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1. 1 to 16 – Mid Term
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MD IFTAKHAR KABIR SAKUR

25th BATCH

COMPUTER AND COMMUNICATION ENGINEERING

International Islamic University Chittagong

COURSE CODE: MGT-3601

COURSE TITLE: Industrial Management

COURSE TEACHER:

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MGT- 360L

(Industrial Management)

Basic & Detail Engineering

Basic Engineering Design (BED):-

1] Conceptual process studies (material balances, process flowsheets,...) and preliminary plot plan. (আনুমানিক প্রক্রিয়া অধ্যয়ন)

2] preliminary piping & instrument diagrams.

3] আসল equipment এর সাইজ ও সংখ্যা এর নির্দিষ্টতা

4] বর্জ্য নিষ্কাশনের নির্দিষ্টতা (Specification of effluents)

5] নিয়ন্ত্রন ও নিরাপত্তা device এর ~~defi~~ ~~definiti~~ definition, (control & safety)

6] All the basic need to support Basic Engineering Design Package (BEDP) containing all data needed by a competent contractor to perform the Detail Engineering.

7] এই Basic Engineering Studies একটা process package এ একত্র করে যা একটা external (consolidate) process licenson দ্বারা নিযুক্ত।

MGT- 3601

(Industrial Management)

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Front-End Engineering Design (FEED) :-

In this stage the engineering team work closely with the client to refine the design basic

1) Detailed Engineering ~~Drawing~~ Design:

Drawings, specification, plans for the projects, etc all are part of this

2) Equipment & material selection:

specific equipments & materials that will be used in the project. engineering team selects it. based on the factors such as performance, cost and availability.

3) Cost estimating:-

The engineering team develops a detailed cost estimate for the project

4) project scheduling:- The engineering team

develop a schedule including key milestones and deliverables based on the engineering design package.

Risk assessment:-

→ Potential risks
→ Hazards associated with the project

Detailed Engineering covering

→ Equipment purchase
→ Development of detailed piping
→ Cost and schedule control
→ Start-up procedure
→ All the studies to be performed before construction of the plan.

Engineering Management

The planning, organizing, coordinating and controlling engineering activities within an organization

There are ~~six~~ criteria of this:

→ ~~sto~~ Strong Leadership
→ Modern equipment
→ Knowledge based
→ project management skills
→ problem solving
→ Communication skills.
→ Risk management
→ Quality management (Must ensure that the project fulfill the criteria)
→ Customer focus.

Legal Issue:-

→ Trade License
→ Environmental License
→ Vat, Tax license
→ Pollution, Radiation

→ As per govt. policy.

Internal & External Environment Factors that Influences Organizational Design Making

Changes brings challanges for managers & leaders of the org.

The environment of the org. consists of its surroundings. That means the work which goes in favour or not in favour.

Like, political situation, economic conditions of the country etc

→ Internal environment:-

(1) Owners & shareholders (Have property rights, can claim the org.)

As the owners are powerful so the manager should care about the owner/owners.

(2) Board of Directors (পরিচালক পরিষদ)

elected by stockholders. To look at GM's work.

(3) Employees :→ Most important

→ If managed they can create a good

environment. But ill-management might create bad conditions in the company.

(4) Organizational culture :-

Behaviour of members, value, vision, beliefs, habits. The culture is important it says how the org. will perform. A strong cultural organization do better than weak culture org.

5) Resources of the org. (संसाधन)

⇒ Physical resources (Land, buildings, warehouse —)
⇒ Human resources (Teachers in uni, Salesman in shop —)
⇒ Informational " (Doctors)
⇒ Technological "
⇒ ~~Physical~~ "

6). Brand value / Goodwill :-

Negative image destroys the org.'s reputation

External Environment

The org. has no control how the external elements will shape up. It focuses on all the general environment factors. & organizations.

Two types:-

(i) General Environment:-

Industry এর বাইরে যা হয় তা।

(ii) Political Factors:- Business-government relationship. & overall political situation

Govt implement laws for good business.

- → Import policy
- → export policy
- → Taxation policy
- → Investment policy
- → Drug policy
- → Competetion policy
- → consumer protection policy.

(ii) Economic Factors:-

Economic conditions of the org. the important factors are:-

→ Inflation
→ Interest rates
→ Unemployment
When interest rates are high customer have less willing to borrow money.

3] Socio-Cultural Factors:-
Society culture where the org. is situated. A manager must know it better.
A business firms must offer products in the society that correspond to their values & attitudes.

4] Technological Factors:-
Must be adopt new tech. manager must know this

5] Legal Factors:- (Laws & regulatory Frameworks)
→ Factory Act
→ Industrial Relations Ordinance
→ The Contract Act
→ Company LAW
These protect consumers, business from wrong doing.

6] Environmental / Natural Factors:

Cost of energy; environmental pollution, global warming

7] Demographic factors:-

-) Concerned with country's population

→ In some countries, there are negative population growth. Rural - urban migration etc helps firms to develop new product. Strategy makers should do analysis.

8] International Factors:-

Global conditions, How the org. is effected.

Industry Factors

Suppliers:-

providers of the production. Dealing with suppliers. is important

Should A company should address to suppliers:-

→ Are the suppliers, price competive?

→ Attractive discounts?

→ Shipping charges ?

→ production standard ?

