



Topic and Contents	Hours	Marks
4.1. Safety management <ul style="list-style-type: none">• Causes of accidents• Effects of accidents• Types of industrial accidents• Preventive measures• Safety procedures	08	06
4.2. Industrial legislation <ul style="list-style-type: none">• Introduction to industrial acts• Necessity of acts• Indian factory act• Workman's compensation act• Minimum wages act		

Safety management

Accident is an unfortunate and sudden mishappening which causes damage or loss of property, material or human. Preventions of accidents are expected. Safety management is concentrating on avoiding accidents.

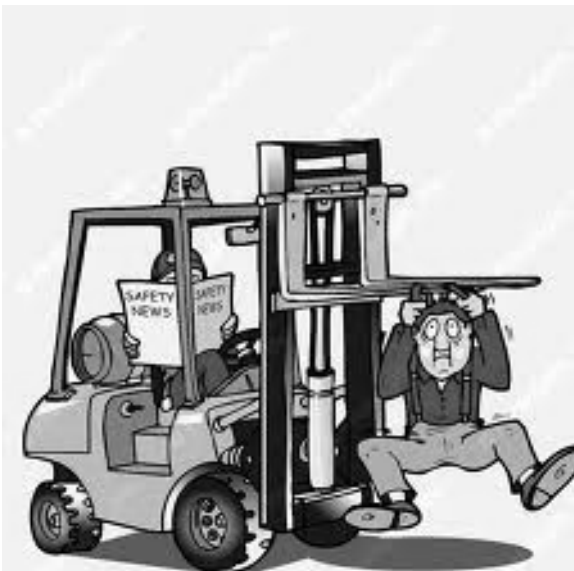
Q. which are the causes of accident?



Accident may happen due to

- Workers
- Management
- Unsafe working conditions
- Natural causes

Causes of accidents due to workers:





- Poor knowledge of work
- Overconfident behavior at the work place
- Lack of concentration
- Stress in work
- Unnecessary daring
- Less work experience
- Use of mobile while working
- Fear of accident
- Bad habits
- Lack of confidence
- Not following rules and regulations

Causes of accidents due to management:

- Provision of unsafe work place to workers
- Bad construction of the plant
- Untrained workers
- Extra load of work to employees
- Poor housekeeping
- Lack of safe procedures
- Less control on habits of workers
- Wrong assignment of work i.e. incorrect person working at sensitive jobs.
- Careless management approaches.

Causes of accidents due to unsafe working conditions:

- poor workplace layout
- oily surface, slippery floor
- poor illumination
- suffocation at work
- bad housekeeping
- unnecessary slopes and steps on shop floor
- un-noticeable turns and crossings
- weak machine foundation
- poor electrification



- exposure to moving parts
- chemical leakages
- humidity at workplace

Natural causes of accidents:

- Earthquake
- Floods
- Cyclones
- Temperature strokes
- Snow falls
- Land slide collapse
- Heavy rains

Q. what are the effects of accidents?

Accidents are unfortunate. Following are the effects of accidents on various elements of society.

1. Effect on worker
2. Effect on industry
3. Effect on family
4. Effect on management





1. Effect on worker:
 - a. Injury to body
 - b. Loss of skills
 - c. Loss of job
 - d. Leave of recovery
 - e. Loss of life
 - f. Financial loss
2. Effect on industry
 - a. Production stoppage
 - b. Bad message to other workers
 - c. Reputation is lowered
 - d. Financial loss for compensating the affected worker
 - e. Extra cost on recovery of machine
3. Effect on management
 - a. Time to solve the case
 - b. Issues related to court, police hospital and compensation
 - c. Status among competitors is affected
 - d. Faith of workers gets disturbed
 - e. More attentiveness becomes necessary in future
4. Effect on family
 - a. Loss of earning member
 - b. Hospitalization related time and money losses
 - c. Attention to patient needs
 - d. Stability of family is disturbed
 - e. Feeling of insecurity
 - f. Other family members may lose working hours after accident of their family member



Q. Which are the types of accidents? Explain in brief.

(A) Based on severity, durability and degree of injury:

