

Code: 20ME2601B

**III B.Tech - II Semester – Regular Examinations – JUNE 2023****HUMAN FACTORS IN ENGINEERING**  
(Common to All Branches)

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
<b>UNIT-I</b>					
1	a)	What do you mean by work measurement? Explain briefly the work measurement techniques.	L2	CO1	7 M
	b)	Describe the typical Man–Machine interaction cycle. Explain the key interactions in cycle with examples.	L2	CO1	7 M
<b>OR</b>					
2	a)	Briefly discuss the factors affecting energy consumption.	L2	CO1	7 M
	b)	Differentiate the contrast heat stress and cold stress.	L2	CO1	7 M
<b>UNIT-II</b>					
3	a)	Explain the significance of physical dimensions of the human body as a working machine in anthropometry.	L3	CO2	7 M

	b)	Discuss the application of anthropometric data in design.	L2	CO2	7 M
<b>OR</b>					
4	a)	Explain the anthropometric measures for industrial design.	L2	CO2	7 M
	b)	Explain the automated systems and expert systems for ergonomic design.	L2	CO2	7 M
<b>UNIT-III</b>					
5	a)	Explain the principles of hand tool and device design.	L2	CO3	7 M
	b)	Explain the guideline for design of office furniture at the work place.	L2	CO3	7 M
<b>OR</b>					
6	a)	Illustrate how to improve human work place through shapes and sizes of various controls and displays of system.	L3	CO3	7 M
	b)	Interpret the significance of duration of rest periods and shift work at work place.	L3	CO3	7 M
<b>UNIT-IV</b>					
7	a)	Describe the importance of color on engineering equipment at the work place.	L2	CO4	7 M
	b)	What do you mean by ageing eye? Explain the purpose of indirect (Reflected) lighting.	L2	CO4	7 M
<b>OR</b>					
8	a)	Explain the significance of color consistency, color continuation and reaction at work place.	L2	CO4	7 M

	b)	Illustrate the difference between direct lighting and indirect lighting.	L3	CO4	7 M
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**UNIT-V**

9	a)	Why is 'noise' unacceptable in a working environment? How do you measure 'noise'? Define 'noise dose' and state why this is an important measure?	L2	CO4	7 M
	b)	Illustrate how noise effects the human performance and discuss the measures to reduce the noise at work place.	L3	CO4	7 M

**OR**

10	a)	Discuss the influence of the following factors on the human efficiency i. Noise ii. Vibration iii. Light	L2	CO4	7 M
	b)	Mention the various sources of vibrations at work place and explain the effect of vibrations on performance.	L2	CO4	7 M