→ Depend on the firm ?

2] Customer & Buyer :-

"Satisfaction of customer"

→ Manager should pay more attention to the customers.

→ Strategy manager should understand the composition of the customers.

→ while making customer profile

⇒ location

→ demographic characteristics of buyers

→ psychographic issues.

3] Competitors & new entrants :-

Policies sometimes are influenced by Competitors.

Competitors have increased in current time. So a Firm should analyze the competitors.

④ Substitutive products:-

Competitor might serve similar product & can fullfill customer's needs. which is a threat.

→ A detergent powder can meet all the needs of user just like a ~~soap does~~ laundry soap does. But the detergent powder is strong here.

⑤ Regulators:- (या check गर्ने)

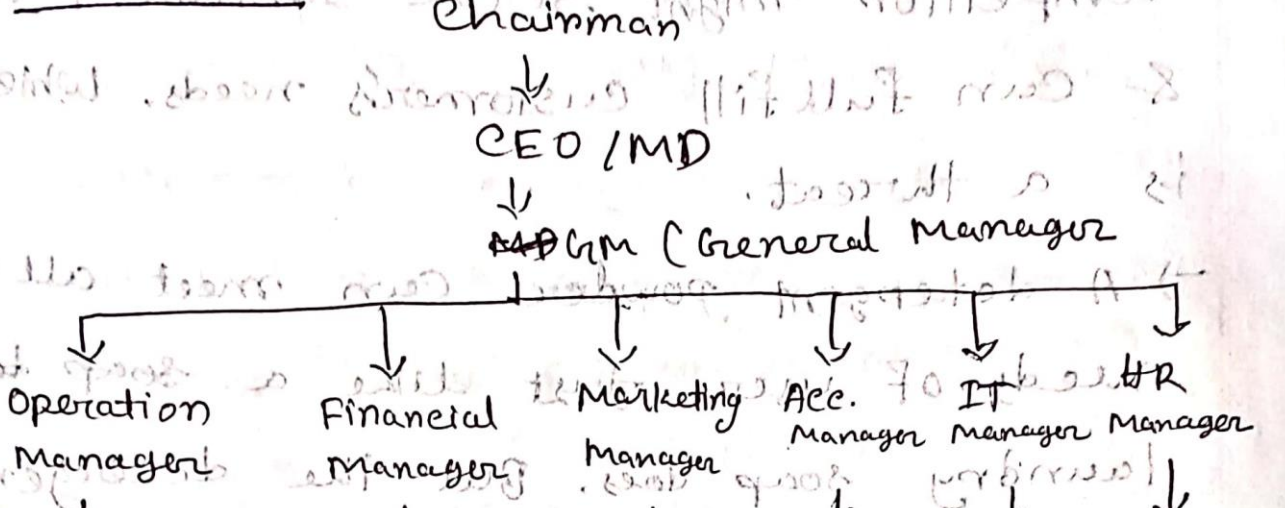
Authony to control, check, regulate influence's an org's policies & practices. Govt agencies are the main player here. Trade Union & the Chamber of Commerce are the examples of it.

⑥ Strategic partners:

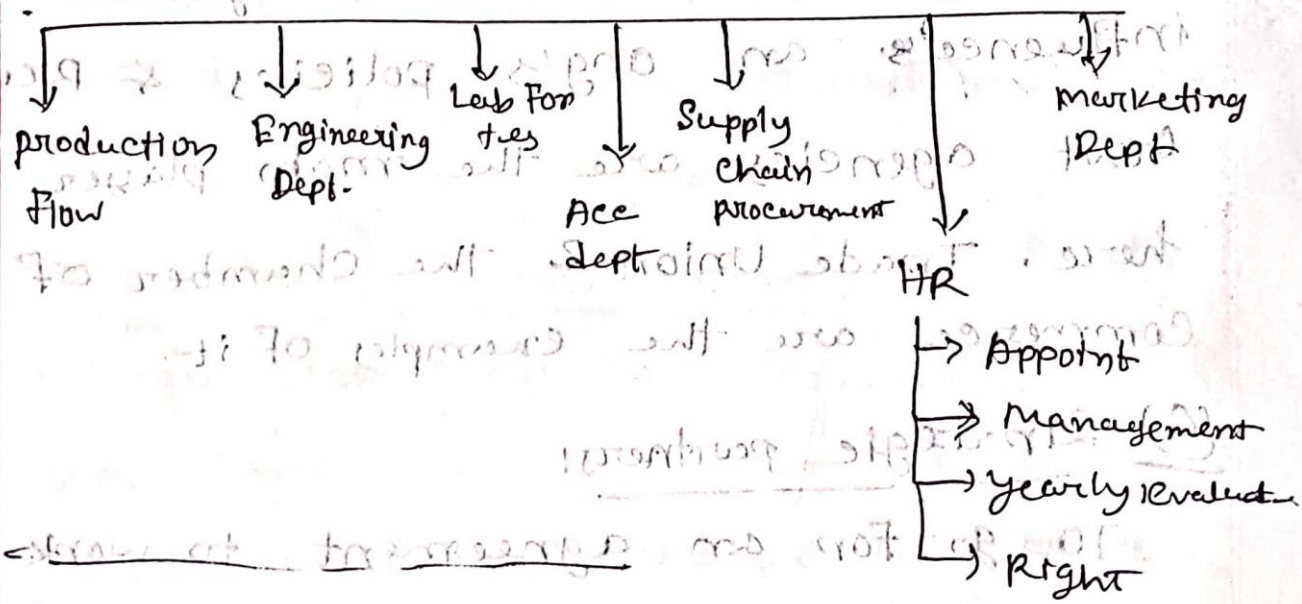
To go for an agreement to work jointly,

Organizational Structure

Office protocol:-



Management Tree



Stake Holders:- Individuals or groups who have an interest in an org.'s ability to deliver intended results & maintain validity.

