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**DEPARTMENT OF MANAGEMENT STUDIES**

**QUESTION BANK**

**I SEMESTER**

**1915206 – OPERATIONS MANAGEMENT**

**Regulation – 2019**

**Academic Year 2019 – 2020**

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*Prepared by*

**Sri. J. Anand – Asst. Professor**

**Sri. VT. Baalaji Amuthan – Asst. Professor**

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## DEPARTMENT OF MANAGEMENT STUDIES QUESTION BANK

**SUBJECT : 1915206 – OPERATIONS MANAGEMENT**

**SEM / YEAR: 2<sup>nd</sup> Semester / 1<sup>st</sup> Year**

### UNIT – I - INTRODUCTION TO OPERATIONS MANAGEMENT

**SYLLABUS:** Production – Meaning, Nature, Types. Operations Management – Nature, Importance, functions, challenges, current priorities, recent trends; Operations Strategy – Strategic fit, framework; Supply Chain Management

#### PART- A

S. No	QUESTIONS	BT LEVEL	COMPETENCE
1	Define production.	Level 1	Remembering
2	Summarize the types of Production.	Level 2	Understanding
3	Identify the major components of a production system.	Level 3	Applying
4	What conclusion can you draw on “Operation management”?	Level 4	Analyzing
5	Discuss the objectives of operation management.	Level 5	Evaluating
6	Interpret the bottleneck in operations management.	Level 6	Creating
7	How would you describe the functions of Operations Management?	Level 1	Remembering
8	Outline the importance of Operations management.	Level 2	Understanding
9	Relate the recent trends in Operations Management.	Level 3	Applying
10	List the 5 steps in framework of operations strategy.	Level 4	Analyzing
11	What conclusions can you draw on Continuous production system?	Level 5	Evaluating
12	Determine the framework of operations strategy.	Level 6	Creating
13	What do you mean by Value Added Services?	Level 1	Remembering
14	What is meant by Strategic Fit?	Level 2	Understanding
15	How would you show your understanding on developing a manufacturing strategy?	Level 3	Applying
16	Examine the objectives of Supply chain management.	Level 4	Analysing
17	Can you list the process of supply chain?	Level 1	Remembering
18	Can you explain “production function”?	Level 2	Understanding
19	How would you explain Supply Chain Management?	Level 1	Remembering
20	Tell the Cycle view of supply chain process.	Level 1	Remembering

PART- B			
S. No.	QUESTIONS	BT LEVEL	COMPETENCE
1	What is Production? Explain the types of Production system.	Level 1	Remembering
2	Summarize the nature of Production in detail.	Level 2	Understanding
3	Write the nature and importance of operations management.	Level 3	Applying
4	List the scope and objectives of operations management.	Level 4	Analysing
5	Discuss the role of operations in strategic management.	Level 5	Evaluating
6	How could you determine the objectives and historical development of operations management?	Level 6	Creating
7	How would you describe the functions of Operations Management?	Level 1	Remembering
8	Demonstrate the recent trends in production and operations management.	Level 2	Understanding
9	Identify the challenges and current priorities for Operations Management.	Level 3	Applying
10	What inference can you make in Strategy Fit along with framework of operations strategy?	Level 4	Analysing
11	What is SCM? Explain flow in SCM and process view of supply chain in detail.	Level 1	Remembering
12	Outline the objectives and Functions of supply chain management.	Level 2	Understanding
13	In today's global environment scenario the nature of operations management in any country is similar to International Operations Management – Comment.	Level 4	Analysing
14	How would you elaborate the concept of SCM?	Level 1	Remembering

PART - C	
S.No.	Questions
1	Construct the following : <ul style="list-style-type: none"> <li>• Customer order cycle</li> <li>• Replenishment cycle</li> <li>• Manufacturing cycle</li> <li>• Procurement cycle</li> <li>• Pull concept</li> <li>• Push concept</li> </ul>
2	Assume you are running a Detergent manufacturing company. Design a supply chain network for effective distribution of Detergents in the markets.
3	How would you show your understanding on operations strategy in manufacturing and services?
4	Can you give a detailed outline of the Supply Chain Process in FMCG industry?

