

SYLLABUS

Academic Session (2015-16)

INDUSTRIAL MANAGEMENT [ETMS-311]

UNIT I

Industrial relations-Definition and main aspects. Industrial disputes and strikes. Collective bargaining.

Labour Legislation-Labour management cooperation/worker's participation in management. Factory legislation. International Labour Organization.

[T1,T2][No. of Hrs. 10]

UNIT II

Trade Unionism-Definition, Origin, Objectives of Trade Unions. Methods of Trade unions. Size and finance of Indian Trade unions-size, frequency distribution, factors responsible for the small size. Finance-sources of income, ways of improving finance.

[T1,T2][No. of Hrs. 10]

UNIT III

Work Study-Method study and time study. Foundations of work study. Main components of method study. Time study standards. Involvement of worker's unions. Work Sampling. Application of work study to office work.

[T1,T2][No. of Hrs. 10]

UNIT IV

Quality Management- What is Quality? Control Charts. Quality is everybody's job. Taguchi Philosophy. Service Quality. What is Total Quality Management (TQM)? Roadmap for TQM. Criticism of TQM. Six Sigma.

[T1,T2][No. of Hrs. 10]

MODEL TEST PAPER-I
FIFTH SEMESTER [B. TECH.]
INDUSTRIAL MANAGEMENT [ETMS-311]
END TERM EXAMINATION

Time : 3 hrs.

M.M. : 75

Note: Attempt any three questions in total including Question No. 1 which is compulsory.

Q.1. (a) State the importance of industrial relations. (5 x 5 = 25)

Ans. Industrial relations is concerned with the relationships between management and workers and the role of regulatory mechanism in resolving any industrial dispute. Industrial relation requires a study regarding I) conditions of work (ii) compensation paid for the sweat the worker makes iii) permanency of the job assured continuance of work or otherwise.

Importance of Industrial relations: Industrial Relations when strained boils to strike, unrest and consequential employer's reaction lock out, retrenchment etc. The productivity can be increased with better industrial relations. Good industrial relations provide congenial atmosphere where workers can think of their job, management thinks of their welfare and goal of the company, the workers also are concentrating to achieve the goal of company. Motivated workers morale become high, the participative team spirit and management profit sharing scheme etc. leaves the worker satisfied. A Satisfied worker is the most productive worker. Thus good I.R achieves better productivity. The achievement of greater productivity can be had by good industrial relations only.

Q.1. (b) Define trade union.

Ans. According to Section 2(b) of the Trade Unions Act of 1926, a trade union is any combination of persons, whether temporary or permanent, primarily for the purpose of regulating the relations between workers and employers, or between workers and workers and for imposing restrictive conditions on the conduct of any trade or business, and includes the federation of two or more trade unions.

Characteristics of A Trade Union:

Association of employees-A trade union is essentially an association of employees belonging to a particular class of employment, profession, trade or industry. For example, there are unions for teachers, doctors, film, artistes, weavers, mine workers and so on.

Voluntary Association-An employee joins the trade union out of his free will. A person cannot be compelled to join a union.

Permanent Body-a trade union is usually a permanent body. Members may come and go but the trade union remains.

Common Interest-The member of a trade union have certain matters of common interest-job security, better pay and working conditions and so on, which bring them together.

Collective Action: Even when an individual employee has any grievance over certain management decisions, the matter is sorted out by the intervention of the trade union. Employees are able to initiate collective action to solve any problem concerning any particular employee or all the employees.

Q.1. (c) What is collective bargaining?

Ans. Collective Bargaining is a process in which representatives of two groups (employers and employees) meet and try to negotiate an agreement which specifies the nature of future relationship (pertaining to employment) between the two.

Features of Collective Bargaining:

The essential features of collective bargaining are as follows:

(i) It is joint or collective process. The representatives of both the management and the employees participate in it.

(ii) It is a continuous process. It establishes regular and stable relationship between the parties involved. It involves not only the negotiation of the contract, but also the administration of contract.

(iii) It is a dynamic process. The parties have to adopt a flexible attitude throughout the process of bargaining.

(iv) It is a form of industrial democracy.

(v) It is an adjustment formula based on give and take approach of both sides

(vi) It is an attempt to achieve and maintain discipline in industry.

Q.1 (d) Define time study. How is it conducted?

Ans. Time study is the technique of work measurement to establish time for a qualified worker to carry out specified task under specified conditions and at defined level of performance. Basic time study equipment consists of - a stop-watch, a study board and time study forms.

The time study procedure consists of steps such as:

(i) Selection of Job (ii) Standardization of Method (iii) Select the operator for study (iv) Recording of details (v) Measure the duration of each element (vi) Calculating representative time of each element (vii) Convert observed time into normal time (viii) Calculate relaxation and other allowances (ix) Calculate Standard time. Time study can be performed depending on the accuracy of stopwatch method, time recording machine and motion picture camera.

Q.1. (e) Describe any four dimensions of quality.

(5 x 5 = 25)

Ans. Dimensions of quality: An alternative method to define quality is to understand its various dimensions. Garvin proposed that quality has eight dimensions.

(a) **PERFORMANCE:** It relates to operational characteristics of the product. An industrial cooling application, for instance, requires that the fan be operational for a certain duration, without stopping at a particular temperature.

(b) **FEATURES:** In addition to meeting the basic performance requirements of the product features provide additional attributes that enhance the quality.

(c) **RELIABILITY:** The expectation that the product will perform satisfactorily for a period of time is known as reliability. For instance, if a two wheeler performs without any major repair or maintenance for five years, it may indicate a certain level of reliability.

(d) **CONFORMANCE:** Meeting the specifications and standards of design.

(e) **DURABILITY:** How long a product lasts before it requires a replacement?

(f) **SERVICEABILITY:** The ease with which the product can be serviced.

(g) **AESTHETICS:** Customers also value the aesthetics of the product. One can relate this idea to the various feel good factors that a customer evaluates before making a choice of say competing brands of passenger cars.

(h) **SAFETY:** Safety aspects denote the assurance to the customer that there are no hazards to the customer that there are no hazards in using the product.

UNIT-I**Q.2. What are the sources of industrial conflict or disputes? Explain.**

(12.5)

Ans. Industrial Dispute: Industrial dispute or difference between employers and employees employers and employers or employees and employees which is connected with the employment or non employment or the terms of employment or with the condition of labour of any person.

The term industrial dispute connotes a real and substantial difference having some elements of persistency and continuity, till resolved and likely, if not, adjusted to endanger the industrial peace of the undertaking or the community.