Who can make more difficult or easier to execute a strategy, This is why manager must be careful.

Importance:-

A stakeholder can have a wide range of interests, including financial, social, environmental, and regulatory concerns. And an outcome of a project can be influenced by them.

Interest:

Economic:- They are concerned with financial outcomes. profitability, return on investment, revenue growth.

Social Interests:-

Social stakeholders are concerned about the impact of a project or organization in a society.

Includes employees, NGO, customers, suppliers, Local communities.

Environmental:-
Concerned with environment. Like air & water quality, biodiversity, climate change.

Support:- Can support financial, operational & social support.

Reputation:- Can impact both positive or negatively.

Innovative:- Valuable Feedback might help to have innovative idea.

Risk management:-
Can help identifying risks and opportunities.

Long-Term success:-
By companies can build strong relationships and trust with groups.

Stakeholders সাধা: ছয় প্রকার:

Shareholders:- maximize the financial returns on their investments

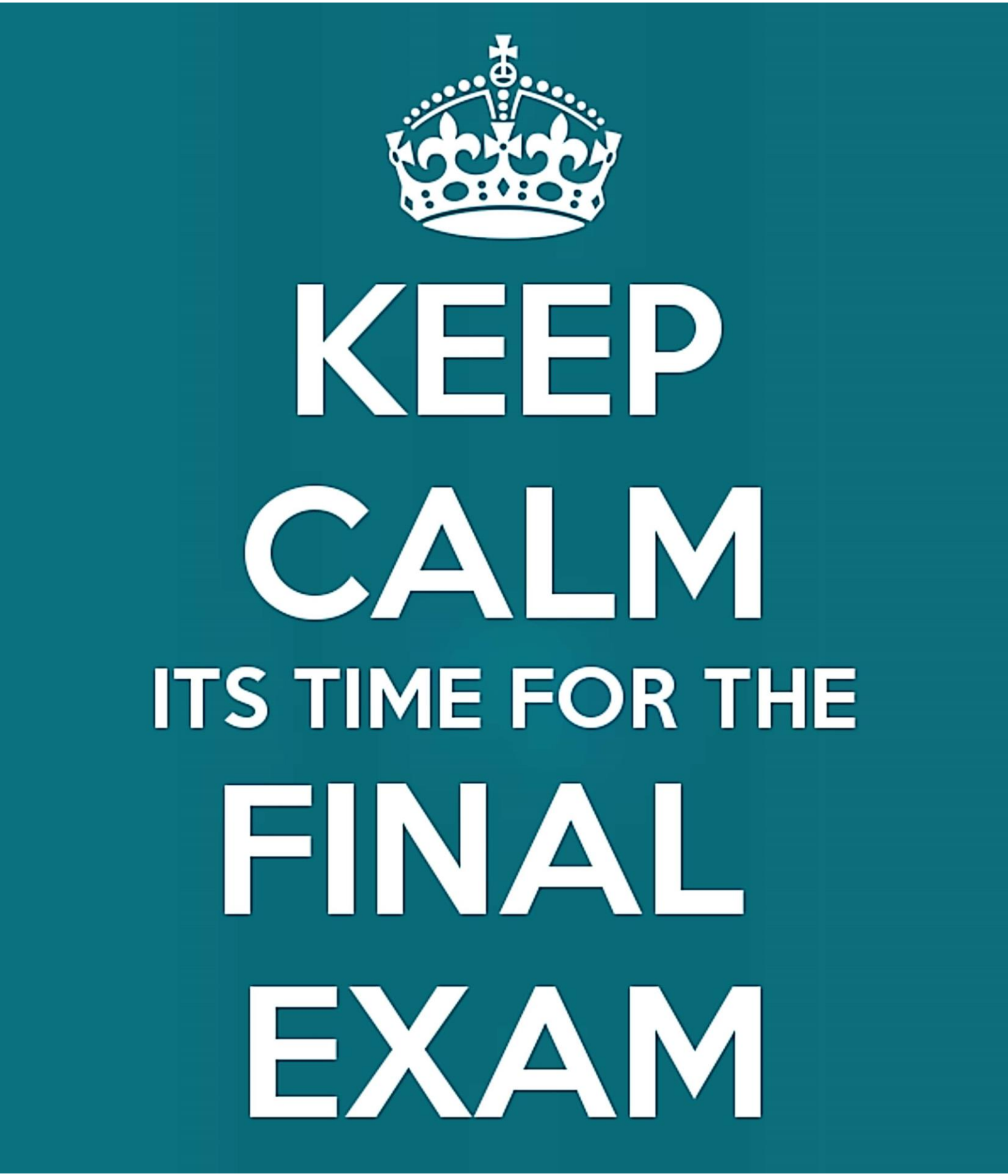
Employees:- Interested in job security, fair compensation, opportunities for growth & development.

