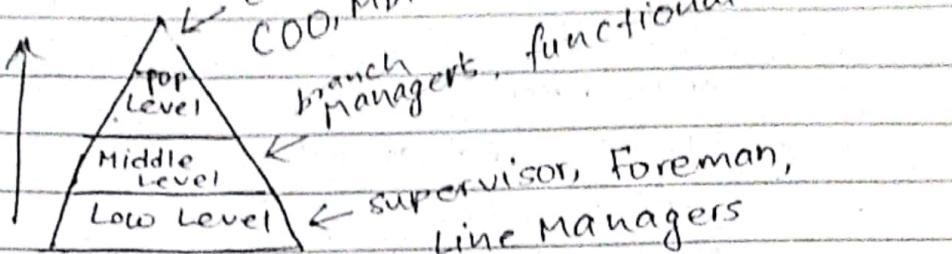


Engineering Management ①

Unit-1 INTRODUCTION

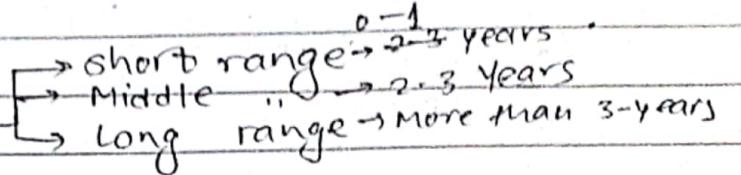
Management

↳ Levels



↳ Functions

- Planning
- Organizing
- Staffing
- Leading
- Motivating
- Directing
- Communicating
- Controlling



↳ Principles

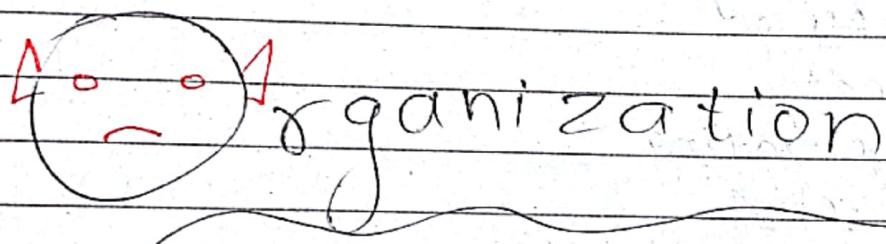
- | | |
|-------------------------------------|----------------------|
| → division of work | → team spirit |
| → unity of objective | → Discipline |
| → Unity of command | → Unity of direction |
| → Authority | → Remuneration |
| → Responsibility | → Tenure etc. |
| → Scalar chain | |
| → Equity | |
| → Centralization & decentralization | |

↳ Scope of Management

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- Financial Management
- Marketing Management
- HR "
- Production "
- Procurement "
- PR (Personal Relationship) "
- CR (Customer) ") "
- Material "
- Maintenance "
- Office "



- systematic arrangement of people
- group of people for achieving common goal.

↳ Features

- Composition of individuals
- Achievement of common goals
- Division of work
- Coordination
- Co-operative relationship
- Authority & Responsibility
- Group behavior
- Performance

etc ~

↳ Types

- Formal Organization
 - systematic
 - must follow all char. of organization

↳ Informal " (NGO)

Formal Organization

- Features :-

- Created intentionally
- achievement of common goals
- Work Specialization
- Fixed authority & responsibility
- Co-ordination
- Scalar chain
- Unlimited life

Informal Organization

- Features

- Created automatically
- to get psychological satisfaction
- no any fixed authority
- No source of information
- depends on time
- no scalar chain
- fixed life.

Formal Organization

Advantages:

- Systematic working
- Achievement of common obj.
- No overlapping of work
- Co-ordination
- Chain of command
- Focus more on work.

Disadvantages:

- Delay in action
- ignores social needs
- Emphasis on work only

Informal Organization

Advantages:

- Fast communication
- Fulfils social needs
- Correct feedback

Disadvantages:

- Spread rumours
- No systematic working
- may bring -ve results
- focus on individual interests

Formal

- ↳ Written documentation
- ↳ Systematic working
- ↳ Delay in decision making
- ↳ proper co-ordination.

- ↳ Fix chain of command
- Emphasis more on work

- Created intentionally
- Does not focus on social need.

- Rules & regulations are fix.