General causes of industrial disputes strains which results in bad industrial relations are.

1. Close mindedness of employers and employees one thinking to extract maximum work with minimum remuneration, other thinking to avoid work and get more enhancement in pay and wages.

2. Irrational wage, wage system and structure not mutually acceptable.

3. Poor working environment, low presence of safety, hygiene conditions vitiated atmosphere for smooth working

4. Poor human relations, and lack of dexterity on the part of management personnel.

5. Lack of control over the situations erosion of discipline, which rebounds.

6. Introduction of new technology or automation mechanization, Computerization etc. without proper consultations, preparations and discussion with workers and creating climate.

7. Nepotism, unequal workloads, disproportionate wage, and responsibilities.

8. Adoption of unfair labour practices either by employer or employees and unions.

9. Unjustifiable profit sharing, and not considering workers as a co shares of the gains of the industry.

10. Frequent union rivalries over membership foisting up of fake unions.

11. Strikes lock out, lay off, and resulting retrenchment due to high handedness on the part of the concerned.

12. Throwing away the agreements and arrived settlements

13. Militancy of the unions

14. Attitude of government and political parties who may indirectly control some the unions for their own gains or to get a hold on the industry.

OR

Q.2. Discuss the important provisions of the Factories Act, 1948. (12.5)**Ans. The Factories Act, 1948**

- The Factories Act, 1948 is the principal legislation, which governs the health, safety and welfare of workers in factories.
- The act extends to the whole of India. Mine and railway workers are not included as they are covered by separate Acts.
- However, it was not until 1987 that the elements of occupational health and safety, and the prevention and protection of workers employed in hazardous processes, got truly incorporated in the Act (after the Bhopal Gas Tragedy)
- The act does not permit the employment of women and young persons in a dangerous process or operation.
- There is provision for one weekly holiday, and an adult worker should work not more than 48 hours in a week.
- There is at least half-an-hour rest after a stretch of five hours of continuous work.
- No women should be employed between 7 p.m. and 6 a.m.
- No person less than 14 years of age should work in the factory. No child should work for more than 4 hours a day and should not work in the night between 10 p.m. and 6 a.m.
- One full-day wage leave should be given to an adult worker for every 20 days of work and one for every 15 days to the child worker. Twelve weeks of maternity leave should be given to a woman.

UNIT-II**Q.3. Discuss the present scenario of trade union in India? (12.5)**

Ans. The Indian trade-union movement is over a century old but is still coping with problems of small membership and financial insecurities. As in the rest of the world, in India too, there has been a decline in the growth of trade unionism as a consequence of the process of globalization and liberalization.

After independence of our country more and more industries were coming, trade unions became stronger. With Nationalization spree trade unions affiliated themselves to political parties more vigorously; rather unions became a pawn in the hands of politician. Real union leaders lost their faces. Masked politicians became the string pullers in industrial affairs. Almost after half a century after independence when the euphoria of independence waned - there was a sudden stop on nationalization, reversal started. More privatization disinvestments started, this created strain on industrial relations. Amalgamation, merger, takeover, N.R.I. Companies, Foreign Companies invasion, started with full speed, workers baffled, unions got submerged, global competition necessity was felt by one all as such industrial relations was at balance.

With the new pattern of employment in information Technology, computer world - the word workers disappeared hence unions become out of questions. If persons are posted as supervisors and managers straight away - they are not coming under workmen Act. The new employment set up of the country has money and comfort as such the relations of employer's employee is cordial.

Trade Unionism in India today:

- Unionization according to industry/region/state
- Like global trend, unionization in India under recession
- 70,000 registered trade unions, many not registered
- 2 per cent of the work force unionized
- PSUs: Industry-level collective bargaining in coal/steel; enterprise level elsewhere
- Private Sector-Plant-level collective bargaining
- Union density according to the size of the industry
- Low unionization in SMEs (Small scale and medium sectors)

The trade unions occupy a significant position in India, more so in matters relating to labour policies. Politically, almost every party patronizes the trade unions as they have a strong influence in garnering labour votes, in the key industries such as cement, iron and steel, coal, heavy electrical, transportation, textile, dock, banking etc. Thus in India, the working class in the organized sector exercises political and economic power far in excess of what their number warrant.

OR

Q.3. What are the functions of trade unions? Examine whether the trade unions in India have been able to fulfill these functions. (12.5)

Ans. The trade union is an association, either of employees or employers or of independent workers. It is a relatively permanent combination of workers and is not temporary or casual. It is an association of workers engaged in securing economic benefits for its members.

Functions of Trade Unions in the India

As per the Indian Trade Union Act, 1926, the primary function of a trade union is to protect and promote the interests of the workers and the conditions of their employment. They can also have other objectives, which are not inconsistent with this primary purpose or opposed to any law. In India, trade unions generally undertake the following functions:

- (i) To achieve higher wages and better working and living conditions for the members.
- (ii) To acquire control over running of the industry by workers.
- (iii) To minimize the helplessness of the individual workers by making them stand up united and increasing their resistance power through collective bargaining; protecting the members against victimization and injustice by employers.
- (iv) To raise the status of the workers as partners in industry and citizens of society by demanding an increasing share for them in the management of industrial enterprises.
- (v) To generate self-confidence among the workers.
- (vi) To encourage sincerity and discipline among workers.
- (vii) To take up welfare measures for improving the morale of the workers.

India has the largest number of trade unions, yet their growth and effectiveness have not been very significant. The political affiliations of the national federations and the local unions taking protective cover under these federations have resulted in a lot of political interference in the union activities. The use of political methods and using labour

groups to create vote banks has made trade-union movement in India more political than labour inspired or labour-driven. Indian trade unionism has also demonstrated the intra-union rivalry hampering their effectiveness. In spite of these weaknesses, the trade unions occupy a significant position in India, more so in matters relating to labour policies.

UNIT-III

Q.4. Explain the need and rationale for study of work. What is the scope of work study? (12.5)

Ans. Need and rationale of Work Study:

International Labor Organization (ILO) defines work study as the technique of method study and work measurement employed to ensure the best possible use of human and material resources in carrying out a specified activity. It is also a management service based on method study and work measurement used in examination of human work leading to investigation of all the resources that effect efficiency and economy of situation to affect improvement.

Work study is an important management tool to achieve higher productivity. It is related to human work; method of doing work and standard of performance. The survival of any organization is dependent on use of latest technology and efficient methods of production. To improve efficiency of production it needs effective utilization of plant, equipment and labor. This can be achieved by using work study which studies method and evaluates the performance. It divides work into smaller elements, studies it, and rearranges it to get same or greater efficiency at reduced cost.