Customers:- Are interested in high-quality products or services, positive customer & experience.

Suppliers:- Interested in fair pricing
- -> Reliable payment
- -> Business relationship.

Local community:-
- -> Social & environmental impact.
- -> Contribution to local economy

Regulators & govt:
- -> Interested in laws
- -> Either the org pay tax or not
- -> operates in socially responsible manner


KEEP
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FINAL

Production Management :-

Process of planning, organizing, directing and controlling the activities in the production of goods or services.

It ensures the production is carried out efficiently & effectively, while also meeting quality standards & cost targets.

The primary target of this is the production process is smooth & efficient as possible. Customer meeting for their demand, delivering high quality product or services.

Activities like; product designing, purchasing, inventory management, production scheduling, quality control & shipping.

production managers are responsible for overseeing all of these activities., Must have to have skills, knowledge on operation

management, Supply Chain Management, Quality management).

Designing Operation System in production:-

(1) Defining the product or service (Product কোন কোন Features, Quality standards, performance requirements of the product or service).

(2) Identifying resources (কি কি resource লাগবে)

(3) Determining the process Flow (Sequence of steps, Time required for each task, the resources needed)

(4) Developing procedure & standards (It is developed to ensure process Flow)

(5) Implementing the system (After designing the process Flow it is implemented by training employees, establishing procedure)

6) Continuously improving the system

(The final step. In there monitoring of entire operation occurs, And makes it effective day by day).

Service Oriented Industry

→ FOcused on providing services rather than producing goods.

Characteristic:-

1] Intangible product:- Service কে product এর মতো ধরা যায় না।

Ex:- Healthcare systems, Consulting services..

2] Customer interaction:-

Heavily depend on customer interaction. Phones or emails are also used to interact. Good customer service is essential here.

3] Labor intensive:-

Require large workforce to deliver services. Leads challenges like managing schedules.

training staff

(4) Customization:-
Depends on customer, They need customized services. So need specific solution for each

(5) Experience Economy:- Focused on customer experience that is beyond the service. Overall customer satisfaction.

(6) Importance of Reputation:-
A good reputation increase customer loyalty & bad one decrease business & revenue.

Other Service-oriented Industry

1] Healthcare:- provides medical care & services.

2] Hospitality:- Provides services those who are away from home. It provides lodging, food & beverage & other recreational activities.

3] Financial services:- Includes Banking, investment, insurance services & other financial services to individuals & businesses.

4] Information Technology:-
Sector includes services related to computer Software dev., networking etc.

5] Educational:- Service including Education, teaching, ~~Testing~~ training, including schools, universities etc.

6] Professional services:-

It is a wide range of specialized services provided by professionals such as accountants, lawyers etc.

7] Transportation:- Shipping, railways etc to move people's goods.

8] Communication services:-

Telecommunications, broadcasting and internet services . etc...

9] Personal services:- A wide range of services provided to individuals, including beauty and wellness services, home repair services etc.

⊞ product Layout, process Layout & fixed position layout :-

product Layout:- Manufacturing layout that is organized around the production of a specific product. The production line is set up in a sequence where each stage of production dedicated to a specific task or process. This is used in mass production.

process Layout:

A manufacturing layout that is organized around specific production processes rather than a specific product.

(বাকি দেওয়া আছে বিস্তারিত)

4 Organizational Technologies & Automation:-

Once these works were done by human but now it is done by machines. which increases the efficiency, productivity, reduce costs etc.

Several OTA:-

(1) Robotics process Automation (RPA):-

Does Data entry, Report generation, Report keeping. Can help with reducing errors, Increasing speed, Improving accuracy in the business.

(2) Artificial Intelligence (AI):-

Use the Machine Learning algorithms to analyze data & make predictions or decisions.
Can use in Customer service, Fraud detection, Supply chain Management.

3] Internet Of Things (IOT):-

Involves the use of sensors & connected devices to collect data and automate processes.
Can be used in inventory management, Equipment maintenance, Energy management.

4] Chatbots:-

Can simulate human conversation.
Can perform task such as customer support, order processing and appointment scheduling.

5] Work Flow Automation:- Involves use of Software.
Use in Approval workflow, Document management, project management.

Computer Assisted Manufacturing (CAM):-

Use software to control automatically Manufacturing process. Can be used in designing Models, Generate Machine Instructions.

Can also use in cutting, milling, drilling.

CAM tech can help to improve the accuracy & consistency of manufacturing processes.

Flexible Manufacturing System (FMS):-

Uses computer-controlled machine, to produce wide range of products. Consists of several machines that are connected to a central computer.

Here the both computer & machine can be reprogrammed for other product.

It improve quality, responsiveness, etc.

3) Robotics:-

Uses robots to perform tasks such as assembly, welding, painting & packaging. Reduce labor costs, increase safety in manufacturing environments.

4) TQM (Total Quality Management):-

It emphasizes the importance of quality in all aspects of an organization's operations.

It includes continuous process of improvement that focuses on meeting customer needs and expectations, reducing defects and errors.

It involves data & analysis it to identify areas for improvement & implementation of quality control. And ensure the products meet ~~all quality~~ quality standard.