Informal

- ↳ Oral documentation
- ↳ No systematic working
- ↳ decision making is fast.
- ↳ there may not be proper coordination.

- ↳ No fix chain of command.
- Emphasis more on individual interests

- created automatically
- Focus on social needs.

- Rules are not fixed.

Virtual Organization

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IMP

* Importance of Management

- Achievement of goals
- Resource utilization
- Productivity increment
- Cost reduction
- Decision making
- Improving staffing
- Standard of living

- Quality management
- Proper planning
- Motivating stakeholders
- Company direction
- Dynamic organization etc.

* Engineering Management

Functions:

- Product Development
- Operations Management
- IT Systems
- Quality Management
- Decision making

* Roles of Engineering Manager

- Develop Budgets
- Assign tasks to engineers
- Recruitment
- Collaboration with departments
- Developing project plans
- Supervising engineering teams
- Research & development
- Manage, support & evaluate
- Checking work's of engineer's etc.

Unit-2

Planning & Organizing

* Planning

Time Frame

- ↳ short
- ↳ Middle
- ↳ Long

Org " Levels

- ↳ Strategic
- ↳ Tactic
- ↳ Operations

⇒ Features

- ↳ Primary function
- ↳ Future oriented
- ↳ intellectual activity
- ↳ continuous process
- ↳ Time frame
- ↳ Based on environmental analysis
- ↳ attainable
- ↳ Economic
- ↳ a means only
etc.

⇒ Process

→ Analysis of environment

↓
Establishing goals/ objectives

↓
Determining planning premises

↓
Identification of alternatives

↓
Evolution of alternatives

↓
Selecting the best alternatives

↓
Formulating supportive plans

↓
Implementation of the plan

↓
Review the plan

08/09

* Tools of planning

- Forecasting
- Network technique
- Flow chart
- Gantt chart
- Break Even Analysis
- Linear Programming
- Simulation etc.

* Importance of planning

- Focus on goal
- Minimize uncertainty
- Maintain control
- Innovation & creativity
- Organizational Effectiveness
- Economy in operation
- Co-ordination
- Avoids failure

* Organizing

⇒ Process :-

1. Division of Work
2. Grouping " "
3. Delegation of authority
4. Co-ordination of work

⇒ Organization Structure

→ ~~Types~~ Types of organization structure

- i) Line orgn. structure (military)
- ii) Functional " "
- iii) Line & staff " "
- iv) Matrix " "
- v) Network " "
- vi) Hybrid " "

