

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E.

Branch: Industrial Engineering and Management

Course Code: 21IM7DEIDE

Course: Industrial Design and Ergonomics

Semester: VII

Duration: 3 hrs.

Max Marks: 100

Date: 24.02.2023

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

- 1 a) What is the role of industrial design in engineering applications in modern manufacturing systems? **10**
- b) Ajay wants to pursue his career in the designing field. He is given only one option either to study engineering design or industrial design. Help him by giving the difference between these two domains with explanation and suitable examples of your choice. **10**

UNIT - II

- 2 a) How do the shapes and sizes of various controls and displays impact the usability and functionality in multiple display and control situations in industrial design? **10**
- b) What is the importance of working position in workstation design and how does it impact the man-machine relationship in terms of reducing strain, fatigue, and injury while also enabling effective task performance? **10**

UNIT - III

- 3 a) Explain the concept of anthropometry. And mention the appropriate anthropometric dimensions and requirements in order to design the following: **10**
- Spinning chair
 - Study Table
 - Clothes
 - Car seat
 - Stretcher
- b) Sneha works as a tele-caller for a telecom company. One day she visits her family doctor complaining about the frequent neck pain that she gets. The doctor conducts an x-ray and finds out that it is a musculoskeletal disorder. What is Musculoskeletal disorder? What are the causes of getting it and what are the measures that Sneha should have taken before in order to prevent it. **10**

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

OR

- 4 a) Aakash works in a furniture factory. He gets an order of 70 spinning chairs from a well known software company. The company wants aakash to Ergonomically design the chairs. What is Ergonomic and why does a company need ergonomic design and also mention a few advantages of it. **10**
- b) How can anthropometric data be used to design automotive interiors that are safe and comfortable for drivers and passengers of different sizes and shapes? **10**

UNIT - IV

- 5 a) Describe the Concept of Hue, Value and Chroma. Explain the colour psychology by taking an example of: **10**
- Hospital wall
 - Traffic signal lights
 - JCB and Cranes
 - Ambulance
- b) How does our brain process visual information to create a perception of the world around us? Mention the process by sketching the vertical section of human eye with proper labelling. **10**

UNIT - V

- 6 a) Consider you are working in a helmet company called 'studds', where you are in the design department. As traffic fines are increasing, People are now making up their mind to wear helmets, one more thing to note is that - the summer season is nearing. Explain the steps that you take in designing the product so that the company achieves monopoly in the helmet market. **10**
- b) Mention the usual standards which are adopted in style of housing or corporate and List out the various requirements to consider in designing a sound house style. **10**

OR

- 7 a) What do you understand by Aesthetics. What are the principles that are used in the Product Designs? Take any example of your choice and explain the role of aesthetics in designing the product. **10**
- b) Shreya is planning to start an Online tutoring class for high school children. So she contacts a Graphic designing company and tells them that she wants an amazing poster displaying an advertisement of her coaching class. Should she involve in the designing process of the Poster? If yes why and what are the benefits that she and company can get if she involves? **10**
