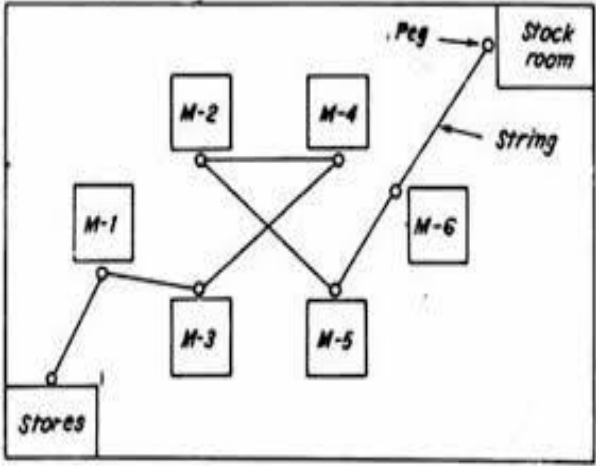

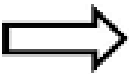
















































































SCHEME OF EVALUATION				
(Scoring indicators) SET A				
REVISION	2021		COURSE CODE	4024 A
COURSE TITLE	INDUSTRIAL ENGINEERING			
QUESTION NO.	SCORING INDICATORS	SPLIT UP SCORE	SUB TOTAL	TOTAL
I	PART-A			
1	Manufacturing or technically productive enterprise in a particular field, country, region or economy viewed collectively or one of these individually	1	1	9×1 =9
2	It is defined as to increase the out from each unit in a production process	1	1	
3	Work study is an investigation by means of a consistent system of the work done in an organization in order to attain best utilization of resources	1	1	
4	<ul style="list-style-type: none">• Select• Record• Examine• Develop• Define• Install• Maintain	1	1	
5	<ul style="list-style-type: none">• Maintenance cost of test equipment• Field testing cost• Final product cost	1	1	
6	<ul style="list-style-type: none">• Patrolling inspection• Floor inspection• Key point inspection• Final inspection	1	1	
7	It is the technique to determine whether a lot or population should be rejected or accepted on the basis of number of defective parts	1	1	
8	<ul style="list-style-type: none">• Material cost• Labor cost• Over heads	1	1	
9	Mean: Sum of value of each observation in a data set divided by the no: of observations Median: Middle value in a set of observation when it is arranged in ascending or descending order Mode: It is the repeating value in a set of observations	1	1	

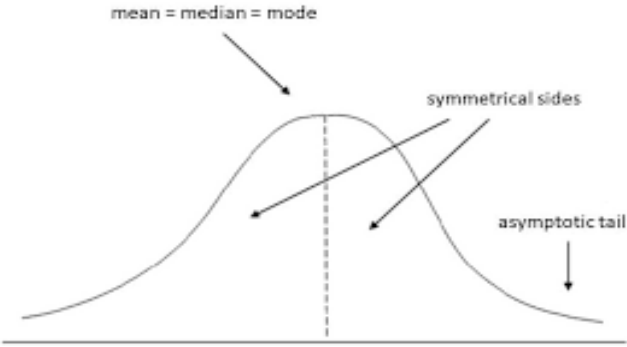
II	PART- B			
1	<p><u>PREPLANNING</u> It involves product planning and development, demand forecasting, facility planning, plant lay out and plant location.</p> <p><u>PROCESS PLANNING</u> Process planning means the preparation of work detail plan</p> <p><u>ROUTING</u> Routing means flow of work in the plant. It determines what work is to be done and where and how it will be done. It decides the path and sequence of operations to be performed on the job from one machine to another</p>	3x1	3	3
2	Material handling is defined as the transferring of resources or materials from one point to another, it mainly depend upon the types of production, volume of production etc....	3	3	3
3	 <ul style="list-style-type: none"> It is a lay out Length of string is used to record the extend as well as the pattern of movement 	3	3	3
4	<p>Standard symbols used in Flow Process Chart</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Operation </div> <div style="text-align: center;">  Transportation </div> <div style="text-align: center;">  Inspection </div> <div style="text-align: center;">  Delay </div> <div style="text-align: center;">  Storage </div> </div>	3	3	3