## UNIT - II FORECASTING, CAPACITY ANF FACILITY DESIGN

**SYLLABUS:** Demand Forecasting – Need, Types, Objectives and Steps. Overview of Qualitative and Quantitative methods. Capacity Planning – Long range, Types, Developing capacity alternatives. Overview of sales and operations planning. Overview of MRP, MRP II and ERP. Facility Location – Models, Factors affecting facility location, Steps in Selection, Location Models. Facility Layout – Principles, Types.

### PART - A

S. No.	QUESTIONS	BT LEVEL	COMPETENCE
1	Define Demand Forecasting.	Level 1	Remembering
2	Classify the need of Demand Forecasting.	Level 2	Understanding
3	Identify the objectives of Demand Forecasting.	Level 3	Applying
4	List the methods in Qualitative Forecasting?	Level 4	Analysing
5	Can you list the characteristics for demand forecasting?	Level 5	Evaluating
6	What is your opinion of Capacity planning?	Level 6	Creating
7	What is aggregate planning?	Level 1	Remembering
8	Infer the factors affecting Capacity Planning.	Level 2	Understanding
9	Demonstrate the concept of Capacity Planning process.	Level 3	Applying
10	Compare the difference between RCCP and CRP.	Level 4	Analysing
11	What conclusions can you draw on Material Requirement Planning?	Level 5	Evaluating
12	How would you prioritize the facts in focus forecasting?	Level 6	Creating
13	How would you explain Enterprise Resource Planning?	Level 1	Remembering
14	Summarize the steps in Location Planning.	Level 2	Understanding
15	How would you show your understanding of Cellular Manufacturing?	Level 3	Applying
16	What are the features on product and process layout?	Level 4	Analyzing
17	Define MRP II.	Level 1	Remembering
18	Compare between MRP I and MRP II.	Level 2	Understanding
19	Define product structure tree.	Level 1	Remembering
20	Choose the relevant factors affecting facility location.	Level 1	Remembering