i) Line Organization Structure

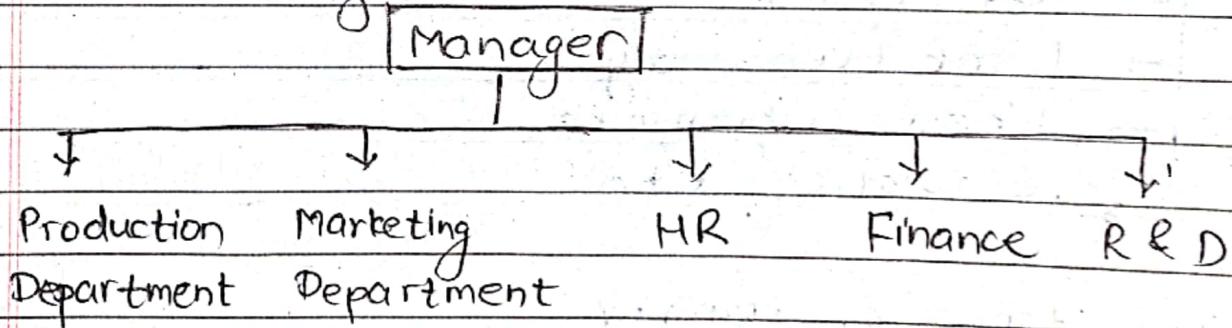


Fig: Line Organization Structure

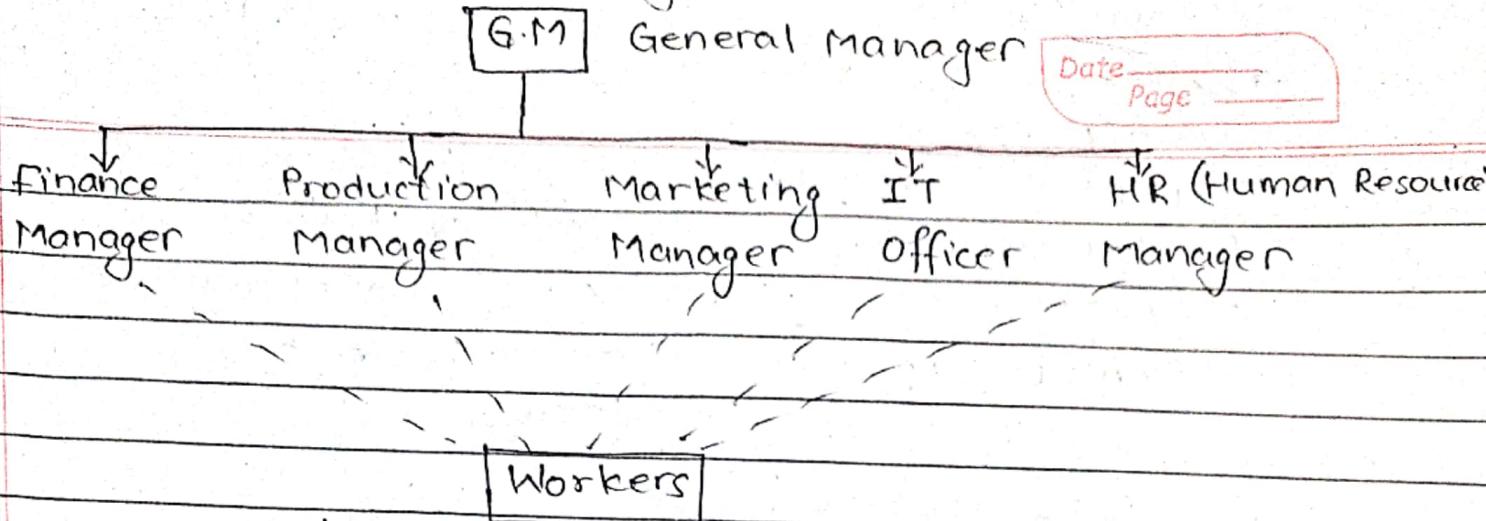
→ Advantages

- Simple
- quick decision
- Discipline
- centralized authority
- Economical

→ Disadvantages

- work overload
- Lack of specialization
- inefficient
- Autocracy etc.

ii) Staff or Functional organization Structure



Adu.

- i) Benefit of specialization
- ii) Democracy
- iii) Relief to executive
- iv) Efficient management

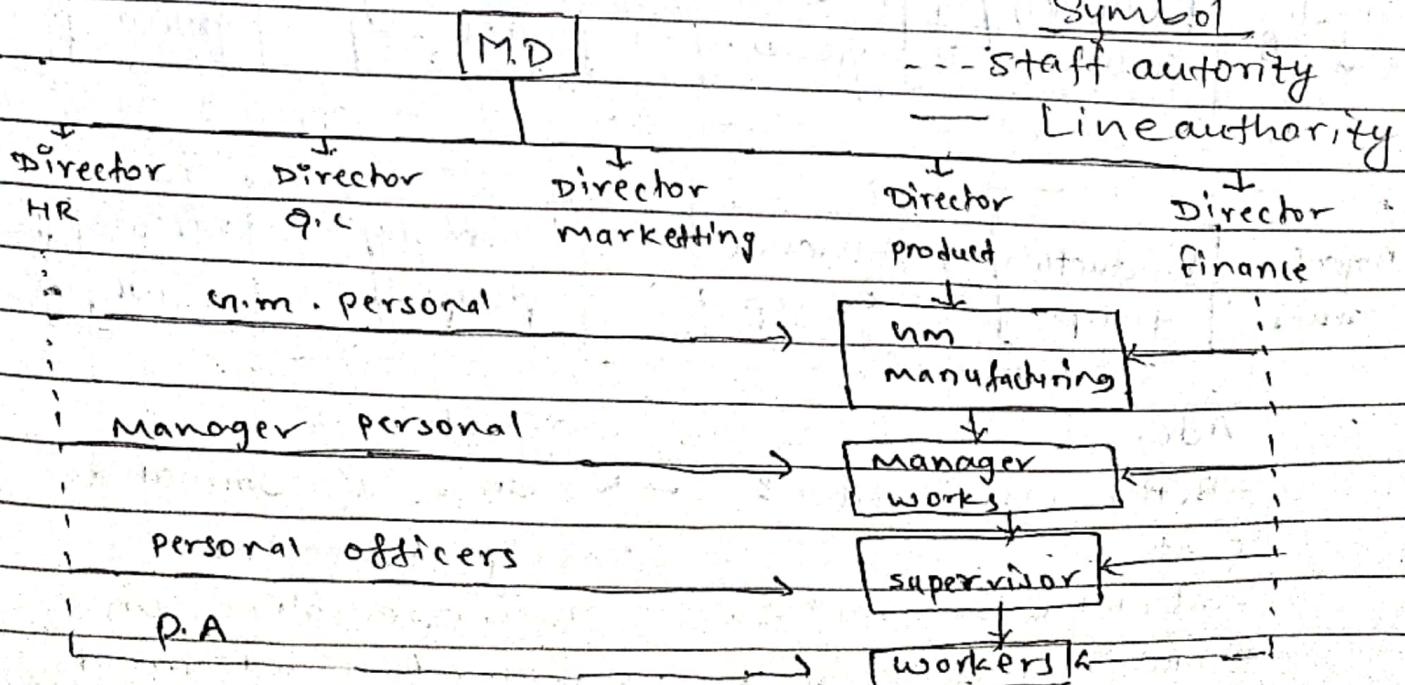
Disadv.