Benchmarking :- A process of comparing an org. performance to that of other org. in the same industry or secton. The best part of it is it identifies the secton for improvement and to develop strategies for improving performance Can be internal (comparing performance in the org external (Comparing performance to othe org.).

TQM & Benchmarking both can be used together as complementary strategies For improving quality & efficiency, Benchmarking provides how the org. can improve its processes & systems. While TQM provides For Continuous imporvement & quality management Helps to achieve higher levels of quality & to stay in the competitive market.

Classification of Layout
Pdf-02

(1) Process Layout:-

Recommended for batch production. All machines performing similar types of operations are grouped at one location in this. All lathes, milling machines, etc. are grouped in the shop will be clustered in like groups.

That means the arrangement of facilities are grouped together according to their functions.

The flow paths of material through the functionalities varies from one function to another product. There can be backtracking in this process.

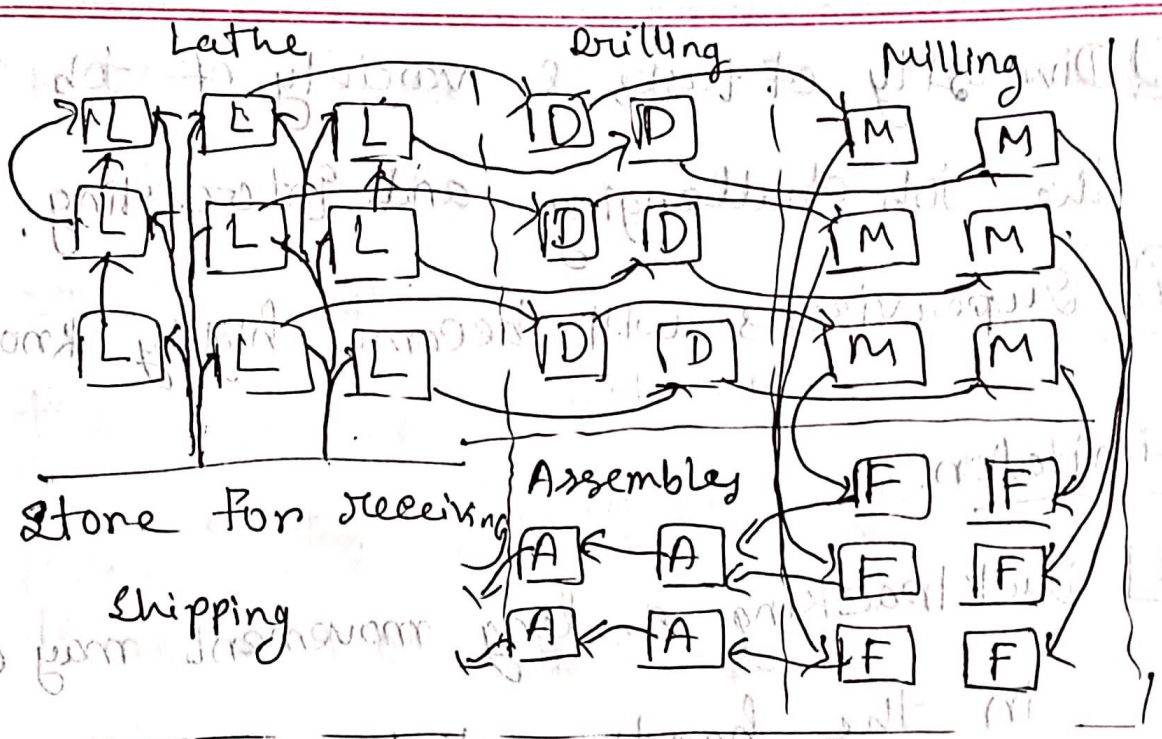


Fig: process layout.

Advantage:-

(1) Machines are better used and fewer machines are used.

(2) Flexibility of equipment & personnel is possible in process layout.

(3) Lower investment, less number of machines.

(4) Higher utilization

(5) High degree of flexibility to work distribution to machineries & workers.

(6) Diversity of tasks & variety of job makes the job challenging and interesting.

(7) Supervisors will become highly knowledgeable

Limitation:-

1] Backtracking & long movement may occur in the handing of the product

2] Material ~~handlized can~~ can't be handled using machine.

3] process time is too big that reduce the inventory turnover.

4] Low production due to set up.

5] Time gap between in & out too much

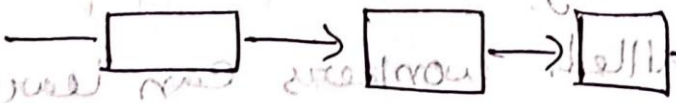
6] Space & capital are tied up by work in process.

2] product layout :-

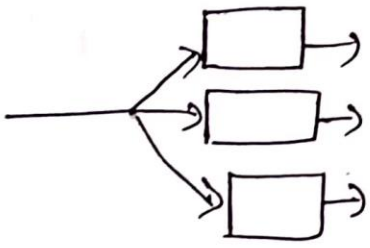
Machine & auxiliary services are located according to the processing sequence of the product.

If production range is big then the facilities can be arrange to achieve efficient flow of materials and lower cost per unit. Special machines are used which perform the required function quickly & reliably.