Scope of Work Study:

The amount of work in a given job is referred to as work content. The work study consists of two techniques:

(a) Method Study: Method study is the systematic recording and critical examination of existing and proposed ways of doing work. It is concerned with the reduction of work content of a job or operation.

(b) Work Measurement: Work Measurement is the application of techniques designed to establish the time for a qualified worker to carry out a specified job at defined level of performance. It is concerned with the investigation and reduction of any ineffective time associated with it.

OR

Q.4. What is work sampling? Of what value is it to the management? (12.5)

Ans. WORK SAMPLING: Work sampling was pioneered by L.H.C. Tippet in a British Textile Mill. It is defined as a technique in which a statistically competent number of instantaneous observations are taken, over a period of time, of a group of machines, process or workers. Each observation records what is seen to happen and the percentage of observations recorded for a particular activity or delay is a measure of percentage of time observed by the occurrence. It is a method of finding the percentage occurrence of certain activity by statistical sampling and random observations.

Work sampling can be applied and used for-

1. Work sampling data provides useful information on delays and interruptions in work process which helps to simplify work process.

2. Allowances that cannot be measured using time study method as they are small and infrequent can be economically measured by work sampling method.

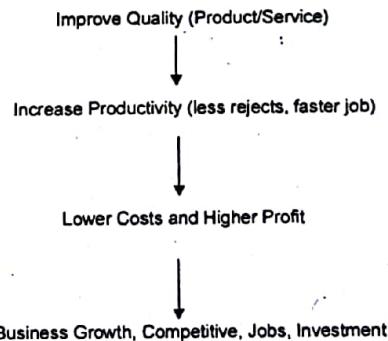
3. Work sampling is used to measure the work load of heterogeneous work that involves long cycle jobs.

4. The information derived from work sampling can be used to compare the efficiency of two departments, to provide for a more equal distribution of work and reasons behind ineffective time.

UNIT-IV

Q5. Describe the TQM philosophy and identify its major characteristics. (12.5)

Ans. TQM is "A management philosophy embracing all activities through which the needs and expectations of the CUSTOMER and COMMUNITY, and the objectives of the organization are satisfied in the most efficient and cost effective manner by maximizing the potential of ALL employees in a continuing drive for improvement."



What characterizes TQM is the focus on identifying root causes of quality problems and correcting them at the source, as opposed to inspecting the product after it has been made. Not only does TQM encompass the entire organization, but it stresses that quality is customer driven. TQM attempts to embed quality in every aspect of the organization. It is concerned with technical aspects of quality as well as the involvement of people in quality, such as customers, company employees, and suppliers.

Here we look at the specific concepts that make up the philosophy of TQM. These concepts and their main ideas are summarized in Table given below.

Customer Focus: The first, and overriding, feature of TQM is the company's focus on its customers. Quality is defined as meeting or exceeding customer expectations. The goal is to first identify and then meet customer needs. TQM recognizes that a perfectly produced product has little value if it is not what the customer wants. Therefore, we can say that quality is customer driven.

Continuous Improvement: Another concept of the TQM philosophy is the focus on continuous improvement. Traditional systems operated on the assumption that once a company achieved a certain level of quality, it was successful and needed no further improvements. We tend to think of improvement in terms of plateaus that are to be

achieved, such as passing a certification test or reducing the number of defects to a certain level. Continuous improvement, called kaizen by the Japanese, requires that the company continually strive to be better through learning and problem solving. Because we can never achieve perfection, we must always evaluate our performance and take measures to improve it.

Employee Empowerment: In TQM, the role of employees is very different from what it was in traditional systems. Workers are empowered to make decisions relative to quality in the production process. They are considered a vital element of the effort to achieve high quality. Their contributions are highly valued, and their suggestions are implemented. In order to perform this function, employees are given continual and extensive training in quality measurement tools.

THE PHILOSOPHY OF TQM

Concept	Main Idea
Customer focus	Goal is to identify and meet customer needs.
Continuous improvement	A philosophy of never-ending improvement.
Employee empowerment	Employees are expected to seek out, identify, and correct quality problems.
Use of quality tools	Ongoing employee training in the use of quality tools.
Product design	Products need to be designed to meet customer expectations.
Process management	Quality should be built into the process; source of quality problems should be identified and corrected.
Managing supplier quality	Quality concepts must extend to a company's suppliers.

Use of Quality Tools: TQM places a great deal of responsibility on all workers. If employees are to identify and correct quality problems, they need proper training. They need to understand how to assess quality by using a variety of quality control tools, how to interpret findings, and how to correct problems. This is done by often called the seven tools of quality control. They are easy to understand, yet extremely useful in identifying and analyzing quality problems. Sometimes workers use only one tool at a time, but often a combination of tools is most helpful. These seven tools of quality are **Cause-and-Effect Diagrams, Flowcharts, Checklist, Control Chart, Scatter Diagram, Histogram frequency, Pareto Chart.**

Product Design: Quality Function Deployment- A critical aspect of building quality into a product is to ensure that the product design meets customer expectations. This typically is not as easy as it seems. Customers often speak in everyday language. For example, a product can be described as "attractive," "strong," or "safe." To produce a product that customers want, we need to translate customers' everyday language into specific technical requirements. However, this can often be difficult. A useful tool for translating the voice of the customer into specific technical requirements is quality function deployment (QFD). Quality function deployment is also useful in enhancing communication between different functions, such as marketing, operations, and engineering.

Process Management: According to TQM a quality product comes from a quality process. This means that quality should be built into the process. Quality at the source is the belief that it is far better to uncover the source of quality problems and correct it than to discard defective items after production. If the source of the problem is not corrected, the problem will

Managing Supplier Quality: TQM extends the concept of quality to a company's suppliers. Traditionally, companies tended to have numerous suppliers that engaged in competitive price bidding. When materials arrived, an inspection was performed to check their quality. TQM views this practice as contributing to poor quality and wasted time and cost. The philosophy of TQM extends the concept of quality to suppliers and ensures that they engage in the same quality practices. If suppliers meet preset quality standards, materials do not have to be inspected upon arrival. Today, many companies have a representative residing at their supplier's location, thereby involving the supplier in every stage from product design to final production.