- i) Delay in decision making
- ii) Expensive
- iii) Multiple Command System
- iv) Chances of conflicts etc.

iii) Line & Staff organization structure

Line authority → Regular

Staff authority → Expert



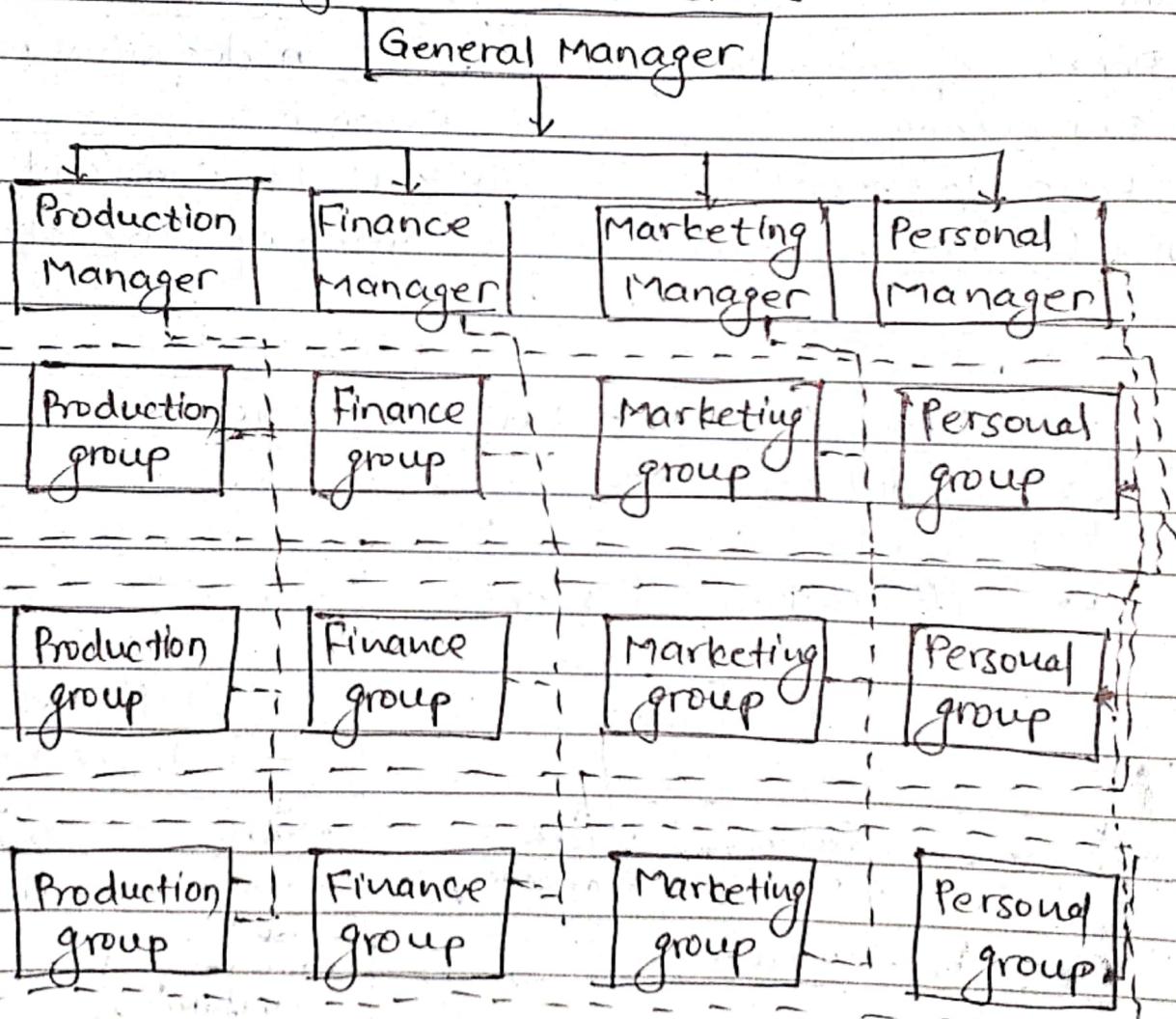
- Adv.
- Higher flexibility
 - better control & monitoring
 - Expertise knowledge
 - better use of resources
 - Efficient management