S. No.	QUESTIONS	BT LEVEL	COMPETENCE																																		
1	Illustrate the various methods of Demand Forecasting.	Level 1	Remembering																																		
2	How would you summarize the need, types of Demand Forecasting	Level 2	Understanding																																		
3	How would you show your understanding of the Objectives of Demand Forecasting & Steps of forecasting?	Level 3	Applying																																		
4	<p>a.) Examine the trend of following by using Semi-Average; Estimate the sales of the year 2020.</p> <table><tr><td>Year</td><td>2011</td><td>2012</td><td>2013</td><td>2014</td><td>2015</td><td>2016</td><td>2017</td><td>2018</td><td>2019</td></tr><tr><td>Sales (Rs.in lakhs)</td><td>18</td><td>24</td><td>26</td><td>28</td><td>33</td><td>36</td><td>40</td><td>44</td><td>48</td></tr></table> <p>b.) Examine the trend of following by using Semi-Average. Estimate the sales of the year 2017</p> <table><tr><td>Year</td><td>2011</td><td>2012</td><td>2013</td><td>2014</td><td>2015</td><td>2016</td></tr><tr><td>Sales</td><td>10</td><td>12</td><td>11</td><td>16</td><td>15</td><td>20</td></tr></table>	Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	Sales (Rs.in lakhs)	18	24	26	28	33	36	40	44	48	Year	2011	2012	2013	2014	2015	2016	Sales	10	12	11	16	15	20	Level 4	Analysing
Year	2011	2012	2013	2014	2015	2016	2017	2018	2019																												
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Year	2011	2012	2013	2014	2015	2016																															
Sales	10	12	11	16	15	20																															
5	<p>From the following data, calculate 4 year moving average.</p> <table><tr><td>Year</td><td>I</td><td>II</td><td>III</td><td>IV</td><td>V</td><td>VI</td><td>VII</td><td>VIII</td><td>IX</td><td>X</td></tr><tr><td>Output</td><td>20</td><td>21</td><td>23</td><td>22</td><td>25</td><td>24</td><td>27</td><td>26</td><td>28</td><td>30</td></tr></table>	Year	I	II	III	IV	V	VI	VII	VIII	IX	X	Output	20	21	23	22	25	24	27	26	28	30	Level 5	Evaluating												
Year	I	II	III	IV	V	VI	VII	VIII	IX	X																											
Output	20	21	23	22	25	24	27	26	28	30																											
6	How would you compare the ideas in capacity planning with distinct levels? Also explain the factor influencing Capacity planning?	Level 6	Creating																																		
7	Recognize the process of Capacity planning.	Level 1	Remembering																																		
8	<p>A company has to decide on the location of a new plant. It has narrowed down the choice to 3 locations A,B and C data in respect of which is furnished below:</p> <table><tr><th rowspan="2">Data</th><th colspan="3">Locations</th></tr><tr><th>A (Rupees)</th><th>B(Rupees)</th><th>C (Rupees)</th></tr><tr><td>Wages and Salaries</td><td>20000</td><td>20000</td><td>20000</td></tr><tr><td>Power and Water Expenses</td><td>20000</td><td>30000</td><td>25000</td></tr><tr><td>Raw Materials and Other Supplies</td><td>80000</td><td>75000</td><td>60000</td></tr><tr><td>Total Initial investment</td><td>200000</td><td>300000</td><td>250000</td></tr><tr><td>Distribution Expenses</td><td>50000</td><td>40000</td><td>60000</td></tr></table>	Data	Locations			A (Rupees)	B(Rupees)	C (Rupees)	Wages and Salaries	20000	20000	20000	Power and Water Expenses	20000	30000	25000	Raw Materials and Other Supplies	80000	75000	60000	Total Initial investment	200000	300000	250000	Distribution Expenses	50000	40000	60000	Level 2	Understanding							
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	<table><tr><td>Miscellaneous Expenses</td><td>40000</td><td>25000</td><td>30000</td></tr><tr><td>Expected Sales Per Year</td><td>225000</td><td>250000</td><td>225000</td></tr></table> <p>Use a suitable criterion and advise the company on the best choice.</p>	Miscellaneous Expenses	40000	25000	30000	Expected Sales Per Year	225000	250000	225000																																																																	
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Expected Sales Per Year	225000	250000	225000																																																																							
9	How would you show your utilization of the sales and operations planning cycle?	Level 3	Applying																																																																							
10	Analyse the concept of Facility layout principles.	Level 4	Analysing																																																																							
11	How would you explain the steps in Location Selection & Discuss the factors affecting facility location?	Level 1	Remembering																																																																							
12	Demonstrate the following ❖ MRP I (5 Marks) ❖ MRP II (5 Marks) ❖ ERP (3 Marks)	Level 2	Understanding																																																																							
13	<p>a. The firm Velu Naachiyar India Ltd. wants to start a Washing machine manufacturing unit in South Tamil Nadu and has to decide on one of the two options narrowed down by its Top level management. Based on the following factors and ratings, you have to advice Velu Naachiyar India Ltd., on selection of Location.</p> <table><tr><th rowspan="2">S. No.</th><th rowspan="2">Details of Factors</th><th rowspan="2">Factor Rating (1 to 5 Scale)</th><th colspan="2">Location Rating (Scale 1 to 10)</th></tr><tr><th>Location A</th><th>Location B</th></tr><tr><td>1</td><td>Power, ability and costs</td><td>3</td><td>6</td><td>4</td></tr><tr><td>2</td><td>Desire of Top level officials</td><td>1</td><td>1</td><td>2</td></tr><tr><td>3</td><td>Environmental Factors</td><td>3</td><td>5</td><td>4</td></tr><tr><td>4</td><td>Civil amenities</td><td>3</td><td>2</td><td>4</td></tr><tr><td>5</td><td>Availability, willingness of executive cadre</td><td>5</td><td>8</td><td>9</td></tr><tr><td>6</td><td>Nearness to market centers</td><td>4</td><td>6</td><td>5</td></tr><tr><td>7</td><td>Transportation, storage costs</td><td>2</td><td>9</td><td>8</td></tr><tr><td>8</td><td>Labor skill, wages, unionism</td><td>5</td><td>7</td><td>6</td></tr></table> <p>b. Kuyili Group of Companies is evaluating 4 locations for a new plant and has weighted the relevant scores as given below. Scores have been assigned with higher values indicative of preferred conditions. Using these scores, develop a qualitative factor comparison for the four locations.</p> <table><tr><th>Relevant factors</th><th>Assigned Weight</th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>Markets</td><td>0.10</td><td>70</td><td>90</td><td>80</td><td>50</td></tr><tr><td>Cost of living</td><td>0.05</td><td>80</td><td>70</td><td>40</td><td>80</td></tr><tr><td>Raw material</td><td>0.25</td><td>70</td><td>80</td><td>80</td><td>60</td></tr></table>	S. No.	Details of Factors	Factor Rating (1 to 5 Scale)	Location Rating (Scale 1 to 10)		Location A	Location B	1	Power, ability and costs	3	6	4	2	Desire of Top level officials	1	1	2	3	Environmental Factors	3	5	4	4	Civil amenities	3	2	4	5	Availability, willingness of executive cadre	5	8	9	6	Nearness to market centers	4	6	5	7	Transportation, storage costs	2	9	8	8	Labor skill, wages, unionism	5	7	6	Relevant factors	Assigned Weight	A	B	C	D	Markets	0.10	70	90	80	50	Cost of living	0.05	80	70	40	80	Raw material	0.25	70	80	80	60	Level 4	Analysing
S. No.	Details of Factors				Factor Rating (1 to 5 Scale)	Location Rating (Scale 1 to 10)																																																																				
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	supply							
	Manufacturing cost	0.35	50	40	60	30		
	Labour availability	0.20	60	70	60	50		
	Environment	0.05	50	60	70	90		
	Total	1.00						
14	Elaborate the basic types of Facility Layouts.						Level 1	Remembering