OR

Q.5. Discuss Taguchi methods and how they are different from traditional statistical quality Control methods. (12.5)

Ans. Control methods. Dr. Genichi Taguchi is a Japanese quality expert known for his work in the area of product design. He estimates that as much as 80 percent of all defective items are caused by poor product design. Taguchi stresses that companies should focus their quality efforts on the design stage, as it is much cheaper and easier to make changes during the product design stage than later during the production process. Taguchi is known for applying a concept called design of experiment to product design. This method is an engineering approach that is based on developing robust design, a design that results in products that can perform over a wide range of conditions.

Taguchi's philosophy is based on the idea that it is easier to design a product that can perform over a wide range of environmental conditions than it is to control the environmental conditions.

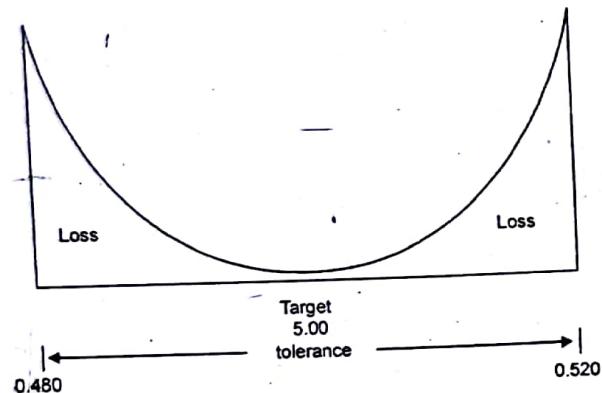
Taguchi has also had a large impact on today's view of the costs of quality. He pointed out that the traditional view of costs of conformance to specifications is incorrect, and proposed a different way to look at these costs.

Dr. Taguchi's view of quality costs.

Conformance to specification specifies a target value for the product with specified tolerances, say 5.00 ± 0.20 . According to the traditional view of conformance to specifications, losses in terms of cost occur if the product dimensions fall outside of the specified limits. However, Dr. Taguchi noted that from the customer's view there is little difference whether a product falls just outside or just inside the control limits. He pointed out that there is a much greater difference in the quality of the product between making the target and being near the control limit. He also stated that the smaller the variation around the target, the better the quality. Based on this he proposed the following: as conformance values move away from the target, loss increases as a quadratic function. This is called the Taguchi loss function and is shown in Figure. According to the function,

smaller differences from the target result in smaller costs: the larger the differences, the larger the cost. The Taguchi loss function has had a significant impact in changing the view of quality cost.

Taguchi Loss Function



MODEL TEST PAPER-II

FIFTH SEMESTER [B. TECH.]

INDUSTRIAL MANAGEMENT [ETMS-311]

END TERM EXAMINATION

M.M.: 75

Time : 3 hrs.

Note: Question No. 1 is compulsory. Attempt any four other questions from the respective sections.

Q.1. (a) What are the determinants of industrial relations? (5 x 5 = 25)

Ans. Industrial relation requires a study regarding (i) conditions of work (ii) compensation paid for the sweat the worker makes (iii) permanency of the job assured continuance of work or otherwise.

The determinants of good industrial relation are:

1. Measures for securing and preserving unity and better relations between workers and employers

2. Arrange to probe and settle industrial dispute between employer employee or employer and employer or employee and employee; give proper representation to workers union and industrial federations of employers.

3. Both the ultimate weapons of employers and employee - strike and lock out should be prevented at any cost. Proper relief to workers after a lock out or lay off through government agencies

4. Workers participation at all levels and encourage give and take principle in collective Bargaining.

Q.1. (b) State the objectives of work study.

Ans. Objectives of Work Study: The objectives of the work study are as follows:

(i) Analysis of existing method

(ii) Finding weakness in existing production process

(iii) Most effective utilization of existing or proposed report and resources

(iv) To set and measure performance standard

(v) Use of performance standard to pay incentives

(vi) To standardize method, material and equipments used in the production process.

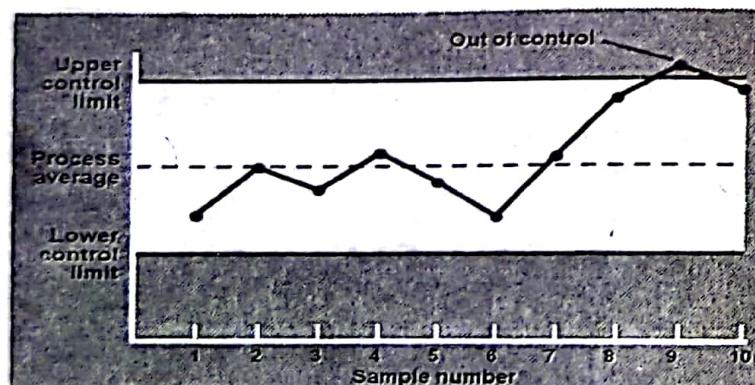
Q.1. (c) Define service quality. Discuss its significance.

Ans. Defining quality in manufacturing organizations is often different from that of services. Manufacturing organizations produce a tangible product that can be seen, touched, and directly measured. Examples include cars, CD players etc. Therefore, quality definitions in manufacturing usually focus on tangible product features. The most common quality definition in manufacturing is conformance, which is the degree to which a product characteristic meets preset standards. Other common definitions of quality in manufacturing include performance-such as acceleration of a vehicle; reliability-that the product will function as expected without failure; features-the extras that are included beyond the basic characteristics; durability-expected operational life of the product; and serviceability-how readily a product can be repaired.

In contrast to manufacturing, service organizations produce a product that is intangible. Usually, the complete product cannot be seen or touched. Rather, it is experienced. Examples include delivery of health care, experience of staying at a vacation resort, and learning at a university. The intangible nature of the product makes defining quality difficult. Also, since a service is experienced, perceptions can be highly subjective. In addition to tangible factors, quality of services is often defined by perceptual factors. These include responsiveness to customer needs, courtesy and friendliness of staff, promptness in resolving complaints, and atmosphere. Other definitions of quality in services include time—the amount of time a customer has to wait for the service; and consistency—the degree to which the service is the same each time. For these reasons, defining quality in services can be especially challenging.

Q.1. (d) Discuss the control charts of quality control.

Ans. CONTROL CHART: To determine whether observed variations are abnormal, we can measure and plot the performance measure taken from the sample on a time ordered diagram called a control chart. Control chart is a graphic comparison of process performance and data with control limits drawn as limit lines on a chart.



The control chart distinguishes between chance causes and assignable causes of variations. A typical control chart consists of a control line corresponding to the average quality at which the process is to perform and two other lines corresponding to the upper and lower control limits, also called the tolerance limits.