5	<div><div>JOB ASSEMBLING NUT AND BOLT</div><div>Two - Handed Process Chart</div><table><tr><th rowspan="2">S.No.</th><th rowspan="2">Left Hand</th><th colspan="2">Symbols</th><th rowspan="2">Right Hand</th></tr><tr><th>LH</th><th>RH</th></tr><tr><td>(i)</td><td>Pick up bolt</td><td></td><td></td><td>Idle</td></tr><tr><td>(ii)</td><td>Hold</td><td></td><td></td><td>Pick up nut</td></tr><tr><td>(iii)</td><td>Hold</td><td></td><td></td><td>To left hand</td></tr><tr><td>(iv)</td><td>Hold</td><td></td><td></td><td>(Assemble screw up)</td></tr></table></div>	S.No.	Left Hand	Symbols		Right Hand	LH	RH	(i)	Pick up bolt			Idle	(ii)	Hold			Pick up nut	(iii)	Hold			To left hand	(iv)	Hold			(Assemble screw up)	3	3	3
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6	<ul style="list-style-type: none">Improvement of qualityReduction of wastageEfficient use of resourcesMaximum utilization of materialsReducing the inspection costBetter analysis of quality and production	3	3	3																											
7	<p>Mean: add the whole values and divide the sum by the total number of values</p> <p>Median: arrange the values either ascending or descending manner and take the center value if it is odd, or take the center two values and find the mean if it is even.</p> <p>Mode: take the most repeating one among the values.</p> <div>PFC.webp</div>	3	3	3																											
8	<div><div>Difference between Floor inspection and Centralized inspection</div><table><tr><th>Sr.No.</th><th>Floor Inspection</th><th>Centralized inspection</th></tr><tr><td>01</td><td>Inspection is conducted at the place of actual production.</td><td>Inspection is performed at a central location in a separate room where all materials to be inspected are brought.</td></tr><tr><td>02</td><td>Material handling is almost zero</td><td>Material handling is more.</td></tr><tr><td>03</td><td>It is difficult to perform of high accuracy with delicate instruments</td><td>It provides better conditions for inspection allows use of accurate instruments</td></tr><tr><td>04</td><td>Suitable for heavy and bulky parts</td><td>Suitable for light and medium parts</td></tr><tr><td>05</td><td>The inspector has to move to the work place for inspection</td><td>Here inspector does not move to the work place for the inspection.</td></tr></table></div>	Sr.No.	Floor Inspection	Centralized inspection	01	Inspection is conducted at the place of actual production.	Inspection is performed at a central location in a separate room where all materials to be inspected are brought.	02	Material handling is almost zero	Material handling is more.	03	It is difficult to perform of high accuracy with delicate instruments	It provides better conditions for inspection allows use of accurate instruments	04	Suitable for heavy and bulky parts	Suitable for light and medium parts	05	The inspector has to move to the work place for inspection	Here inspector does not move to the work place for the inspection.	3	3	3									
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9	<p>Fig. 60.1, O.C. Curve indicating sampling risks.</p>	3	3	3
10	<p><u>Estimation</u></p> <ul style="list-style-type: none"> • Calculating the expected cost • Need high technical knowledge • Can find profitable or not <p><u>Costing</u></p> <ul style="list-style-type: none"> • It is the actual cost • Require knowledge of account • Helpful for comparison of cost 	3	3	3
	PART- C			
III	<ul style="list-style-type: none"> • Transportation facility • Communication facility • Land features • Availability of water • Availability of raw materials • Availability of labors • Climatic conditions if needed 	1x7	7	7