PART - C																																						
S.No	Questions																																					
1	<p>Potential locations A, B and C have the cost structures shown for producing a product expected to sell at Rs. 100 per Unit. Find out the most economical location for which each of the locations would be most economical.</p> <table><tr><th>Location</th><th>Fixed Cost /Year</th><th>Variable Cost /Unit</th></tr><tr><td>A</td><td>25000</td><td>50</td></tr><tr><td>B</td><td>50000</td><td>25</td></tr><tr><td>C</td><td>80000</td><td>15</td></tr></table>										Location	Fixed Cost /Year	Variable Cost /Unit	A	25000	50	B	50000	25	C	80000	15																
Location	Fixed Cost /Year	Variable Cost /Unit																																				
A	25000	50																																				
B	50000	25																																				
C	80000	15																																				
2	<p>The table below gives the actual demand in units for the past 10-month period. Compute a weighted 3 Month Moving Average where the weights are highest for the latest months and descend the order of 3, 2, 1.</p> <table><tr><th>Month</th><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><th>Demand</th><td>100</td><td>105</td><td>108</td><td>110</td><td>112</td><td>114</td><td>120</td><td>130</td><td>128</td><td>140</td></tr></table>										Month	1	2	3	4	5	6	7	8	9	10	Demand	100	105	108	110	112	114	120	130	128	140						
Month	1	2	3	4	5	6	7	8	9	10																												
Demand	100	105	108	110	112	114	120	130	128	140																												
3	<p>A department works on 8 hours shift, 250 days a year and has the usage data of a machine as given below: Determine the number of machines required.</p> <table><tr><th>Product</th><th>Annual Demand (units)</th><th>Processing Time (Std in Hours)</th></tr><tr><td>X</td><td>250</td><td>3</td></tr><tr><td>Y</td><td>350</td><td>4</td></tr><tr><td>Z</td><td>425</td><td>5</td></tr></table>										Product	Annual Demand (units)	Processing Time (Std in Hours)	X	250	3	Y	350	4	Z	425	5																
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X	250	3																																				
Y	350	4																																				
Z	425	5																																				
4	<p>Karikaalan Exports limited is a major garment export house based at Sivagangai. The sales figures (in 1000units) of a particular garment during the past 20 weeks are given in table below:</p> <p>(i) Calculate the three week moving average 22 forecast for the given 20 weeks and also forecast the demand for 21st week. (5Marks)</p> <p>(ii) Calculate the weighted moving average forecast for the given 20 weeks with the weights being W1 =1, W2 =2 and W3 =3. And also forecast the demand for 21st week.(5Marks)</p> <p>(iii)Find the simple exponential smoothing forecast for all the 20 weeks and also forecast the demand for 21st week. Assume <math>\alpha = 0.2</math> and F1 =21. (5Marks)</p> <table><tr><th>Week</th><th>Demand</th><th>Week</th><th>Demand</th></tr><tr><td>1</td><td>21</td><td>11</td><td>19</td></tr><tr><td>2</td><td>24</td><td>12</td><td>22</td></tr><tr><td>3</td><td>18</td><td>13</td><td>26</td></tr><tr><td>4</td><td>22</td><td>14</td><td>24</td></tr><tr><td>5</td><td>27</td><td>15</td><td>17</td></tr><tr><td>6</td><td>23</td><td>16</td><td>21</td></tr></table>										Week	Demand	Week	Demand	1	21	11	19	2	24	12	22	3	18	13	26	4	22	14	24	5	27	15	17	6	23	16	21
Week	Demand	Week	Demand																																			
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		7	21		17	29	
		8	25		18	27	
		9	27		19	23	
		10	18		20	25	