1. Minor accidents:
 - Less harmful in nature to the worker
 - Preventing employees from working, for the period less than 48 hours from the time of accident.
 - Not necessary to report to higher management
2. Reportable accidents:
 - Injuries caused to the worker prevent him from working for the period of 48 hours or more
 - Supervisor should do reporting to the higher management
 - Accident is little complicated than the minor accident.
3. Fatal accidents:
 - It results into death of the employee.
 - Its reporting to the top management, legal bodies and police is must.
4. Accidents due to dangerous occurrences:
 - Explosion, fire, leakage may be the reasons for such accidents.
 - Man as well as property can be damaged
5. Internal accidents:
 - Injuries without showing external signs (e.g. fractured bones) are called as internal accidents.
6. External accidents:
 - Injury with external signs of it is called as external accident.
7. Major accident:
 - Accident causing death/permanent/prolonged disability to the injured employee is called as major accident.
8. Temporary accident:
 - Injury after accident disables for a short period/ a day/ a week.
9. Permanent accident:
 - Injury after accident disables the affected worker forever.



(B) Based on place of accident:

1. Construction accident:
 - Accident occurs at construction site. These accidents are often happening and injuries are serious.
2. Chemical plant accidents:
 - Exposure to chemicals is a real and everyday danger.
3. Industrial plant accident:
 - Industries busy in manufacturing have machineries and moving parts. Accidents occur may be due to mistakes by worker, management or situation.
4. Mining accidents:
 - Mines are seriously dangerous sites. Collapses of soil layers, suffocation, poisonous gases, etc. are the reasons.

Q. Explain preventive measures.

- 1) Safe working methods: Operations in the factory must be designed considering safety first. Possibility of accident should be eliminated. Prior care must be taken for that, while deciding the methods and operations.
- 2) Proper selection of workers: Disciplined, mentally stable, emotionally balanced and alert people always work in safe manner. Workers with above qualities, with good motive of work must be selected for the work. The attitude and aptitude of workers must be tested through various psychological tests and interviews at the time of selection.
- 3) Training for safe working: Training gives knowledge of work, improves person's attitude and gives correct direction. Trained employees work safely. A proper worker with proper training is the better man power to be employed. So training of workers is the assurance of safe working. Hence, training is one of the preventive measures to avoid accidents.
- 4) Accidents prone areas: Survey of industrial processes, plant layout, material transportation, sensitive operations helps us to understand where the possibility of accident is more. Corrective actions and prevention can be taken at such places. Instructions regarding the

same make awareness among the concerned authorities or employees and thus accidents can be avoided.



5) Safety devices: During the industrial operations prevention can be taken by using safety devices. Helmets, goggles, breathe purifiers, pads, hand gloves, safety shoes, aprons, protection shields are some of the personal safety devices which can be used. It depends on the type of process and kind of body exposure. Unnecessary extra care which creates difficulties in work must be avoided. Persons must be trained to use the safety devices effectively.





- 6) Safety program: A systematic working with safety is possible through establishment of safety department. This department will be dedicated for safety related work only. A complete schedule for safety awareness will be carried out by the same. Workers can be educated by conducting various safety programs and imparting training to make them conscious for safety.
- 7) Safety provisions:
- Fencing of rotary and moving parts
 - Provisions of fire extinguishing equipment
 - Employment of adolescents on dangerous machines must be restricted.
 - Availability of first aid facilities
 - Instructions for safety and related precautions, while working must be displayed wherever required.
- 8) Promoting safety awareness in employees: Even though everybody knows miseries of accident, there are number of accidents every day. So it is also important to create safety consciousness among the employees.

By the following ways management may promote safety awareness:

1. Safety training programs
2. Display of banners, posters which underlines importance of safety.
3. Organizing seminars, conferences, sessions by experts on industrial safety related issues.
4. Competition in industry related to safety and awards to those departments where minimum accident instances occur.
5. Displaying safety related messages, instructions, guidelines near the work area.
6. Formation of safety committees.

In these ways or other, management can create environment of safety awareness. The above mentioned safety procedures, preventive measures and safety awareness plans may reduce accidents considerably. Accidents are undesirable and hence this safety approach is the vital one.