- disadv.
- High administrative cost
 - conflict between line & staff authority
 - Lack of co-ordination
 - delay in decision making.

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~~IMP~~ iv) Matrix Organization Structure



Adv.

- Better coordination & control
- adaptable to current env.
- maxⁿ use of resources

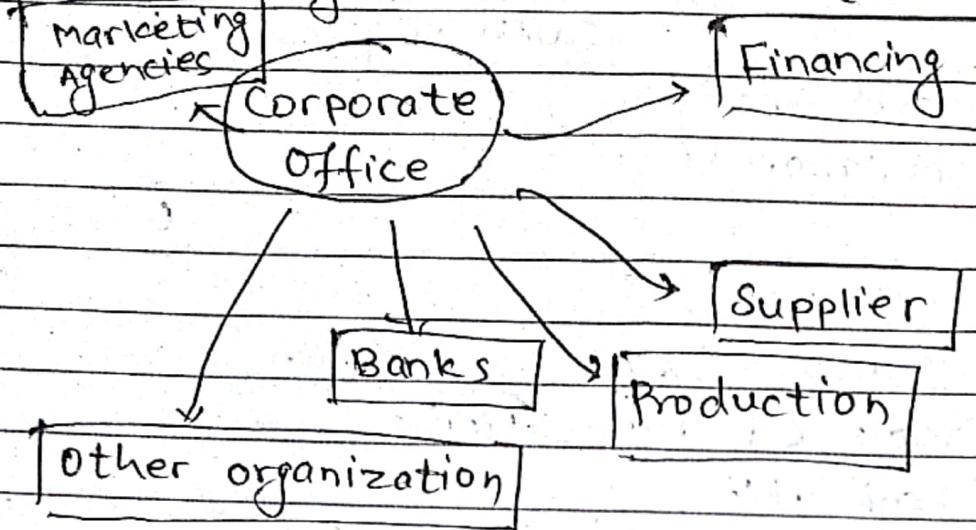
disadv.

- No unity of command
- costly structure
- Over specialization
- complex to understand.

- Participative management
- Relief to executives.