### UNIT – III – DESIGN OR PRODUCT, PROCESS AND WORK SYSTEMS

**SYLLABUS:** Product Design and Development – Process, Elements, Issues, New Product development phases and Techniques. Process – Planning, Selection, Strategy, Major Decisions. Production Planning and Control – Production planning System – Benefits and Limitations, Scheduling –elements and types. Method Study, Motion Study. Work Measurement and Productivity – Measuring Productivity and Methods to improve productivity.

#### PART - A

S. No.	QUESTIONS	BT LEVEL	COMPETENCE
1	Define product design.	Level 1	Remembering
2	Classify the approaches to product design.	Level 2	Understanding
3	Identify the main purpose of motion study.	Level 3	Applying
4	List the features for a good product design.	Level 4	Analysing
5	Discuss the benefits of product development.	Level 5	Evaluating
6	How could you determine Productivity?	Level 6	Creating
7	What is process planning?	Level 1	Remembering
8	What is meant by process selection?	Level 2	Understanding
9	Write any 3 influencing factors for designing a new product.	Level 3	Applying
10	Contrast the meaning of MTS, MTO, ATO, ETO?	Level 4	Analysing
11	Compile the steps in process planning.	Level 5	Evaluating
12	Interpret the objectives of motion study.	Level 6	Creating
13	Quote the meaning of method study.	Level 1	Remembering
14	Compare the method study and work measurement.	Level 2	Understanding
15	How would you use work measurement?	Level 3	Applying
16	Differentiate Standardization and Simplification.	Level 4	Analysing
17	How the Motion study is connected with manufacturing?	Level 1	Remembering
18	Summarize the objectives of work measurement.	Level 2	Understanding
19	Explain SIMO chart.	Level 1	Remembering
20	Define partial productivity.	Level 1	Remembering



S. No.	PART - B QUESTIONS	BT LEVEL	COMPETENCE
1	Describe the various aspects of product design, and its elements in detail.	Level 1	Remembering
2	Demonstrate the various approaches and influencing factors in deciding the product design. List the issues in it.	Level 2	Understanding
3	Identify various stages involved in developing a product.	Level 3	Applying
4	Analyze the product development techniques in detail.	Level 4	Analysing
5	Discuss the documentation requirement and steps involved process planning.	Level 5	Evaluating
6	What would you recommend the various stages in process selection methods? Also explain the process selection decision.	Level 6	Creating
7	Illustrate production planning and control in detail.	Level 1	Remembering
8	Can you explain scheduling elements and types?	Level 2	Understanding
9	How would you organize the Objectives in Motion study and principles in motion study?	Level 3	Applying
10	What are the various principles of motion study and its objectives in detail?	Level 4	Analysing
11	a) Recite the components of work measurement. (8Marks) b) Tell the various techniques of work measurement. (5Marks)	Level 1	Remembering
12	What is meant by Productivity and discuss the three major types of productivity.	Level 2	Understanding
13	a) Examine the importance of productivity. b) List the factors influencing productivity.	Level 4	Analysing
14	Write down the methods to improve productivity?	Level 1	Remembering

PART - C	
S. No.	QUESTIONS
1	Discuss the types of Production-Planning and Control Systems
2	Prepare a flow process chart for a hospital admission procedure for surgery.
3	Conclude your understanding about the strategy for the Process along with types.
4	Tell the key decisions relating to the process design and the influencing factors in it.

### UNIT - IV MATERIALS MANAGEMENT

**SYLLABUS:** Inventory Management – Nature, importance and Classification of Inventory and Inventory Control Techniques, Budgeting and Control. Purchasing – Objectives, Functions, Policies and Procedure. Vendor rating and Value Analysis. Stores Management – Nature, Layout, Classification and Coding. Overview of JIT.