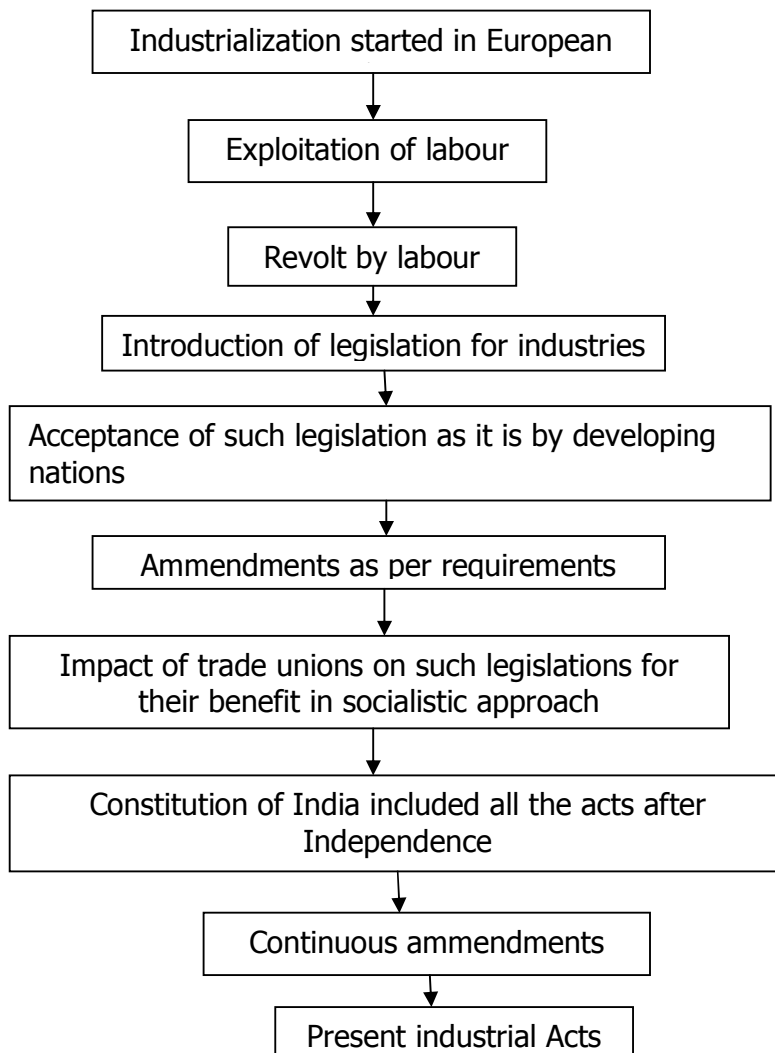
Q. Explain safety procedure.

1. Develop, establish and maintain plans for safety.
2. Define policies for administration of a safety program which will include safety training, industrial safety, safe working conditions etc.
3. Providing accident prevention guidance to staff.
4. Developing safety education, award programs to create safety awareness.
5. Reviewing documents related to safety and directions mentioned in handbooks.
6. Understanding legal systems related to accidents and deciding policies accordingly.
7. Providing safety engineering at workplace.
8. Short term and long term planning for safety factors related to technical developments and associated operational methods.
9. Formation of safety department with dedicated staff for the same function.
10. Establishing procedures of safe working.
11. Checking the ground reality and finding out accident prone areas. Actions must be taken to avoid accidents.
12. Handling workman's compensation claims and correspondences after unfortunate occasions.
13. Provision of safety aids, first aid services near the workplace.
14. Documentation related to accidents should be maintained.
15. Review of plans related to construction, facilities, equipment and other systems to ensure confirmation with acceptable safety standards.
16. Evaluating and approving safety practices in potentially hazardous areas or operations.
17. Ensure that the health and safety of all employees are taken care.
18. Accident analysis to learn in future for no repetitions of the same.

Q. what is industrial legislation? Explain various industrial acts.

Employer and employees are the two parties across the table. Relationship between these two is very important for the development and the survival of any organization. Industrial acts, initially called as labour legislation had a protective function dealing with wages, working conditions, social interests, industrial peace etc. it thus gives legal framework to relationship between employer and employees.

The progress of such legislation is mentioned below:





Q. Why acts are necessary?

Industrial Acts are helpful in the following ways:

1. It gives legal platform and support to employees.
2. It creates industrial peace and improves employer-employee and labour-management relationships.
3. It gives solutions to quarrels in industry
4. It removes out autocracy of management and extortion of workers
5. Employees get compensation in case of accidents.

Q. Explain various industrial Acts.

Factory act, ESI, Workman’s compensation act and minimum wages acts are some industrial acts.