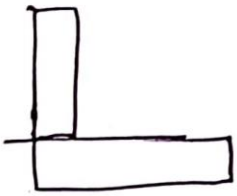
When production is high then ~~layout~~ can't this can be used



(a) Production line in the form of series



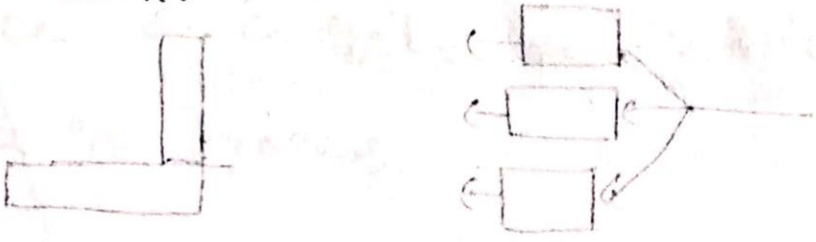
(b) parallel production line



(c) production in L.

Advantages:-

→ Flow of product will be smooth.
→ In this process inventory is less.
→ Time is less.
→ Cost is minimum.
→ Simplified production, planning & control systems are possible
→ Less space is occupied
→ As material handling cost is reduced as it is mechanized.
→ Perfect line balancing
→ Manufacturing cycle is short.
→ Small amount of work-in-process inventory.
→ Unskilled workers can learn & manage production.



Limitation:-

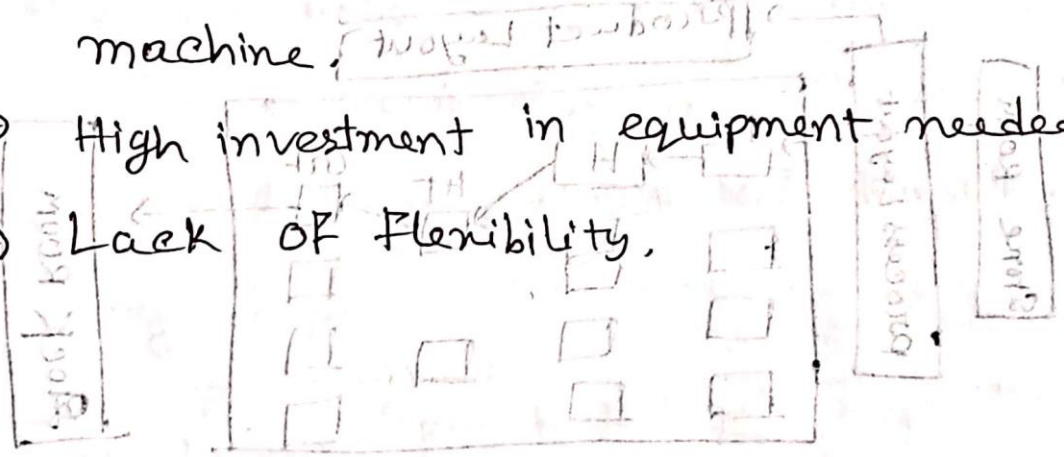
→ Breakdown of one machine may cause stoppage of machines in the downstream of the line.

→ Change in product design may require major change in the layout.

→ The line output is decided by bottleneck machine.

→ High investment in equipment needed.

→ Lack of Flexibility.



3 Combination Layout:-

Process & product Layout jointly creates this.

A Combination Layout is possible where an item is being made in different types & sizes.

Note that the sequence of operation remains same though there might be variation or difference in product.

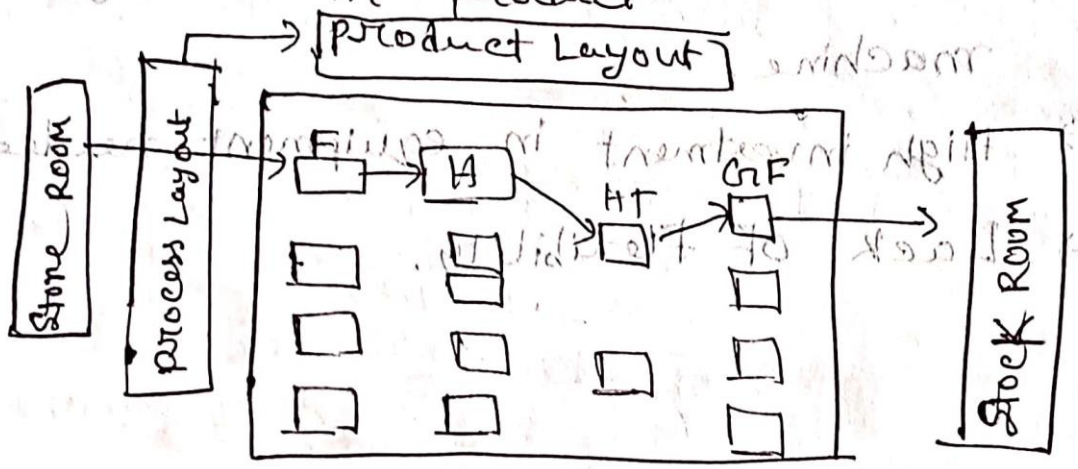


Fig:- Combination Layout

(4) Fixed position Layout :-

Also called as project Type of Layout. Material, Major Components remain in a Fixed ~~position~~ Location & tools, machinery, men and other materials are brought to this location.

Suitable when one or few pieces of identical heavy products are to be manufactured.

A large number of heavy parts, the cost of transportation of these parts is very high.

