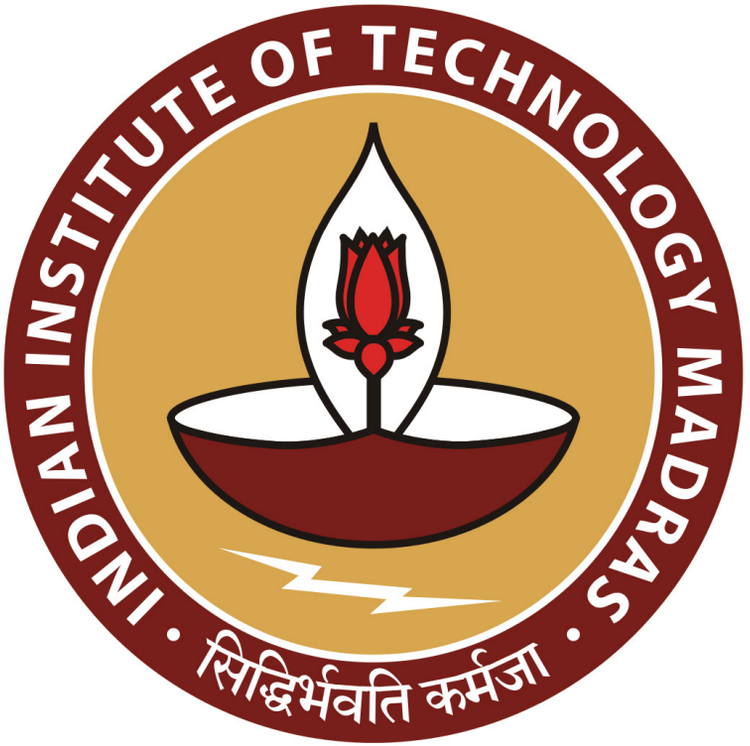


IIT Madras

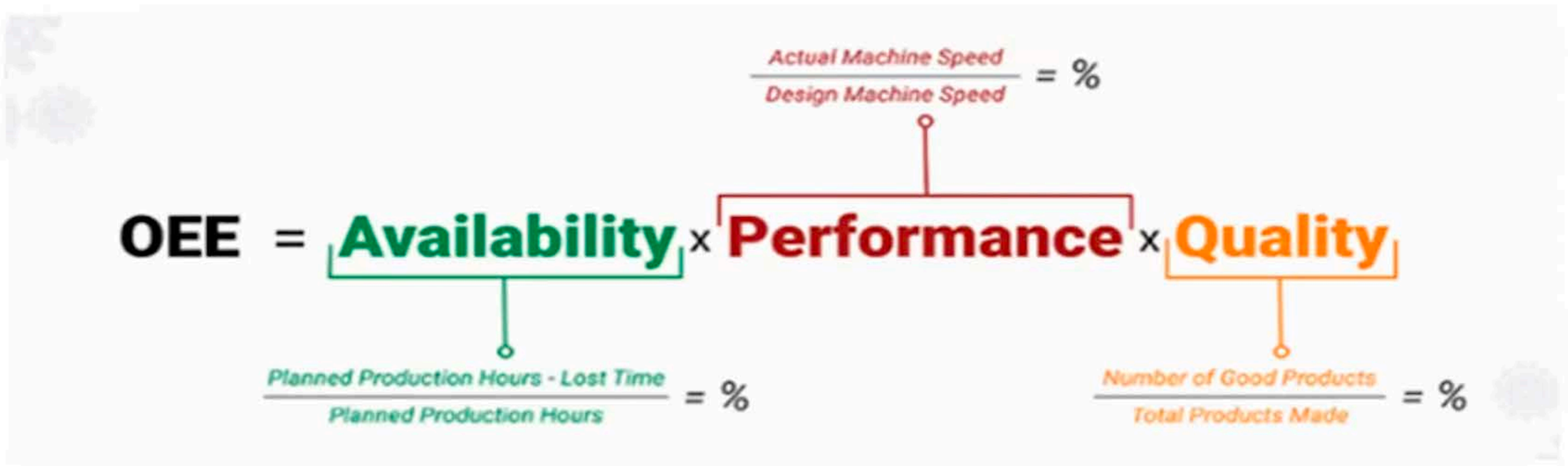
ONLINE DEGREE

OVERALL EQUIPMENT EFFECTIVENESS (OEE)

Gold Standard in measuring manufacturing productivity

OEE is the product of availability, performance, and quality.

What does OEE of 100% Signify?