Vertical scale indicates the quality variations. Horizontal scale has time, number of samples of product is taken at specified time intervals, quality checked, measured, averaged and plotted on the chart. If the values plotted are within the control limits, process is said to be under control. If values move away from control limits process is out of control.

In other words a sample statistic that falls between UCL & LCL indicates that the process is exhibiting common causes of variation; a statistic that falls outside the control limits indicates that the process is exhibiting assignable causes of variation. Observations falling outside the control limits do not always mean poor quality. For example assignable cause may be a new billing process introduced to reduce the number

of incorrect bills sent to customers. If the proportion of incorrect bills, that is the performance measure from a sample of bills, falls below LCL of control chart the new procedure likely changed the billing process for the better & a new control chart should be constructed.

Q.1. (e) Discuss the trade unionism in India with special reference to size and finance.

Ans. India has the largest number of trade unions, yet their growth and effectiveness have not been very significant. Some of the primary reasons among them being their small size and financial insecurity.

Small Size: The small size of trade unions is an outcome of the Indian Trade Unions Act of 1926, which allows a large number of small unions to be registered. With multiple unions operating, the size gets reduced and with inter-union rivalry taking centre stage, new employees, shy away from becoming members. It also needs to be noted that women employees, who now account for a large section of the workforce, refrain from joining any union, and this has also impacted the size and growth of unions in India.

Financial Insecurity: The membership fee, which is the major source of revenue for the Indian trade unions, is low, given the low per capita income of the workers. More often than not "ad hoc" payments are made rather than regular payments. They do not get any financial support from any agency, as opposed to the situation in America, where the National Federation of Central America makes regular contributions. The insufficiency of funds affects their working, and their organization is dependent on honorary workers whose time availability to focus exclusively on workers' interest is limited.

UNIT-I

Q.2. Explain the difference between Strikes and Lockouts. Explain the provision of Strikes and Lockouts in Industrial Disputes Act, 1947. (12.5)

Ans. In 1929 Industrial dispute Act was enacted later in 1947 it became industrial dispute, act where in machineries to solve industrial dispute were indicated.

Strike: Means a cessation of work by a body of persons employed in any industry acting in combination or a concerted refusal or a refusal under a common understanding of any number of persons who are or have been so employed to continue to work or to accept employment.

The ingredients can be summed up as

1. A cessation of work
2. This abstinence of work must be by a body of persons employed in an industry
3. The strikers must have been acting in combination.
4. They must be persons working in an industry as per this I.D Act 1947.
5. There must be concerted refusal or refusal in a common understanding, they must stop work for some demands relating to this employment or its terms, or conditions of labour.

The strike may be manifested in different forums like, hunger, sit down, solve down, pend own, lighting etc.

Lock out : As per section 2 (1) of I.D Act It means the temporary closing of a place of employment or the suspension of work, or the refusal by an employer to continue to employ any number of person employed by him

There is temporary closing of employment.

The elements of demand for which the industry is locked out must be present. The intention to reopen or take the workers back if they accept the demands, must exist lock out is not closure it is a tactic in bargaining it is intended for the purpose of compelling the employee to accept any terms or conditions affecting employment. It is a weapon in the hands of employers, A lock out declared in consequence of an illegal strike or a strict declared in consequence of a illegal lock out shall not be deemed to be illegal.

OR

Q.2. Explain the concept of Collective Bargaining. Explain the essentials of a good collective bargaining process. (12.5)

Ans. Collective Bargaining: Collective bargaining is a method by which trade unions protect and improve the conditions of their members working lives. Collective bargaining brings the employer and the employees around one table to discuss and settle many contentious issues effectively. It enables both the parties to know each other and their views, and to define their rights and obligations regarding terms of employment, working conditions, etc., through negotiations, discussions and bargains.

Forms of Collective Bargaining

At the outset it should be stated that there is a great deal of variation in the collective bargaining practices ranging from an informal oral agreement to very formal and detailed agreement.

Collective Bargaining takes the following forms:

(i) It may be a single plant bargaining, that is, bargaining may be between a single trade union. This type of collective bargaining prevails in the United States and India.

(ii) It may be a multiple plant bargaining, that is, bargaining may be between a single factory or establishment having several plants and the workers employed in all these plants.

(iii) It may be a multiple employer bargaining, that is, bargaining between all the trade unions of workers in the same industry through their federal organizations, and the employer's federation. This is possible both at the local and regional levels and is generally resorted to in the textile industry.

In India, collective bargaining has been classified under four categories. These are:

(i) Agreements which are negotiated by officers during the course of conciliation proceedings and are called settlements under the Industrial Disputes Act.

(ii) Agreements which are concluded by the parties themselves without reference to a Board of Conciliation and are signed by them. Copies of such agreements, however, are sent to appropriate governments and to conciliation officers.

(iii) Agreements which are negotiated by the parties on a voluntary basis when disputes are sub judice and which are later submitted to industrial tribunals, labour courts or labour arbitrators for incorporation into the documents as parts of awards. These are known as consent awards.

(iv) Agreements which are drawn up after direct negotiation between labour and management and are purely voluntary in character. These depend for their enforcement on moral force and on the goodwill and co-operation of the parties.

Collective Bargaining Process

There are two stages in collective bargaining, viz., (i) the negotiation stage and (ii) the stage of contract administration.

(i) Negotiation

(a) Identification of Problem: The nature of the problem influences whole process. Whether the problem is very important that is to be discussed immediately or it can be postponed for some other convenient time, whether the problem is minor that it can be solved with the other party's acceptance on its presentation and does not need to involve long process of collective bargaining process etc. It also influences selection of representatives, their size, period of negotiations and period of agreement that is reached ultimately. As such it is important for both the parties to be clear about the problem before entering into the negotiations.

(b) Preparing for Negotiations: When it becomes necessary to solve the problem through collective bargaining process, both the parties prepare themselves for negotiations. The preparation starts with selection of representatives. Such representatives should be selected who can carry out negotiations with patience, composure and who can present their view effectively. After selection they should be fed with complete problem and its pros and cons. His powers and authority during negotiations also should be clearly spelt out. Other preparations include fixing up time for negotiations, period of negotiations etc. But once the parties enter into negotiations the period of negotiations may vary depending upon circumstances.