Indian Factory Act:

a) Facts:

1. Modifications in 1934 factory act
2. Passed in 1948
3. Last major ammendments in 1976

b) Aims:

1. To ensure adequate safety measures
2. To promote health and welfare of the workers employed in factories
3. To prevent haphazard growth of factories
4. To consolidate and amend the laws for regulating labour in the factories in India
5. The licensing and registration of the factories

c) Terminology:

1. Adult: A person who has completed the age of 18 years.
2. Adolescent: A person of the age between 15 to 18 years
3. Child: A person of the age less that 15 years
4. Calendar year: A period between 1st January to 31st December (i.e. 12 months)
5. Day: A period between 2 mid-nights (i.e. 24 hours)
6. Week: A period between 2 Saturdays (i.e. 7 days)



7. Factory: A premises of 10 workers (if power is used) or a premises of 20 workers (if power is not used)
8. Power: Any form of energy other than animal or husbandry input. For example electrical or pneumatic.
9. Prime mover: Any device which generates or provides power
10. Machinery: Any device which transforms given power.

d) Main provisions:

1. All provisions are related to:
 - Health & safety
 - Welfare & development
 - Duration of work
 - Young & women workers
 - Leave structure
2. Appointment of labour welfare officers in the factory consisting of minimum 500 workers
3. Rights of labour welfare officers are given to State government
4. Working duration: Special facts:
 - Adult: 48 hrs/week
Child: 45 hrs/week
 - Women and children- prohibited to work during night (7 p.m. to 6 a.m.). But amendment is possible in this last fact.
5. Administration:
 - Appointment of labour welfare officer.
 - Appointment of factory inspectors
 - Enforcement of law through labour institute and Director General of Factory Advice Service
 - Penalties are prescribed for each offence

e) Special provisions:

1. Accidents & diseases
2. Dangerous operations
3. Penalty and procedures



f) Conditions stipulated in factory act related to hygiene of workers:
These conditions are with respect to the following facts such as cleanliness, ventilation and temperature, artificial humidification, overcrowding, lighting, drinking water, bathrooms, latrines, spittoons etc.

1. Cleanliness:

- Daily sweeping or cleaning of floors, benches, passages and staircases.
- Cleaning of workroom at least per week
- Effective means of drainage
- Painting and varnishing once a year

2. Ventilation and temperature:

- Circulation of fresh air
- Exhaust fans at proper places
- Use of device to keep balance of temperature.

3. Artificial humidification:

- Use of prescribed methods to have an artificial humidification
- Use of clean water for humidification process

4. Overcrowding:

- Space required for a worker is 500 cu. Feet
- No passage, room, workplace shall be overcrowded

5. Lighting:

- Sufficient and suitable
- Natural or may be artificial
- Glazed windows in clean condition
- Formation of shadows should be avoided

6. Drinking water:

- Should be available to all workers during all working hours
- Should be provided and maintained at suitable points
- Drinking water place must be away from latrine by 6 meters



7. Latrines:

- Separate enclosed for male and female
- One latrine must be made available per 20 persons
- Latrines must be of prescribed sanitary types

8. Spittoons:

- Sufficient number of spittoons shall be kept at convenient places
- These must be regularly kept clean

g) Safety provision under factory act:

1. Fencing of machinery:

Fencing of following should be done:

- Moving parts of prime mover
- Every part of transmission machinery
- Every part of electric generator and motor
- All dangerous parts, etc

2. Untrained adult man, woman or young person should not be allowed to work near machinery in motion

3. Employee with loose fitting clothes should not be allowed to work near machinery in motion

4. Young persons should not be allowed to work at dangerous places

5. Provide safe case to machinery

6. Every hoist and lift must be of rigid mechanical construction, proper material and sufficient strength.

7. Gates must be provided to enclose the hoistway and liftway.

8. Do not overload the lifts and cranes.

9. Materials of ropes, chains must be sound and with adequate strength

10. Speed of revolving machinery should not cross the limit

11. Covering of each pit as well as opening in the floor

12. No person should carry excessive weights

13. Care should be taken to protect the eyes



h) Welfare measures stipulated in factory act

1. Washing facilities:
 - Must be adequate and suitable
 - Must be separately provided for male and female
2. Sitting facilities:
 - Must be provided for all workers
 - Ergonomics considerations must be followed
3. First aid appliances:
 - Must be readily accessible during all working hours
 - One box should be provided per 150 workers
 - One ambulance room should be provided in a factory employing more than 300 workers.
4. Canteens:
 - One canteen atleast per 250 workers in a factory
5. Crèches:
 - Every factory employing more than 30 female workers, shall be provided and maintained a suitable room or rooms for the use of children under the age of six years of such women
 - Its incharge must be a woman trained in this aspect
6. Welfare facilities:
 - One welfare officer should be appointed in a factory employing more than 500 workers

Workman's compensation act:

1. Facts:
 - a. Passed in 1924
 - b. Few major amendments in 1962, 1976 and 1986
2. Aim: to compensate employees against accidents occurred in the industry premises.
3. Terminology:
 - a. Accident: any mishappening that causes injury to a person.



