry? What are the uses of Anthropometry data? (6)
- 2) List the types or classes of systems. Explain any two class of system with suitable example. (6)
  - A)
  - B) Explain with block diagram how man-machine environment interact. (8)
  - C) Explain the precautions to be taken to avoid machine vibration. (6)
- 3) Sketch and explain the different types of Quantitative visual displays. Discussion the expected and unexpected designs of displays. (6)
  - A)
  - B) Compare the salient features of Camera.with that of Human Eye. (8)
  - C) Write a short note on 'Visual Capabilities'. (6)
- 4) Describe illumination? How does it influence human performance? Write examples. (8)
  - A)
  - B) Explain biomechanics. Which is best posture to lift a weight of 75 Kgs? (6)
  - C) Explain the assumption of Ergonomics (6)

- 5) Explain the concept work-rest cycles. (6)
- A)
- B) Explain with the help of illustration the body movements (i) Adduction & Abduction (ii) Shoulder Circumduction. (8)
- C) Explain the factors influencing the design of controls (6)
- 6) What are the factors to be considered during the seat design features. (8)
- A)
- B) Explain different types of auditory displays. (4)
- C) Describe the feature of foot control. (8)
- 7) Explain the principal of seat design. (6)
- A)
- B) What are repetitive stress injuries? List the types of Joints in human body. (8)
- C) Enumerate the effect of glare on the quality of light. (6)
- 8) Explain with sketch the different features of human eye. (10)
- A)
- B) Explain the relationship between strength and endurance. (6)
- C) Define Information Theory. Enumerate the different types of information. (4)

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