U.S.N.										

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

Autonomous Institute Affiliated to VTU

September / October 2023 Semester End Main Examinations

Programme: B.E. **Semester: IV**
Branch: Industrial Engineering and Management **Duration: 3 hrs.**
Course Code: 22IM4PCINE **Max Marks: 100**
Course: Industrial Engineering

Instructions: 1. Answer any FIVE full questions, choosing one full question from Unit I&3.
2. Missing data, if any, may be suitably assumed.

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.

		UNIT - I	*CO*	*PO*	Marks
1	a)	Distinguish between the terms Production and Productivity. Does increase in Production lead to improved Productivity? Justify.	*CO1*	*PO1*	**10**
	b)	What is Work Study? Analyze the role of Work Study in improving the productivity in Organizations.	*CO1*	*PO1*	**10**
		OR			
2	a)	Economical and Human factors play a significant role in work study applications and that is why it is said, "Work study is 90% psychological and only 10% technical". Analyze and Comment.	*CO1*	*PO1*	**10**
	b)	Enumerate the factors affecting productivity in organizations.	*CO1*	*PO1*	**10**
		UNIT - II			
3	a)	Enumerate the major steps involved in carrying out a method study.	*CO2*	*PO2*	**10**
	b)	The operator engaged on the machine performs the following operations: Pick up the job, place it between the jaws of a hydraulic vice (0.2 min);Make the switch "ON" to tightly hold the part (0.08 min); Make the switch "ON" start automatic cycle of the operation (0.08 min);Machining of the part on auto cycle (1.5 min); Wait till the vice opens automatically (0.08 min); Pick up the machined job from the vice (0.05min); Keep it in the tray (0.05 min). Construct the multiple activity chart for the machining operation and determine the utilization of resources involved.	*CO2*	*PO2*	**10**

<table>
<tr><td></td><td></td><td></td><td>UNIT - III</td><td></td><td></td><td></td></tr>
<tr><td></td><td>4</td><td>a)</td><td>Review different categories of Work Measurement techniques.</td><td>CO3</td><td>PO3, PO5, PO9, PO12</td><td>10</td></tr>
<tr><td></td><td></td><td>b)</td><td>Describe the steps involved in time study.</td><td>CO3</td><td>PO3, PO5, PO9, PO12</td><td>10</td></tr>
<tr><td></td><td></td><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td></td><td>5</td><td>a)</td><td>Why are jobs broken down into elements? Discuss in detail different elements and give an example for each.</td><td>CO3</td><td>PO3, PO5, PO9, PO12</td><td>10</td></tr>
<tr><td></td><td></td><td>b)</td><td>An operator working on a pillar drill performed the following elements for which the observed time and rating are given:
i) Calculate normal time of each element and normal time of the job.
ii) Also calculate standard time of the job.
<table>
<tr><th>Element Code</th><th>Element Description</th><th>Observed Time(min)</th><th>Rating (%)</th><th>Allowance (%)</th></tr>
<tr><td>A</td><td>Position job into a drill jig</td><td>0.20</td><td>80</td><td>11</td></tr>
<tr><td>B</td><td>Switch on machine and lower drill</td><td>0.08</td><td>100</td><td>11</td></tr>
<tr><td>C</td><td>Drill hole</td><td>2.20</td><td>90</td><td>13</td></tr>
<tr><td>D</td><td>Raise drill and switch off machine</td><td>0.05</td><td>80</td><td>11</td></tr>
<tr><td>E</td><td>Remove job from jig</td><td>0.10</td><td>110</td><td>11</td></tr>
</table></td><td>CO3</td><td>PO3, PO5, PO9, PO12</td><td>10</td></tr>
<tr><td></td><td></td><td></td><td>UNIT - IV</td><td></td><td></td><td></td></tr>
<tr><td></td><td>6</td><td>a)</td><td>With the help of a suitable illustration, describe the components of man-machine system and their functions.</td><td>CO4</td><td>PO3</td><td>10</td></tr>
<tr><td></td><td></td><td>b)</td><td>Describe different types of controls used for transmitting information from human to machine in a typical human machine work system.</td><td>CO4</td><td>PO3</td><td>10</td></tr>
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			UNIT - V			
	7		Write brief notes on the following trends in manufacturing and industrial engineering: i) Agile Manufacturing ii) Value Engineering iii) Total Quality Management iv) Just in Time Philosophy	*CO3*	*PO3, PO5, PO9, PO12*	**20**

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