#### PART - A

S. No.	QUESTIONS	BT LEVEL	COMPETENCE
1	Define Inventory Management.	Level 1	Remembering
2	Classify Inventory on the basis of elements and purpose.	Level 2	Understanding
3	Identify the various facts in Economic Ordering Quantity.	Level 3	Applying
4	List the objectives of purchasing.	Level 4	Analysing
5	What do you think about “Inventory position”?	Level 5	Evaluating
6	Explain material planning.	Level 6	Creating
7	What do you mean by purchasing?	Level 1	Remembering
8	What is meant by Mnemonic Code in materials management?	Level 2	Understanding
9	How would you apply the steps in lean manufacturing?	Level 3	Applying
10	Why do you think JIT is needed in manufacturing?	Level 4	Analysing
11	Compile the various components of Inventory Carrying Cost.	Level 5	Evaluating
12	How could you determine the term “Store Layout”?	Level 6	Creating
13	How would you explain centralized buying?	Level 1	Remembering
14	Explain materials management manual.	Level 2	Understanding
15	How would you make use of FSN and ABC analysis?	Level 3	Applying
16	What is the relationship between the “push” and “pull” methods of material flow?	Level 4	Analysing
17	Recognize the term Re-order point.	Level 1	Remembering
18	Infer the meaning of Vendor rating.	Level 2	Understanding
19	Explain value analysis.	Level 1	Remembering
20	Define JIT.	Level 1	Remembering

S. No.	PART - B QUESTIONS	BT LEVEL	COMPETENCE
1	Explain nature and importance of Inventory management.	Level 1	Remembering
2	Explain the classification of inventory.	Level 2	Understanding
3	Identify the inventory control techniques.	Level 3	Applying
4	What are the features in selective inventory control?	Level 4	Analysing
5	Discuss the objectives, functions of purchasing?	Level 5	Evaluating
6	Prioritize the Importance of budgeting and control in inventory process.	Level 6	Creating
7	Describe the procedure in purchasing.	Level 1	Remembering
8	How would you summarize the policies and procedure in purchasing?	Level 2	Understanding
9	How would you Organize the various purchasing policies?	Level 3	Applying
10	Can you identify the different techniques involved in vendor rating?	Level 4	Analysing
11	a) Explain in detail the procedure to carry out Value Analysis (8Marks) b) List the Pros and Cons of Value Analysis (5Marks)	Level 1	Remembering
12	a) Give a detailed outline on layout of stores (5Marks) b) Explain the classification and coding of stores layout (8Marks)	Level 2	Understanding
13	a) What inference can you make in Store management? (3 Marks) b) Can you list the objectives and procedure of Store management? (10 Marks)	Level 4	Analysing
14	Illustrate the elements, benefits and limitations of JIT with real world example.	Level 1	Remembering

PART - C	
S. No.	Questions
1	As a purchase manager of Thirunelveli Group of companies, what factors do you consider to evaluate the vendors?
2	<p>The following details are available in respect of a firm:</p> <ul style="list-style-type: none"> <li>i. Inventory requirement per year = 6000 Units</li> <li>ii. Cost per Unit (Other than Carrying and Ordering Cost) = Rs 5</li> <li>iii. Carrying cost per unit for One Year = Re. 1</li> <li>iv. Cost of Placing each Order = Rs 60</li> <li>v. Alternative Order Sizes (Units) 6000, 3000, 2000, 1000, 600 and 200.</li> </ul> <p>Determine the Economic Ordering Quantity.</p>

3	Assume you are a storekeeper of a textile unit. What are your roles and responsibilities?
4	<p>a) Mr. Tamil Selvan keeps his inventory in special containers. Each container occupies 10 square feet of store space. Only 5,000 square feet of the storage space is available. The annual demand for the inventory item is 9,000 containers, priced at Rs. 8 per container. The ordering cost is estimated at Rs. 40 per order and the annual carrying costs amount to 25% of the inventory value. Would you recommend to Mr. Tamil Selvan to increase his storage space? If so, how much should be the increase? (8 Marks)</p> <p>b) Aluva Company uses annually 12,000 units of raw material costing Rs. 1.25 per unit. Placing each order costs Rs. 15 and the carrying cost is 15% per year per unit of the average inventory, find the economic order quantity. (7 Marks)</p>

### UNIT - V SCHEDULING AND PROJECT MANAGEMENT

**SYLLABUS:** Project Management – Nature, Constraints in Projects, Project Life Cycle. Scheduling Techniques, PERT, CPM; Scheduling –Process, Techniques; shop floor control; Flow shop scheduling – Johnson's Algorithm – Gantt charts; personnel scheduling in services.