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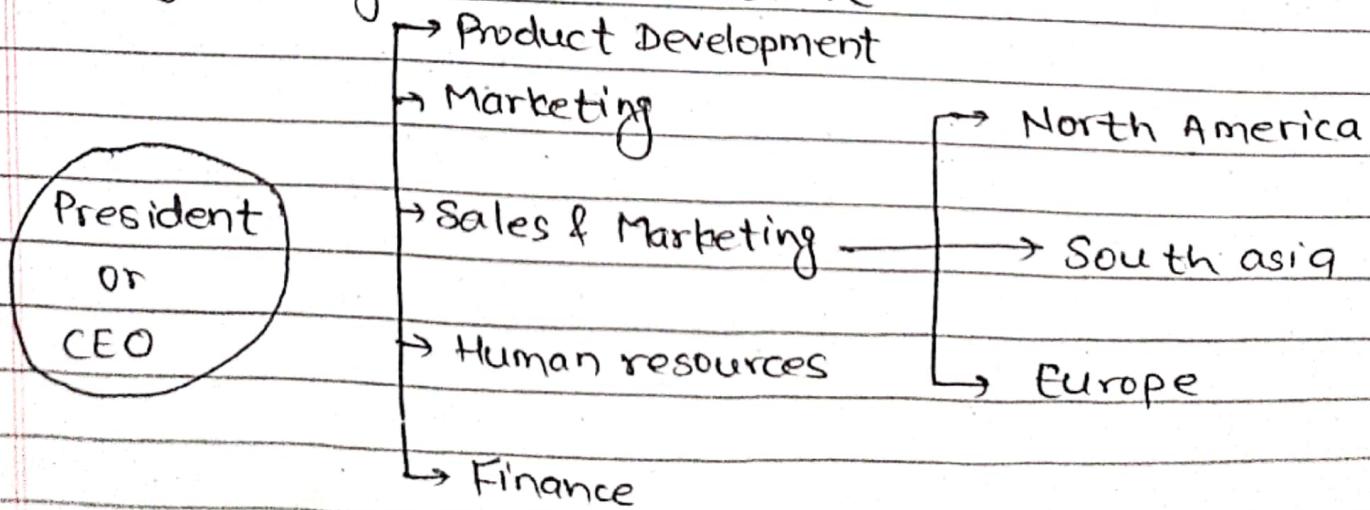
v) Network Organization Structure



Adv.

- Eliminates departmentations → conflict may arise
 - minimize cost
 - Benefits of specialization
 - Flexible operation
 - Diversification
- disadv.
- Lack of secrecy
 - Difficult to co-ordinate
 - Dependency etc.

vi) Hybrid Organization Structure



- | | |
|--------------------------|---------------------------------|
| Adv. | disadv. |
| → flexible | → conflicts between departments |
| → cost control | |
| → Optimize resource use | → confusion about the authority |
| → data based decisions. | |
| → improve collaborations | |

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* Contemporary issues in planning

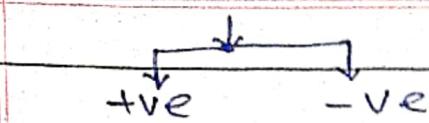
- 1) Technological adoption
- 2) Globalization
- 3) Sustainability & CSR
- 4) Economic volatility
- 5) Workforce management

Unit- 3

Motivation & Leadership

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* Motivation



- Promotion ; → Demotion
- incentives ; → :
- Transfer ; → :
- Salary & wages ; → :
- Reward ; → punishment
- bonus or profit sharing ; → :
- facilities ; → :

Motivation

- ↓
- Financial (Monetary) ; Non-financial (Non-monetary)
- (Intrinsic) ; (Extrinsic)
- Salary ; → job rotation
- & Wages ; → job enlargement
- incentives ; → achievement
- bonus or dividends ; awards
- Facilities ; → Recognition
- Rewards ; → Appreciation
- (Financial) ; → Non-financial rewards.
- Profit sharing ;