(c) Negotiations of Agreement: usually there will be a chief negotiator who is from management side. He directs and presides the process. The chief negotiator presents the problem, its intensity and nature and the views of both the parties. Then he allows the representatives of both the parties to present their views. During negotiations, the representatives should be attentive as to find out what the other party is arguing for. The representatives tend to think about what counter arguments they can present and how to say no effectively, while the other party is presenting its own views. This is a major obstacle in the bargaining process. By understanding their problems and weighing them, sometimes a better solution may be reached, which is more acceptable to both the parties. So, it is important that representatives should reach negotiating table with positive attitudes. When a solution is reached at, it is put on the paper taking concerned legislations into consideration. Both the parties concerned sign the agreement which, in turn, becomes a binding contract for both the parties.

(ii) Contract Administration

Implementation of the contract is as important as making a contract. Management usually distributes the printed contract, its terms and conditions throughout organization. The union takes steps to see that all the workers understand the contract and implement it. From time to time depending upon changing circumstances, both the parties can make mutually acceptable amendments.

Tactics or Strategies in Collective Bargaining

The tactics or strategies to be adopted in any collective bargaining situation vary depending upon the culture of the organization and different environmental factors, particularly the type of union operating in an industrial establishment. But the following are some of the common strategies to make collective bargaining exercise more meaningful:

1. The management has to anticipate the demands and also understand the main directions in which the demands are going to be placed. Generally speaking, negotiations are best done if both the parties do their home work well. The representatives must come to the bargaining table equipped with the necessary information and supportive data regarding the company's economic status and prospects, the prevailing rates of pay and conditions of employment in comparable industries in the local areas. The management team should take into consideration the financial liability involved, the past agreements, and the impact of present negotiations in future years.

2. It is essential that a real team spirit is maintained throughout the negotiations. For this purpose, it is necessary that the roles to be played by each member of the team are properly pre-assigned, and each member knows when to take over the discussions. The team must have the confidence of facing any eventuality which may come up during negotiations. The team must have the power of taking decisions. The team must consist of people who have confidence of the workforce and unions. It is good to have a rehearsal among the team members on such points which can be anticipated to be made forcefully by the opposite team.

3. Any collective bargaining strategy should firstly separate the personalities from the problems for arriving at a workable and desirable agreement and secondly, explore the possibilities for harmony and compatibility.

4. Collective bargaining is two way traffic. The management as well as the union must gain out of collective bargaining. Hence, the management team should also present their counter-proposals. For instance, the union pressure for a wage-hike may be matched by a counter demand for an increase in production, reduction in absenteeism, avoidance of wasteful/restrictive practices, industrial peace, and so on.

5. There is a greater necessity on the part of the management representatives to give a patient hearing to the demands of the union and not to react even if there is a threat of strike or work-stoppage. A rational well reasoned approach can achieve better results than an emotionally charged loud-mouthed approach.

6. It is also a bad strategy to depute persons of low rank without authority to establishment having several plants and the workers employed in all these plants.

UNIT-II**Q.3. Elaborate the growth of trade union in India.**

(12.5)

Ans. The growth of trade unions in India has passed through a few distinctive phases, paralleling the political and economic development in the country.

The Pre-independence Phase

The earliest known trade unions in India were the Bombay Millhand's Association formed in 1890. The trade-union movement began in India after the end of the First

World War. All India Trade Union Congress was formed in 1920 on a national basis; the Central Labour Board, Bombay and the Bengal Trades Union Federation were formed in 1922. The Indian government passed the Trade Unions Act in 1926, which legalized the registered trade unions in India. The All India Trade Union Congress (AITUC) is the oldest trade union in India.

The First Post-Independence Phase

The first decade (1950-mid-1960s) corresponds to an era of State planning and import substitution, when public-sector employment and public-sector unionism rose phenomenally. The nationalist Indian National Trade Union Congress (INTUC) and the communist All India Trade Union Congress (AITUC). State intervention in the determination of wages and working conditions was the norm.

The Second Post-independence Phase (Mid-1960s-1980)

The 1960s to the 1980s represented the second post-independence growth phase of trade unions, characterized by:

- A period of economic stagnation and political turmoil.
- The emergence of many more unions.
- Employment slow down
- Inter-union rivalry
- An increase in industrial conflicts
- Pressure on centralized bargaining
- The railway strike of 1974 and severe curbs during emergency

The Third Post-independence Phase (1980-Pre-liberalization Era)

- Period of segmented and uneven economic growth
- Decentralized bargaining and independent trade unionism.
- Bangalore PSU strike and Mumbai textile workers' strike
- Inter-state and inter-regional variations in labour-management relations

The Fourth Post-independence Phase (Post-liberalization Era)

- Stabilization and structural adjustments
- Demands for labour market flexibility
- Recruitment freeze in public sector
- Right sizing of manpower through VRS
- Reducing the role of unions

OR**Q.3. Explain the following:**

- (i) Objectives of a trade union
- (ii) Strategies for the achievement of objectives of a trade union. (12.5)

Ans. Objectives of Trade Unions

The following are the broad objectives of trade unions:

1. Ensure Security of Workers: This involves continuous employment of workers, preventing retrenchment, layoffs or lockouts etc.

2. Obtain better economic returns: This involves wage hike at periodic intervals, bonus at higher rates, subsidized canteen and transport facilities etc.

3. Improve working environment and Welfare Measures: This involves better workplaces, ventilation, lighting, safety. Healthcare, sanitation, less pollution, maternity facilities, children's education, housing insurance etc.

4. Secure Power to Influence management: This involves the worker's participation in management, decision-making, the role of unions in policy decisions affecting workers, etc.

5. Secure Power to influence the Government: This involves influence on the government to pass labour legislation that improves working conditions; safety, welfare, security and retirement benefits of the workers and their dependents etc.

Strategies for the Achievement of Trade Union Objectives:

Trade Unions use a combination of strategies for achieving their objectives. A few basic ones are listed below:

(i) Organizing on the basis of craft or skill and using the union's power of collective indispensability to bargain

(ii) Getting recognized as the sole bargaining Agent to advocate the interest of the members. The recognition could be voluntary, coming from management or gained through secret ballot elections.

(iii) Associating with national federations to get political support to their cause

(iv) Collective bargaining of terms and conditions of employment

(v) Political pressure through local legislations or political affiliations.

(vi) Arbitration by which unsettled or unresolved disputes can be settled by an outside agency

(vii) Negotiating agreements with the management on wages, hours of work and other terms and conditions of employment.

(viii) Legal enactments- trade unions send their representatives to legislatures so that protective labour legislations may be enacted to secure better working and living conditions for workers.

(ix) Mutual insurance through common contributions to meet financial needs of workers.