#### PART - A

S. No.	QUESTIONS	BT LEVEL	COMPETENCE
1	Define project and project management.	Level 1	Remembering
2	Compare forward scheduling and backward scheduling.	Level 2	Understanding
3	Identify the purpose of PERT?	Level 3	Applying
4	List the objectives of project management.	Level 4	Analysing
5	Construct the estimate expected time in PERT network.	Level 5	Evaluating
6	Write down the tasks that project team must perform before the project begins?	Level 6	Creating
7	What is PERT?	Level 1	Remembering
8	How would you compare CPM and PERT?	Level 2	Understanding
9	Construct the meaning of Gantt Chart.	Level 3	Applying
10	What inference can you make of Zero Total Float?	Level 4	Analysing
11	Discuss any two principles of Work Center Scheduling.	Level 5	Evaluating
12	How would you determine the concept of Personnel Scheduling in services?	Level 6	Creating

13	Explain Shop floor control.	Level 1	Remembering
14	What is meant by technical feasibility?	Level 2	Understanding
15	Discuss the Project Management Triangle	Level 3	Applying
16	What are the ways of scheduling work centers?	Level 4	Analysing
17	Define Johnson's rule.	Level 1	Remembering
18	What is the main idea of Slack?	Level 2	Understanding
19	How would you describe the Load leveling?	Level 1	Remembering
20	Define the term critical path method (CPM).	Level 1	Remembering

S. No.	Part - B Questions	BT Level	Competence																																																					
1	Can you elaborate the project management process?	Level 1	Remembering																																																					
2	Demonstrate the features and constraints in Project Management.	Level 2	Understanding																																																					
3	Identify the techniques would you use to explain in scheduling.	Level 3	Applying																																																					
4	How do you classify the steps in PERT?	Level 4	Analysing																																																					
5	Explain the tools and functions of Shopfloor Control?	Level 5	Evaluating																																																					
6	a) What judgment would you make about the Crashing in Project Network. (5Marks) b) Compare between Resource Leveling and Resource Allocation (8Marks)	Level 6	Creating																																																					
7	<p>A project consisting of 8 activities has the following characteristics:</p> <table><tr><th rowspan="2">Activity</th><th rowspan="2">Preceding Activity</th><th colspan="3">Time Estimates (in Weeks)</th></tr><tr><th>Most Optimistic</th><th>Most Likely</th><th>Most Pessimistic</th></tr><tr><td>A</td><td>-</td><td>2</td><td>4</td><td>12</td></tr><tr><td>B</td><td>-</td><td>10</td><td>12</td><td>26</td></tr><tr><td>C</td><td>A</td><td>8</td><td>9</td><td>10</td></tr><tr><td>D</td><td>A</td><td>10</td><td>15</td><td>20</td></tr><tr><td>E</td><td>A</td><td>7</td><td>7.5</td><td>11</td></tr><tr><td>F</td><td>B,C</td><td>9</td><td>9</td><td>9</td></tr><tr><td>G</td><td>D</td><td>3</td><td>3.5</td><td>7</td></tr><tr><td>H</td><td>E,F,G</td><td>5</td><td>5</td><td>5</td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table> <p>(i) Draw the PERT Network for the project. (ii) Determine the Critical Path.</p>	Activity	Preceding Activity	Time Estimates (in Weeks)			Most Optimistic	Most Likely	Most Pessimistic	A	-	2	4	12	B	-	10	12	26	C	A	8	9	10	D	A	10	15	20	E	A	7	7.5	11	F	B,C	9	9	9	G	D	3	3.5	7	H	E,F,G	5	5	5						Level 1	Remembering
Activity	Preceding Activity			Time Estimates (in Weeks)																																																				
		Most Optimistic	Most Likely	Most Pessimistic																																																				
A	-	2	4	12																																																				
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E	A	7	7.5	11																																																				
F	B,C	9	9	9																																																				
G	D	3	3.5	7																																																				
H	E,F,G	5	5	5																																																				