~~Self~~

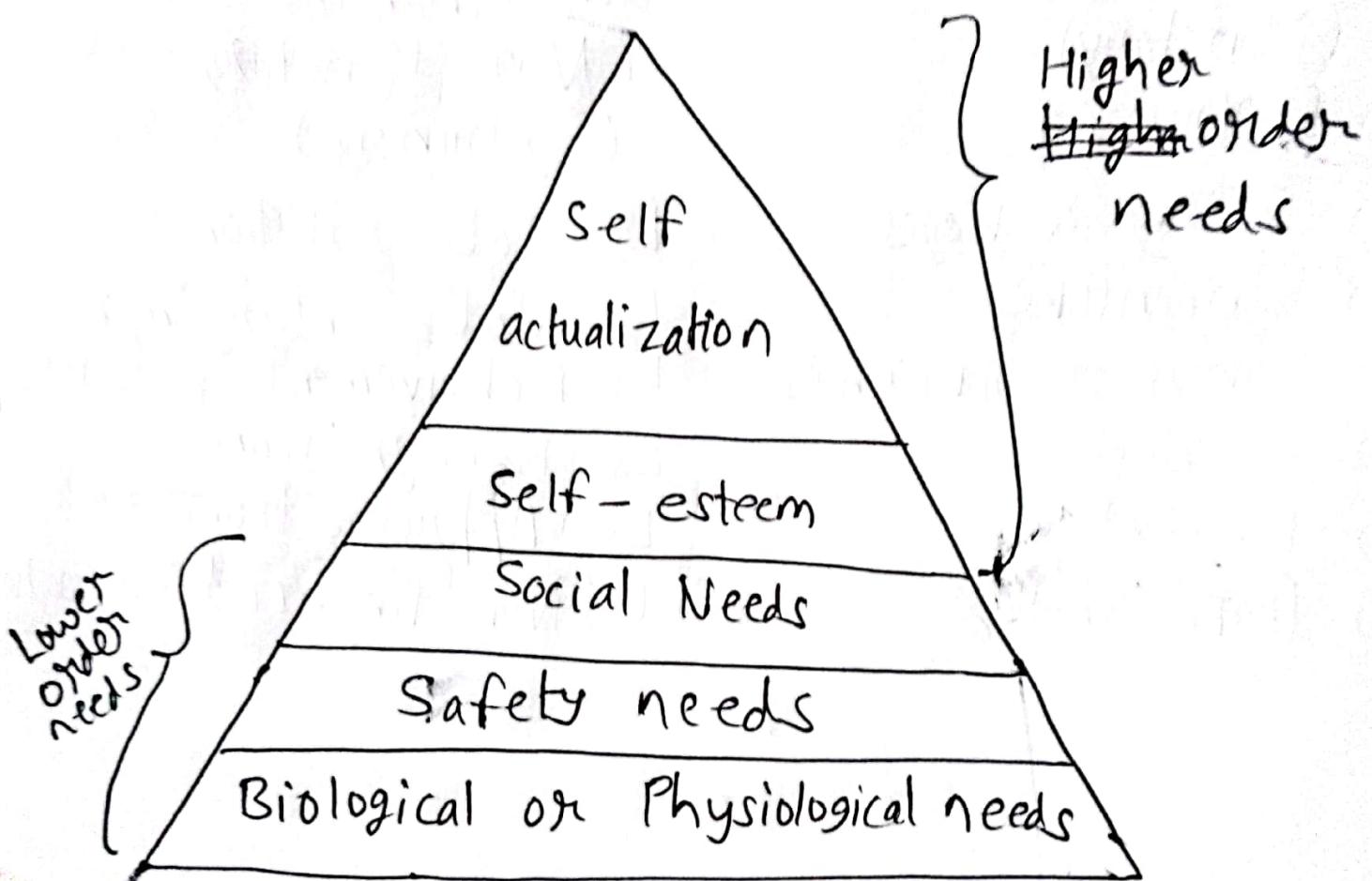
* Importance

- profitable operations
- Productivity
- Resistance to change
- Use of Human Resources
- Employee satisfaction
- minimize disputes & strikes
- Co-ordination
- Retention of employee
- Goal achievement etc.

Theories of Motivation (Imp.)

1. Maslow's need hierarchy theory

↳ defined by Abraham Maslow



1. Biological or Physiological needs \Rightarrow food, shelter & clothing
2. Safety needs \Rightarrow job security, health
 - ↳ insurance
 - ↳ health checkup
3. Social needs \Rightarrow affluence, love, affection, emotion, etc.
4. Self-esteem \Rightarrow ego, esteem, attitude, power, position, etc.
5. Self-actualization \Rightarrow Creative, contribution,

Contribution & Criticism

Contributions & criticism

- | | |
|---------------------------------------|--|
| \hookrightarrow universal | \hookrightarrow non testable theory
<small>(non experimental)</small> |
| \hookrightarrow clearly explained | \hookrightarrow It is clinically tenured |
| \hookrightarrow comprehensive | \hookrightarrow need classification is somewhat artificial. |
| \hookrightarrow clear prescriptions | \hookrightarrow may not apply at all times and places |
| | \hookrightarrow individual differences |

2. Herzberg's two factor theory (Dual factor theory)

↳ defined by Frederick Herzberg

Hygiene factor

Maintenance

Extrinsic

↳ External to job

↳ prevent dissatisfaction

↳ zero level motivation

↳ Never satisfied completely

↳ Money is most

Motivating factor

Satisfiers

Intrinsic

↳ inside the job

↳ affect satisfaction

↳ encourage individuals

Contribution

↳ This theory provides tools to satisfy as well as motivate.

↳ Financial benefits are not only the motivating factors.

↳ Advocates concept of Job enrichment

Limitation

↳ It is theory of job satisfaction

↳ does not utilize the measure of satisfaction

↳ ignores situational variables