UNIT-III

Q.4. What are the various techniques of work measurement? Name them and describe each of these very briefly.

Ans. Work Measurement is the application of techniques designed to establish the time for a qualified worker to carry out a specified job at defined level of performance. It is concerned with the investigation and reduction of any ineffective time associated with it. Work measurement provides a scientific method of fixing production standards i.e. standard time for a job. Amount of time a particular task should take to accomplish is calculated to accomplish planning, determine performance, establish costs and improve productivity.

Basically there are eight objectives of measurement as mentioned below:

(i) Planning: Work measurement data enables management to determine manpower requirement, future requirements of equipments & machines as well as number of machines a worker can conveniently handle and to understand start and end time of a particular process.

(ii) Estimation of costs: Manufacturing time is required to estimate labour cost. Similarly, indirect costs like depreciation, rent, power charges, fuel./salaries of staff and supervisors etc. depends on time.

(iii) Cost reduction and Cost control: Work measurement data is helpful to reduce or control cost. Efficiency can be improved if information of men, machine utilization and time lost by men and machine is available. It provides labour costs standards which help to control labour costs.

(iv) Basis for incentive: Work measurement data acts as basis for incentives to prepare for standards that needs to be achieved by worker.

(v) Improvement in existing methods: Work measurement data helps to bring improvement in existing methods by eliminating unnecessary activities those results into waste of time.

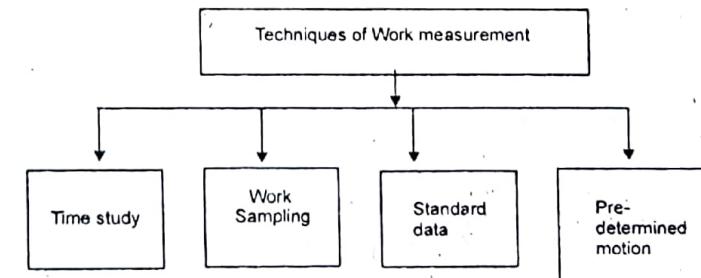
(vi) Comparison of alternative methods: When method study gives two or more alternatives which are equally advantageous, work measurement data helps to select one alternative.

(vii) Sub-standard Workers: Work measurement data helps to set standards like production per hour or per shift by worker. Management needs to take decisions about workers like training, transfer of old workers to light jobs, action against workers who purposely work slow, etc.

(viii) Measuring employee performances: Work measurement data is useful to check employee performance. It enables line management to find out if employee is making satisfactory progress, fully trained or training period should be extended or if worker is suitable for job offered.

Techniques of Work Measurement:

Techniques of Work Measurement



The work measurement is carried out by using following principle techniques:

(i) Time Study: Time study is the technique of work measurement to establish time for a qualified worker to carry out specified task under specified conditions and at defined level of performance. Basic time study equipment consists of - a stop-watch, a study-board and time study forms. The time study procedure consists of steps such as (i) Selection of Job (ii) Standardization of Method (iii) Select the operator for study (iv) Recording of details (v) Measure the duration of each element (vi) Calculating representative time of each element (vii) Convert observed time into normal time (viii) Calculate relaxation and other allowances (ix) Calculate Standard time. Time study can be performed depending on the accuracy of stopwatch method, time recording machine and motion picture camera.

(ii) Work Sampling: Work sampling was pioneered by L.H.C. Tippet in a British Textile Mill. It is defined as a technique in which a statistically competent number of instantaneous observations are taken, over a period of time, of a group of machines, process or workers. Each observation records what is seen to happen and the percentage of observations recorded for a particular activity or delay is a measure of percentage of time observed by the occurrence. It is a method of finding the percentage occurrence of certain activity by statistical sampling and random observations.

Work Sampling Steps:

1. Decide objectives of the study
2. Explain objectives to related persons
3. Fix up work and delay elements
4. Decide the duration of the study
5. Determining desired accuracy & confidence of final result
6. Make preliminary estimate of percentage occurrence of activity or delay to be measured
7. Design actual study
8. Record the observations
9. Summarize result and prepare report
10. Check accuracy of data and Prepare results

(iii) Standard Data: Large numbers of operations in a plant have several common elements. When similar elements and jobs are present throughout a plant, the standard data system of work measurement can be used. Standard data consist of tables, curves and charts built up from various basic job constituents called as elements. These elements along with the time are used to set output standards for new jobs for organization. Standard data elements must first be measured by any of the three work measurement systems: Time Study, PMTS or work sampling. Therefore, it is important to choose the elements used in these methods that can be reused in standard data. The standardization of times and methods is critical using standard data. It is feasible under following conditions: (i) Identical elements recur consistently from job to job. (ii) The workload consists of similar operations, machines, products and methods. (iii) All similar elements have identical start and stop motions and are spread throughout the plant.

(iv) Predetermined Motion Time Study (PMTS): These systems utilized the time study and micro motion techniques of the earlier techniques to determine and assign times to specified basic motions. It is a work measurement technique whereby time established for basic human motions are used to build up the time for a job at a defined level of performance. The motions and associated times were catalogued. Work measurement then became a matter of establishing the best basic motion pattern to perform a certain task and, from the catalog or data card, assigning the appropriate predetermined time for each basic motion in that pattern. Since times for all motions are predetermined, it is possible to accurately predict future task times. The catalogs of predetermined times leveled to 100% of performance time. Of all the predetermined motion time systems, the most well known is Methods-Time Measurement (MTM), as developed by Harold B. Maynard, G. J. Stegemerten, and J. L. Schwab and published in 1948. Because it is a very detailed system and in the public domain, MTM has been recognized as the most accurate and widely accepted predetermined motion time system in use today. The MTM system has a detailed data card of basic motions (reach; Move; Grasp; Position; Release; body, leg, and foot motions; and so on), each concerned with particular variables. Basic motions are identified, and with the variables considered the appropriate times are chosen from the data card.

OR

Q.4. Mention briefly various steps in making a time study. (12.5)

Ans. Time study is a systematic process of directly observing and measuring human work to establish the time required for completion of the work. Time study is a very flexible technique, suitable for a wide range of work performed under a wide range of conditions. It is a direct observation technique; it considers specific and special conditions but it does rely on the use of subjective process of rating. A time study observer should be properly trained in the technique and especially in rating.

Steps in taking a Time Study

The time study consists of the following steps:

Select: The job to be studied.

Record: All the relevant data regarding the job method of work.

Measure: Each element in terms of time over a sufficient number of cycles of the activity.