8	Classify your view about Scheduling of Work Centers.	Level 2	Understanding																												
9	<p>The following table gives the activities in a Production project and other information:</p> <table><tr><th>Activity</th><th>Optimistic Time a</th><th>Normal Time m</th><th>Pessimistic Time b</th></tr><tr><td>1-2</td><td>30</td><td>44</td><td>54</td></tr><tr><td>1-3</td><td>8</td><td>12</td><td>16</td></tr><tr><td>2-3</td><td>1</td><td>2</td><td>3</td></tr><tr><td>2-4</td><td>2</td><td>3</td><td>5</td></tr><tr><td>3-4</td><td>8</td><td>10</td><td>12</td></tr><tr><td>4-5</td><td>14</td><td>22</td><td>25</td></tr></table> <p>i) Draw a PERT Diagram ii) Find the probability that the project will be completed in less than 63 days.</p>	Activity	Optimistic Time a	Normal Time m	Pessimistic Time b	1-2	30	44	54	1-3	8	12	16	2-3	1	2	3	2-4	2	3	5	3-4	8	10	12	4-5	14	22	25	Level 3	Applying
Activity	Optimistic Time a	Normal Time m	Pessimistic Time b																												
1-2	30	44	54																												
1-3	8	12	16																												
2-3	1	2	3																												
2-4	2	3	5																												
3-4	8	10	12																												
4-5	14	22	25																												
10	<p>In a factory, there are six jobs to perform, each of which should go through two machines A and B, in the order AB. The processing timing (in hours) for the jobs is given here. You are required to determine the sequence for performing the jobs that would minimize the total elapsed time, T. What is the value of T?</p> <table><tr><th>Jobs</th><th>Machine A</th><th>Machine B</th></tr><tr><td>1</td><td>7</td><td>3</td></tr><tr><td>2</td><td>4</td><td>8</td></tr><tr><td>3</td><td>2</td><td>6</td></tr><tr><td>4</td><td>5</td><td>6</td></tr><tr><td>5</td><td>9</td><td>4</td></tr><tr><td>6</td><td>8</td><td>1</td></tr></table>	Jobs	Machine A	Machine B	1	7	3	2	4	8	3	2	6	4	5	6	5	9	4	6	8	1	Level 4	Analysing							
Jobs	Machine A	Machine B																													
1	7	3																													
2	4	8																													
3	2	6																													
4	5	6																													
5	9	4																													
6	8	1																													
11	How would you describe the different types of Gantt Chart?	Level 1	Remembering																												
12	<p>Summarize the following:</p> <p>a) Active schedule b) Semi-active schedule c) Non-delay schedule</p>	Level 2	Understanding																												
13	<p>a) What is the relationship between PERT and CPM? b) Examine the material flow system and patterns in facility layout and give their characteristics.</p>	Level 4	Analysing																												
14	<p>Describe how to calculate</p> <p>a) Earliest Finish and Latest Finish Time(5Marks) b) Earliest Start and Latest Start Time (8Marks)</p>	Level 1	Remembering																												

**PART - C**

PART - C				
S.No	Questions			
1	Given the following information about a Project, you are required to calculate: 1) Find the Total Float for each activity. 2) Critical Path of the project and its duration			
	Activity	Duration	Activity      Duration	
	1-2	2	4-6              3	
	1-3	2	5-8              1	
	1-4	1	6-9              5	
	2-5	4	7-8              4	
	3-6	8	8-9              3	
	3-7	5		
2	Elaborate your opinion about the Product Life Cycle with relevance to Operation Management.			
3	Consider the tasks, durations, and predecessor relationships in the following network. Draw the network and answer the questions that follow. (i)        What is the variance for activity B? (ii)       Based on the calculation of estimated times, what is the critical path? (iii)      What is the estimated time of the critical path? (iv)      What is the probability of completion of the project before week 42?			
4	A small project consists of seven activities for which the relevant data are given below:			
	Activity	Preceding Activity	Activity (Days)      Duration	
	A	-	4	
	B	A	7	
	C	-	6	
	D	C	5	
	E	B	7	
	F	D,E	6	
	G	F	5	
	i) Draw the network and find the project completion time. ii) Calculate total float for each activity.			