SCRAP ANALYSIS - BROACHING PROCESS

The Scrap Production in Week 1 and 3 are 2% and 1% respectively

The scrap production is under the acceptable limits

	2/10/2019		3/10/2019		4/10/2019		5/10/2019		6/10/2019		Week Total	Total Hobbing Production	Scrap %
	Shift 1	Shift 2	Shift 1	Shift 2	Shift 1	Shift 2	Shift 1	Shift 2	Shift 1	Shift 2			
Week -1 Broaching Scrap	11	8	13	0	7	6	11	8	4	6	71	3,462	2.05%
	16/10/2019		17/10/2019		18/10/2019		19/10/2019		20/10/2019		Week Total	Total Hobbing Production	Scrap %
	Shift 1	Shift 2	Shift 1	Shift 2	Shift 1	Shift 2	Shift 1	Shift 2	Shift 1	Shift 2			
Week -3 Broaching Scrap	4	2	1	0	0	5	5	10	7	4	37	3,835	0.96%

FINANCIAL LOSS OF SCRAP

GEAR	MATCHING PART NO.
Gear 2-A	Blank-001
Gear 2-B	Blank-002
Gear 3-A	Blank-011
Gear 3-B	Blank-021
Gear 4-A	Blank-011
Gear 4-B	Blank-022
Gear 5-A	Blank-012
Gear 5-B	Blank-021
Gear 6-A	Blank-012
Gear 6-B	Blank-022

Part Number	Per Unit Cost
Blank-011	105
Blank-012	35
Blank-021	47
Blank-022	25

Given the Information that Gear-6A needs Blank-012, the direct material cost is INR 35 per Unit

Material Loss due to Scrappage of components of GA-6A is

35 X (71+37) = INR 3780

OVERALL COST AND MARGINS

SALES DETAILS (GEAR ASSEMBLIES)	Sales Price	Direct Materials	Direct Labour	Production Overhead	Cost of Goods Sold	Unit Margin	Unit Margin %
Gear Assembly 3 (BS4/6)	555.00	152	95	165	412.00	143.00	26%
Gear Assembly 4 (BS4/6)	490.00	130	65	145	340.00	150.00	31%
Gear Assembly 5 (BS4/6)	350.00	82	35	115	232.00	118.00	34%
Gear Assembly 6 (BS4/6)	205.00	60	25	45	130.00	75.00	37%

MARGIN ANALYSIS - INFERENCE

1. Gear Assembly - 5 & 6 provides maximum margin in the months of Nov-2020 and Dec-2020
2. GAs-3, 4, and 5 have Gross Margins of 26%, 31%, and 33.5% to make them at least 34 % - What should be the revised price
   a. Use Goal Seek function

SALES DETAILS (GEAR ASSEMBLIES)	Modified sale Price	Original Sale Price	Change
Gear Assembly 3 (BS4/6)	625.20	555.00	70.20
Gear Assembly 4 (BS4/6)	515.89	490.00	25.89
Gear Assembly 5 (BS4/6)	352.06	350.00	2.06
Gear Assembly 6 (BS4/6)	205.00	205.00	0.00

Basic Concepts

ABC Analysis

It is an inventory evaluation technique, in which items are classified into three categorie A, B, and C.

Category	Value	Control	Record Maintenance	Purchase/ Inventory Strategies
A	High	Tightly Controlled	Accurate	Just-in-Time, Planned Orders
B	Medium	Moderately Controlled	Good	Planned Orders (Safety Stock)
C	Low	Minimally Controlled	Simple	Economic Order Quantity

Basic Concepts

Gear Blanks - B Category Item

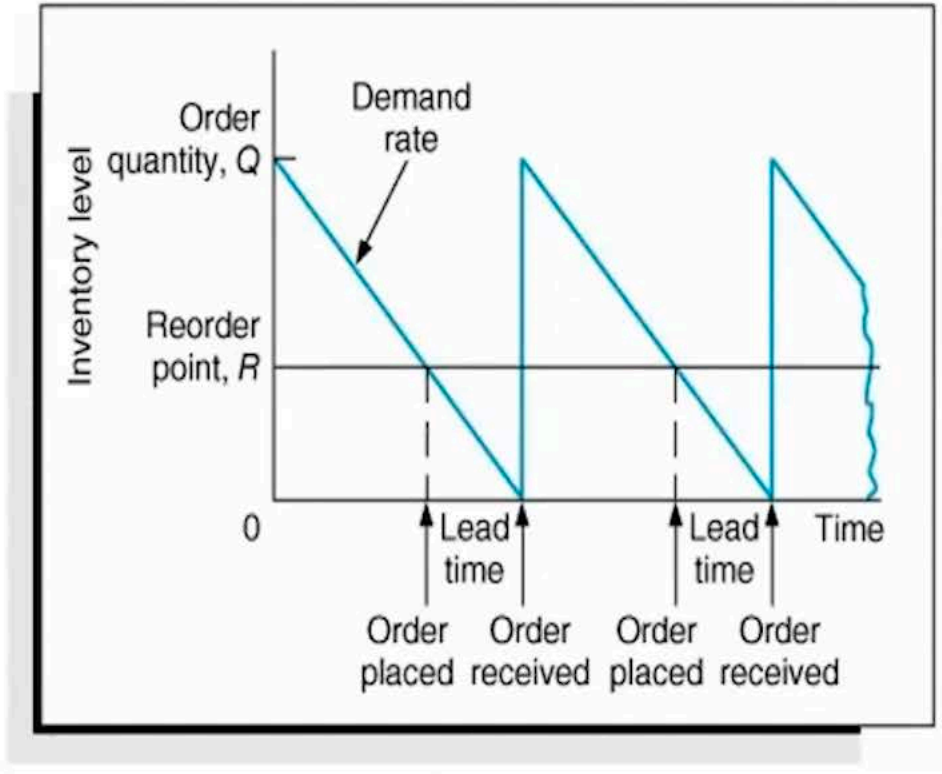
Safety Stock - It is the amount of inventory that must be held by an factory unit to meet exigencies.

