



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fifth Semester, B.E. - Industrial and Production Engineering

Semester End Examination; February / March - 2022

Work Study and Ergonomics

Time: 3 hrs

Max. Marks: 100

Course Outcomes

The Students will be able to:

CO1: Understanding the fundamentals of the Productivity, Workstudy and various types of Wages and Incentives.

CO2: Analyze the present method and develop the best method.

CO3: Compute the standard time for a work.

CO4: Understanding the Ergonomics and its principles.

CO5: Design the Man/machine system on basis of principles of Ergonomics.

Note: I) PART - A is compulsory. Two marks for each question.

II) PART - B: Answer any **Two** sub questions (from a, b, c) for Maximum of 18 marks from each unit.

Q. No.	Questions	Marks	BLs	COs	POs
I : PART - A		10			
I a.	Define productivity.	2	L1	CO1	PO1
b.	Write the process chart symbols.	2	L1	CO2	PO1
c.	Define rating.	2	L1	CO3	PO1
d.	Define ergonomics	2	L1	CO4	PO1
e.	Name the four displays in car.	2	L1	CO5	PO1
II : PART - B		90			
UNIT - I		18			
1 a.	Discuss on sources for developing measures of productivity.	9	L2	CO1	PO1
b.	Differentiate Harlsey plan and Rowan plan.	9	L2	CO1	PO1
c.	Explain the basic procedure of work study.	9	L2	CO1	PO1
UNIT - II		18			
2 a.	Taking the example of assembly of pen, explain your assumptions on flow process chart.	9	L2	CO2	PO3
b.	Explain briefly process chart symbols.	9	L2	CO2	PO1
c.	Explain any three charts with example.	9	L2	CO2	PO3
UNIT - III		18			
3 a.	What is work measurement? And also explain the different steps involved in work measurement.	9	L1	CO3	PO2
b.	Discuss on time study steps and equipments.	9	L1	CO3	PO3
c.	What is meant by work sampling and also write its applications.	9	L1	CO3	PO1

UNIT - IV**18**

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|-----------------------------------------------------------------------------------------------------------------------------------|---|----|-----|-----|
| 4 a. Explain Man-Machine system. | 9 | L2 | CO4 | PO1 |
| b. Distinguish between the design and use of traditional and present day tools and techniques with respect to ergonomics aspects. | 9 | L1 | CO4 | PO1 |
| c. Discuss on general principles for carrying out the physical activities. | 9 | L2 | CO4 | PO3 |

UNIT - V**18**

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|--------------------------------------------------------------------------------|---|----|-----|-----|
| 5 a. Illustrate the quantitative display. | 9 | L1 | CO5 | PO1 |
| b. Name the types of control. Compare them on the basis of speed and accuracy. | 9 | L1 | CO5 | PO3 |
| c. Discuss on vibrations and lightening systems on human performance. | 9 | L1 | CO5 | PO1 |

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