	OR																																							
IV	<ul style="list-style-type: none">• Good quality raw materials• Innovative machines• Good working conditions• Reduce wastage of resources• Better working conditions• Wages and incentives• Better planning	1X7	7	7																																				
V	<ul style="list-style-type: none">• Draw the chart as per the rule• Can use all process chart symbols• Explanations on the RH side• Description on the top left	2 2 2 1	7	7																																				
	OR																																							
VI	<table border="1"><tr><td></td><td>SEARCH</td><td></td><td>INSPECT</td></tr><tr><td></td><td>FIND</td><td></td><td>PRE-POSITION</td></tr><tr><td></td><td>SELECT</td><td></td><td>RELEASE LOAD</td></tr><tr><td></td><td>GRASP</td><td></td><td>TRANSPORT EMPTY</td></tr><tr><td></td><td>TRANSPORT LOADED</td><td></td><td>REST FOR OVER COMING FATIGUE</td></tr><tr><td></td><td>POSITION</td><td></td><td>UNAVOIDABLE DELAY</td></tr><tr><td></td><td>ASSEMBLE</td><td></td><td>AVOIDABLE DELAY</td></tr><tr><td></td><td>USE</td><td></td><td>PLAN</td></tr><tr><td></td><td>DISASSEMBLE</td><td></td><td></td></tr></table>		SEARCH		INSPECT		FIND		PRE-POSITION		SELECT		RELEASE LOAD		GRASP		TRANSPORT EMPTY		TRANSPORT LOADED		REST FOR OVER COMING FATIGUE		POSITION		UNAVOIDABLE DELAY		ASSEMBLE		AVOIDABLE DELAY		USE		PLAN		DISASSEMBLE			7	7	7
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VII	<p>Control charts are the representation of variation from the specified tolerance limit</p> <p><u>Advantages</u></p> <ul style="list-style-type: none"> • Detect the correction before production • Can judge the job • Helps to establish the tolerances • Helps for quality analysis • Forecast the cost of production • Improve the quality of product 	7	7	7
	OR			
VIII	<ol style="list-style-type: none"> 1. Determine Sample Plan 2. Collect initial set of samples 3. Calculate the average for each set of samples \bar{X} 4. Calculate the range of each set of samples. This is the difference between the largest and smallest value in the sample.(R) 5. Calculate the Average of \bar{X} that is $\bar{\bar{X}}$ 6. Calculate the average of the R values. 7. Calculate Control Limits $UCL_R = D_4 \bar{R}$ $LCL_R = D_3 \bar{R}$	1X7	7	7
IX	<ul style="list-style-type: none"> • Can help the management for future development • Reveal the source of economy by installing and implementing a system of cost control • Helps to provide useful data to management to taking decision • Helps for correct analysis of production • Helps for the proper utilization of resources • Helps for standardizing the price • Helps to identify the source of wastage 	1X7	7	7
	OR			
X	<ul style="list-style-type: none"> • Wear and tear: The normal damage that occurs to an asset 			

	<ul style="list-style-type: none"> • Exposure to weather: Weather can cause physical depreciation • Fixed asset destruction or damage: Damage to an asset can cause depreciation • Obsolescence: Assets become obsolete over time as new alternatives are developed • Economic development: Changes in economic development can cause depreciation • Expiration of legal rights: When legal rights expire, assets can depreciate • Efflux of time: The passage of time can cause depreciation • Accidents: Accidents can cause depreciation 	1X7	7	7
XI		7	7	7
	OR			
XII	<p>1. Material Cost Material costs are a crucial element of cost, comprising the expenditures on all the materials required for production. It's categorized into Direct and Indirect Material based on traceability and substantiality in the production process.</p> <p><u>Direct Material</u> Direct materials are the raw materials that can be directly traced to the production process and constitute a significant portion of the total cost. They are integral and identifiable parts of the finished product.</p> <p><u>Indirect Material</u> Indirect materials are materials used in production but are not directly traceable to the final product. They are necessary for the production process but do not become a part of the finished product.</p>	1X7	7	7

	<p><u>Labor</u></p> <p>Labor cost is a significant element of cost accounting, encompassing the expenses incurred by the workforce in the production process. Based on the degree of traceability to the final product, labor cost is bifurcated into direct labor and indirect labor.</p> <p><u>Direct Labor</u></p> <p>Direct labor refers to the workforce directly producing goods or delivering services. Direct labor costs can be explicitly traced to specific products or services.</p> <p><u>Indirect Labor</u></p> <p>Indirect labor entails the personnel who support the production process but are not directly involved in producing goods or services. The indirect labor costs are spread over multiple output units or production departments.</p> <p><u>3. Overhead Cost</u></p> <p>Overhead cost is a crucial element in cost accounting, encompassing all the costs not directly tied to producing a good or delivering a service. It is further categorized into direct and indirect overheads based on traceability and allocability to specific cost centers or products.</p>			
XIII	<ul style="list-style-type: none"> • Increased Profitability: Higher output with the same resources translates to increased revenue and potentially lower per-unit costs, leading to improved profit margins. • Cost Reduction: Increased production can lead to economies of scale, reducing per-unit costs and overall production expenses. • Enhanced Competitiveness: Being able to produce more efficiently and at lower costs allows businesses to offer competitive pricing and potentially capture a larger market share. • Improved Resource Utilization: Increased production can lead to better utilization of resources, including labor, materials, and equipment, leading to higher efficiency. • Innovation and Investment: Increased profits can be reinvested into research and development, leading to new products, 	1X7	7	7

	<p>processes, and technologies, further driving innovation and growth.</p> <ul style="list-style-type: none"> Stronger Customer Satisfaction: <p>Higher production can help businesses meet customer demand more effectively, leading to higher customer satisfaction and loyalty.</p>			
	OR			
XIV	<ul style="list-style-type: none"> STRIGHT LINE METHOD DECLINING BALANCE METHOD SINKING FUND METHOD SUM OF YEAR –DIGIT METHOD 	2 2 2 1	7	7