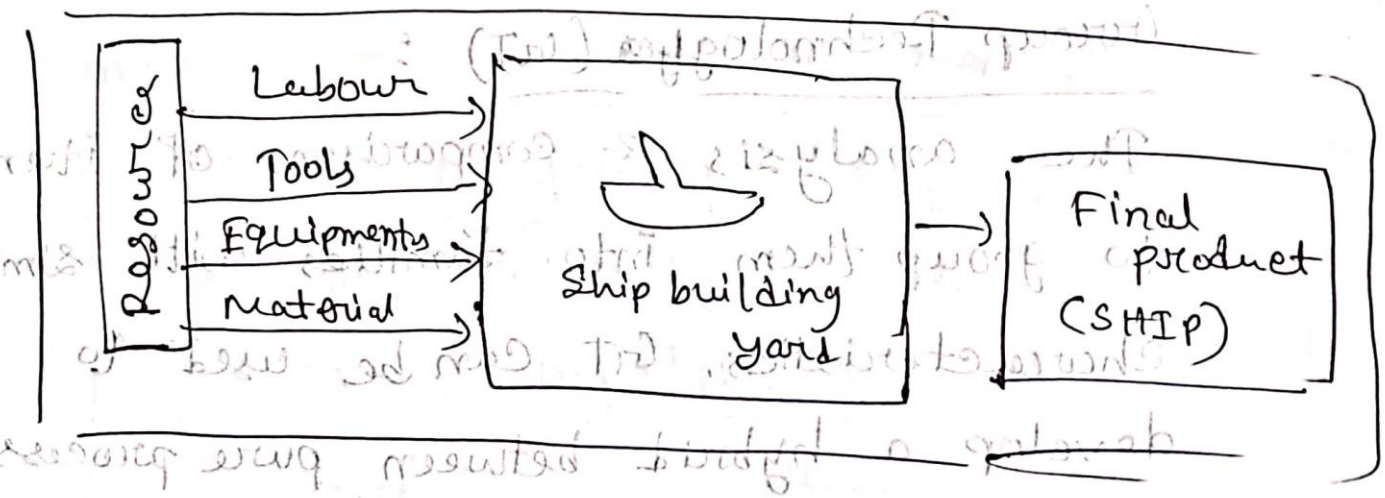


Fig:- Fixed position Layout.

Advantage:-

→ Job enlargements
→ Upgrades the skills up of the operators.
→ Workers take interest in doing the job
→ Production Flexibility.
→ Capital investment is lower.

5 Group Layout / Cellular Layout

A grouping of equipment for performing a sequence of operations on family of similar components or products has become all the important.

Group Technologies (GT) :-

The analysis & comparisons of items to group them into families with similar characteristics. GT can be used to develop a hybrid between pure process layout & pure flow line layout.

Have 2 steps:-

(i) Determine component families or groups.

(ii) Applying GT to arrange the plans equipment used to process a particular family of components.

⇒) Group layout is the combination of product layout & process layout.

The m-machines & n-components will be divided into distinct number of machine-component cells. Here the objective is to minimize the intercell movements.

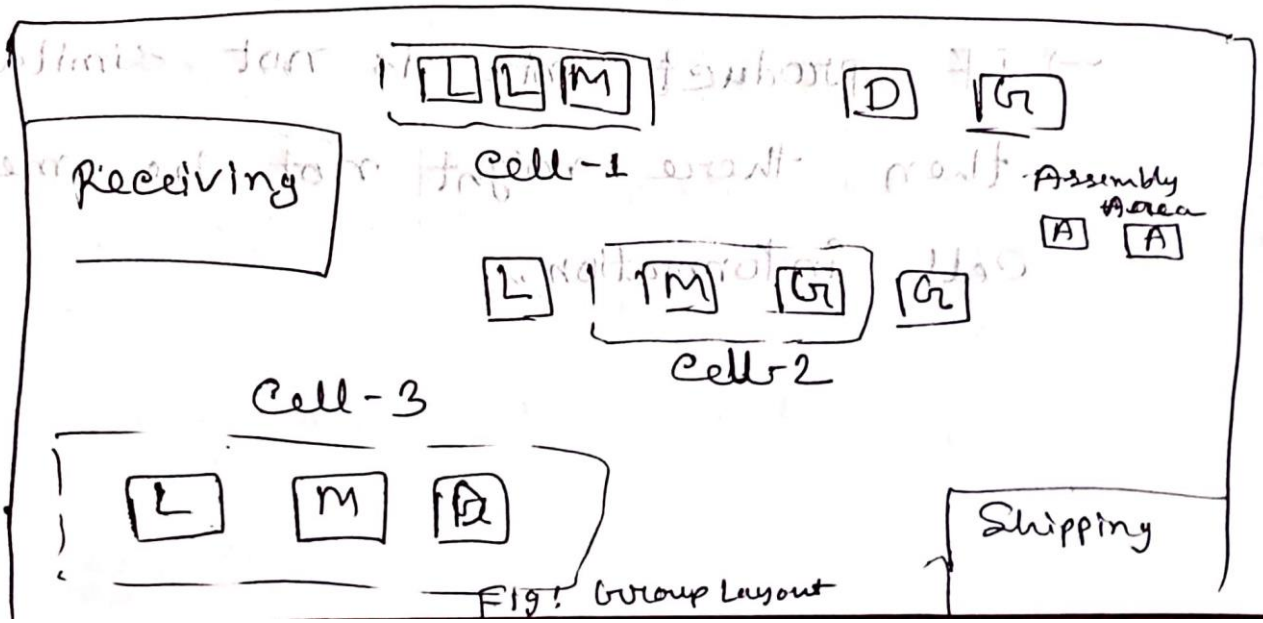


Fig: Group Layout

Advantage:-

→ Component standard.
→ Reliability of estimates.
→ Machine operation & productivity effective.
→ Customer service

(*) Can decrease the:-

→ paper work and overall production time.
→ work-in-progress & work movement
→ overall cost.