- b. Dependent: it means any of the relatives of an affected worker e.g. wife, widowed mother, minor son, unmarried daughter etc.
- c. Workman: any persons, who are employed in an organization working according to rules of section (II) of this act, except those who work on casual basis.
- d. Minor: any person of age not more than 18 years
- e. Partial disablement: Disablement which reduces the earning capacity of a workman. It is of temporary nature.
- f. Total disablement: disablement which reduces capacity of workman for total work and then he/she cannot earn at all.

4. Main provisions:

- a. Provisions are related to entitlement, rates, coverage of dependents and distribution of compensation.
- b. Compensation is not extending to:
 - Casual workers
 - Those employed in armed forces
 - Workers covered by ESI act
 - Workers under the influence of drink or drugs
 - Willful disobedience by the worker
 - Purposeful unsafe behavior
 - Less than 3 days impact of injury
 - Accident due to negligence towards safety supports
- c. The rates of compensation vary depending upon the injury results i.e. death, permanent disablement, partial disablement etc.

d. Amount of compensation:

Death after injury:

Amount= (50% of monthly wages) X Relevant factor **or** 80,000/-,
the amount which is more is compensated.

Plus to this Rs. 2,500 towards expenditure of funeral.

Permanent total disablement:

Amount= (60% of monthly wages) X Relevant factor **or** 90,000/-



Permanent partial disablement: proportionate compensation is paid for the injuries are mentioned in the part II of schedule I.

e. Few important rules:

- Compensation should be paid as soon as it falls 'due'.
- Medical treatment cost is not considered in compensation.
- In case of difficult financial condition of employer, then advance partial payment can be given in the start.
- If the compensation is not paid, then commissioner may direct to pay simple interest on the amount for delay.
- Compensation should not be done directly to the concerned worker/family. It should be given through commissioner.

f. Administration:

- Act is administered by the state government.
- Special commissioners may be appointed to execute the act.

g. Employer has to do compensation under following cases:

1. Injury has taken place during the course of employment.
2. Injury has been caused by an accident.
3. Either of following happens:
 - Temporary disablement or
 - Permanent disablement or
 - Partial disablement or
 - Total disablement or
 - Death

h. Industrial health through workmen's compensation act:

1. Workmen are compensated against accidents.
2. Injured employees are supported in all ways.
3. Indirect awareness about accidents.
4. Assistance after the accidents.



5. Financial support to affected employees.
6. Attitude of 'thanks for help' among workmen.

Minimum wages act:

1. Facts:

1. Passed in 1948.
2. Allocable to the entire country.
3. Recent amendments in 1988.

2. **Aim:** to ensure that employed persons are not subjected to exploitative wages by the employers.

3. Definitions:

1. Cost of living index number: the index number ascertained and declared by the competent authority to be the cost of living index number applicable to employees in employment.
2. Wages: all remuneration capable of being expressed in terms of money, which would, if the terms of contract of employment, express, were fulfilled, be payable to a person employed in respect of his work done.

It does not include:

- House accommodation
- Light bill
- Water charges
- Medical expenses
- PF or Pension contribution
- Travelling allowances
- Gratuity payable on discharge

4. Main provisions:

1. Fixation of minimum wages:
 - The minimum wages may consist of basic rate of wages and special allowance at a rate to be adjusted to keep with the cost of living index.
 - The government fixes the minimum wages.
 - This is revised at regular time intervals; but not exceeding five years.



- The government fixes the time rate, by day or month or by such other larger wage period as may be prescribed.
2. Procedure for fixing and revising minimum wages:
- Committee formation by appropriate government for wage fixation.
 - These committees provide necessary inputs and suggestions.
 - Publishing of proposal by the government.
 - Responses from people in two months time against the proposal.
 - Consideration to valid responses.
 - Fixation of minimum wages rate.
 - Declaration by government through official gazette.
3. Advisory board:
- Advisory board is appointed by the appropriate government.
 - This board is responsible for coordination of the committees and subcommittees appointed for the purpose of wage fixation.
 - Central advisory board is appointed by the central government for advising the central and state governments in the wage fixation and revision issues.
4. Composition of committees:
- Nomination of members is done by the appropriate government.
 - Members represent employers and employees in equal number.
 - Independent persons do not exceed one third of the total committee members.
 - The chairman of the committee is independent member.
 - The chairman is appointed by the appropriate government.
5. Claims:
- Claims are possible under following cases:
 1. Payment less than minimum wages.
 2. Overtime rate issues.
 3. Payment of remuneration for days of rest.
 - Period for application for claim is 6 months.