Safety stock = (Maximum usage) – (Average usage).

Lead time Demand is assumed to be the annual average demand of the item

Reorder Point (ROP) - It is the minimum inventory or stock level for a specific product that triggers the reordering of more inventory when reached.

Reorder Point (ROP) = Demand during lead time + safety stock



Basic Concepts

Economic Order Quantity (EOQ) - It the optimal quantity of material units that needs to be ordered at a time. It is the factor of holding cost, ordering cost and Demand

$$Q = \sqrt{\frac{2DS}{H}}$$

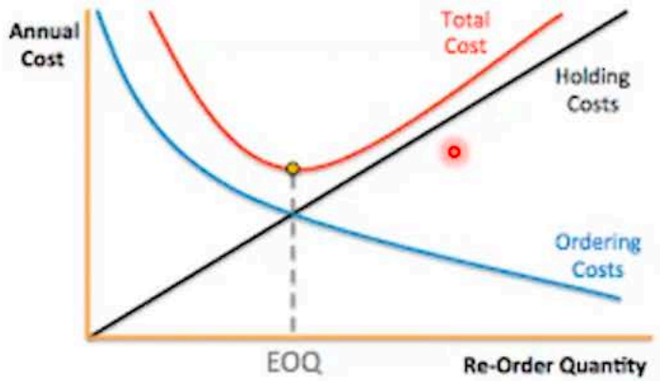
where:

Q = EOQ units

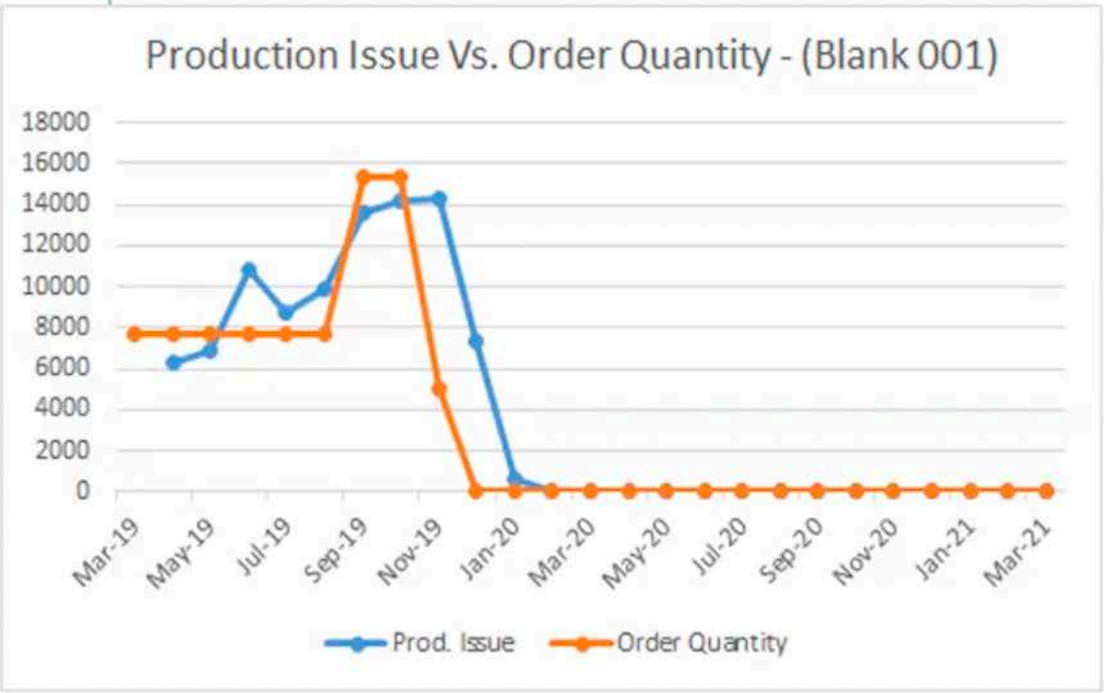
D = Demand in units (typically on an annual basis)

S = Order cost (per purchase order)

H = Holding costs (per unit, per year)



RAW MATERIAL INVENTORY ANALYSIS



Order Quantity is more smoothened for Blank-001 compared to Blank-011

Ponder over the impact of Changeovers in Blank Supplier company due to fluctuations in demand?

ENDING INVENTORY