Limitation:-

→ Is not good for all solution.
→ If product mix is not similar then there might not be meaningful cell information.

Industrial Law

Law on Sales of goods:-

Legal framework that governs the sale & purchase of goods between businesses or individual engaged in commercial activities. And to do that laws are needed

The law on sales of goods aims to establish the right & responsibilities of buyers & sellers in a transaction. works on sale, price, date of delivery, contract etc.

It is based on the UN's Convention on Contracts for the International Sale of Goods (CISG). It is adopted by over 90 countries

International law on hire & purchase:-

Cover issues such as:-

1] Contractual Agreement:-

laws require that any agreement between the parties involved in a hire or purchase transaction be made in writing, clearly stipulating the terms & conditions of the transactions.

2] Title & ownership:-

Legal rights & obligations of both parties involved in & the title & ownership of the goods being hired or purchased.

3] Liability:- This law requires that the party involve in a hire or purchase transaction be liable for their respective actions & responsibilities.

4] Payment Terms: This law require payment terms of a hire & purchase transaction be agreed upon by both parties in writing.

5] Termination & Cancellation:-

This law provide ~~information~~ termination or cancellation of anything under specific circumstances.

6] Dispute resolution:- This law provide for the resolution of any dispute.

7] The Negotiable Instruments (NI) Act:-

This act; Negotiable Instruments can take the form of promissory notes, bills of exchange and cheques.

The ACT lays down rules for the creation, transfer, and discharge of these instruments, and provides legal remedies for disputes arising

from their use.

This act also provides protections of negotiable instruments, such as rights of endorsement, negotiation, and discharge.

NI act provides framework for the use of negotiable instruments in commercial transactions, giving legal protections.

This law also gives support to the owner & his patents. patents are called as Intellectual property. And this law gives owner its right. It also provide validity of patents.

In general, to obtain a patent, an invention must be novel, non-obvious and useful.

Novelty means that the invention is not already known or available to the public.

Non-Obviousness means that the invention would not have been obvious to the a person of ordinary skill in the relavent time of the Invention.

Usefulness means that the invention has some practical Application.

Once patent is granted the owner can sell it. But if anyone uses it without permission the owner can take action against him/her.

patent will be invalid if the owner fails to give enough discription of ~~work~~ its work.

Factories ACT

Aims to ensure safety, health & welfare of workers in factories. various measures to regulate the working conditions in factories such as, cleanliness, ventilation, temperature, lighting etc.

Factories Act of Bangladesh is a legislation that sets the minimum standard for working conditions in factories in Bangladesh.

The main objective of the Act is to ensure the safety, health, and welfare of workers employed in factories, and to regulate the working conditions in factories. Also it sets out working hours, overtime, leave, wages, safety, health & welfare of workers.

DIFE (Department of Inspection for Factories & Establishments) responsible for inspecting

Industrial Relations Ordinance:-

IRO regulates international relationships between employers & employees. Was first introduce in 2002.

IRO is to promote harmonious industrial relations between employers & employees. It is used to solve any kind of problems between them.

Under IRO, Employers have the right to have safe working conditions, Minimum wages, etc. And employees have the right to join trade Union, engage in collective bargaining & strike.

It also have Industrial tribunals that settle down the dispute between Employers & Employees.

Also provides for the registration of Trade Union. Still it is in criticism for not being able to give rights to the workers.

Workmen's Compensation Act:

Also knowns as Employee's Compensation Act.

Ensure that employees who are injured or became disabled during working the employees have to get the compensation for their loss of income and medical expenses.

This act works for all employees, including permanent, temporary, casual workers. And applies to both public & private sector employees.

Also imposes certain obligations on employers, such as register of accidents & ensure that the employees are provided with appropriate safety during their work.

Employers have to report authority about accident & the authority need to investigate & compensate the payable to the employee.

PdF - 1

ISO 9000 :-

International standards that provide guideline for quality management & quality assurance.

It was introduced for the organization to so that the products meet customer needs & expectations.

It provides a framework for establishing and maintaining quality management system.

The ISO 9000 certificate is often used to show customer or stakeholders that an org. is committed to quality & has a good management & good quality practices.

2) Statistical Quality Control (SQC)

A set of statistical techniques that are used to monitor & control the quality of products & services. It involves statistical analysis to identify and control source of variation in production processes.

SQC can include SPC (~~spc~~ Statistical process control) which involves charts to monitor & analyze process data and acceptance sampling, which inspects if a product meets quality standard or not. SQC is often used in manufacturing where Quality Control is critical to customer satisfaction & safety.

ISO 9000 is framework where SQC is tools & techniques