- Three possibilities in results:
 1. Employee's stand is correct about minimum wages →
Extra amount + compensation is paid.
 2. Other than minimum wages case of employee and his stand is correct → due amount + 10 Rs. is paid.
 3. Employees stand doubtful and wrong → penalty to employee upto 50 Rs. to be paid to the employer.
- 6. Penalties: 500 Rs. and imprisonment.

HELPFUL LINES FOR ONLINE EXAM

1. Accident is **unfortunate, mishappening and sudden.**
2. Which is not included in the cause of accident due to worker?
 - a. Lack of concentration
 - b. **Poor housekeeping**
 - c. Mischievous behavior
 - d. Overconfidence
3. Which is not included in the cause of accident due to management?
 - a. **Bad habits of worker**
 - b. Untrained workers
 - c. Bad construction of plant
 - d. Faulty equipment
4. Who can be responsible for accident?
 - a. Worker
 - b. Management
 - c. Working conditions
 - d. **All the above**
5. Who is responsible for "unguarded moving parts"?
 - a. Workers
 - b. **Management**
 - c. Government
 - d. None



6. Which is not included in the causes of accidents due to unsafe working conditions?
 - a. Chemical leakages
 - b. Suffocation at work
 - c. Irregular floor heights
 - d. **Quarrels of workers**

7. Which is not included in the causes of accidents due to nature?
 - a. Floods
 - b. **Gas leakage**
 - c. Heavy rains
 - d. Temperature strokes

8. **Worker, industry and family of worker** get affected directly or indirectly due to accidents.

9. Which is not the effect of accident on worker
 - a. Injury to body
 - b. **Production stoppage**
 - c. Loss of job
 - d. Financial loss

10. If affected worker is recovered within 10 hours, then which type of accident is it?
 - a. **Minor**
 - b. Major
 - c. Reportable
 - d. Fatal

11. What happens in fatal accident?
 - a. Hospitalization
 - b. Fractures
 - c. Disablement
 - d. **Death**



12. Injury after accident disables the affected worker forever is **permanent accident.**
13. Internal accident means **injury showing external signs.**
14. Which preventive measure industry should take to avoid accidents?
 - a. Safety provision
 - b. Training for safe working
 - c. Safety devices
 - d. **All the above**
15. Industrial acts are useful for
 - a. Guarantee of employee welfare
 - b. Provision of legal platform
 - c. Removes extortion of workers
 - d. **All the above**
16. Indian factory act is passed in **1948.**
17. Major amendments done in factory act in **1976.**
18. Adolescent is a person of the age between **15-18 years.**
19. Child is a person of the age **less than 15 years.**
20. Calendar year as per factory act is **1st January to 31st December.**
21. Day as per factory act is **period between 2 midnights.**
22. Week as per factory act is a period between **2 Saturdays.**
23. Factory using power as per factory act is a premises of **minimum 10 workers.**
24. A labour welfare officer is appointed in the factory as per factory act when there are **minimum 500 workers.**
25. Rights of labour welfare officer are given to **state government.**
26. As per factory act painting should be done **once a year.**
27. As per factory act, space required for water is **500 Cu feet.**
28. Drinking water must be away from latrine by **6 meters.**
29. As per factory act, one box of first aid is provided for **150 workers.**
30. One ambulance room should be provided in a factory employing more than **300 workers.**



31. One canteen should be provided atleast per **250 workers** in a factory.
32. Crèches should be provided when there are more than **30** female workers of their kids of age below **6** years.
33. Workman's compensation act is passed in **1924**.
34. Who is incorrect person in the definition of dependent?
- Wife
 - Widowed mother
 - Minor son
 - Friend**
35. Compensation is not extended to ----- under workman's compensation act.
- Workers covered under ESI act
 - Casual workers
 - Willful disobedience
 - All the above**
36. Employer has to do compensation under which case
- Injury caused during employment
 - Injury caused by accident
 - Any disablement/death after accident
 - All the above**
37. Minimum wages act is passed in **1948**.
38. Which is not included in "wage" under minimum wages act?
- Travelling allowance
 - PF
 - Gratuity
 - All**
39. Advisory board concerned with minimum wages act is appointed by **appropriate government**.
40. Minimum wages which are fixed are declared by government through **official gazette**.