Examine: The recorded data and the element times critically so that unproductive or random elements are separated out from the productive elements.

Rating: The operator's effective speed of work relative to the observer's concept of normal pace or speed is called rating and it is denoted as below:

$$\text{Performance rating} = \text{Observed pace} / \text{Normal pace} \times 100$$

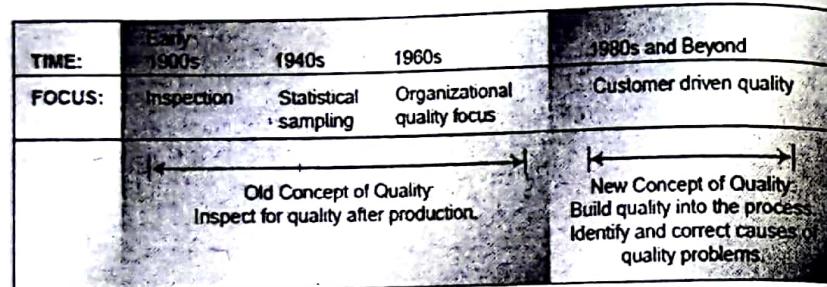
UNIT-IV

Q.5. Explain how TQM is different from the traditional notions of quality.

Ans. Timeline Showing Difference Between Old And New Concepts Of Quality

What characterizes TQM is the focus on identifying root causes of quality problems and correcting them at the source, as opposed to inspecting the product after it has been

made. Not only does TQM encompass the entire organization, but it stresses that quality is customer driven. TQM attempts to embed quality in every aspect of the organization. It is concerned with technical aspects of quality as well as the involvement of people in quality, such as customers, company employees, and suppliers.



Total quality management (TQM) is different from the old concept of quality because its focus is on serving customers, identifying the causes of quality problems, and building quality into the production process. The old concept of quality is reactive, designed to correct quality problems after they occur. The new concept total quality management is proactive, designed to build quality into the product and process design.

TQM philosophy focuses on continuous improvement. Whereas traditional systems operated on the assumption that once a company achieved a certain level of quality, it was successful and needed no further improvements. We tend to think of improvement in terms of plateaus that are to be achieved, such as passing a certification test or reducing the number of defects to a certain level. Traditionally, change for American managers involved large magnitudes, such as major organizational restructuring. The Japanese, on the other hand, believe that the best and most lasting changes come from gradual improvements. To use an analogy, they believe that it is better to take frequent small doses of medicine than to take one large dose. Continuous improvement, called kaizen by the Japanese, requires that the company continually strive to be better through learning and problem solving.

Part of the TQM philosophy is to empower all employees to seek out quality problems and correct them. With the old concept of quality, employees were afraid to identify problems for fear that they would be reprimanded. Often poor quality was passed on to someone else, in order to make it "someone else's problem." The new concept of quality, TQM, provides incentives for employees to identify quality problems. Employees are rewarded for uncovering quality problems, not punished.

In TQM, the role of employees is very different from what it was in traditional systems. Workers are empowered to make decisions relative to quality in the production process. They are considered a vital element of the effort to achieve high quality. Their contributions are highly valued, and their suggestions are implemented. In order to perform this function, employees are given continual and extensive training in quality measurement tools.

OR

Q.5. What is Six Sigma ? What are its benefits and goal? (12.5)

Ans. Six Sigma is a highly disciplined process that helps us focus on developing and delivering near-perfect products and services. The word Sigma is a statistical term that measures how far a given process deviates from perfection. The central idea behind Six Sigma is that if you can measure how many "defects" you have in a process, you can systematically figure out how to eliminate them and get as close to "zero defects" as possible and specifically it means a failure rate of 3.4 parts per million or 99.9997% perfect.

Features of Six Sigma:

- Six Sigma's aim is to eliminate waste and inefficiency, thereby increasing customer satisfaction by delivering what the customer is expecting.
- Six Sigma follows a structured methodology, and has defined roles for the participants.
- Six Sigma is a data driven methodology, and requires accurate data collection for the processes being analyzed.

- Six Sigma is about putting results on Financial Statements.
- Six Sigma is a business-driven, multi-dimensional structured approach for:
- Improving Processes
- Lowering Defects
- Reducing process variability
- Reducing costs
- Increasing customer satisfaction
- Increased profits

Six Sigma has two key methodologies:

1.DMAIC: It refers to a data-driven quality strategy for improving processes. This methodology is used to improve an existing business process.

2.DMADV: It refers to a data-driven quality strategy for designing products and processes. This methodology is used to create new product designs or process designs in such a way that it results in a more predictable, mature and defect free performance.

DMAIC Methodology: This methodology consists of the following five steps.

Define --> Measure --> Analyze --> Improve --> Control

(i) Define: Define the problem or project goal that needs to be addressed.

(ii) Measure: Measure the problem and process from which it was produced.

(iii) Analyze: Analyze data and process to determine root cause of defects and opportunities.

(iv) Improve: Improve the process by finding solutions to fix, diminish, and prevent future problems.

(v) Control: Implement, control, and sustain the improvement solutions to keep the process on the new course.

DMADV Methodology : This methodology consists of five steps:

Define --> Measure --> Analyze --> Design --> Verify

(i) Define: Define the Problem or Project Goal that needs to be addressed.

(ii) Measure: Measure and determine customers' needs and specifications.

(iii) Analyze: Analyze the process to meet the customer needs.

(iv) Design: Design a process that will meet customers' needs.

(v) Verify: Verify the design performance and ability to meet customer needs.

Six Sigma offers six major benefits that attract companies:

(a) Generates sustained success

(b) Sets a performance goal for everyone

(c) Enhances value to customers

(d) Accelerates the rate of improvement

(e) Promotes learning and cross-pollination

(f) Executes strategic change

MODEL TEST PAPER-III

FIFTH SEMESTER [B. TECH.]

INDUSTRIAL MANAGEMENT [ETMS-311] END TERM EXAMINATION

Time : 3 hrs.

M.M. : 75

Note: Question No. 1 is compulsory. Attempt any four other questions from the respective sections.

Q.1. (a) Enlist problems that the trade unions face in India? (5 x 5 = 25)

Ans. Problems of the Trade Union Movement in India- The shortcomings or the weakness of the trade union movement in India are as follows:

1. Lack of balanced growth
2. Low membership
3. Poor financial position
4. Political control
5. Multiplicity of unions
6. Inter-union rivalry
7. Lack of able leaders
8. Lack of recognition
9. Opposition from employers
10. Indifferent attitude of members

Q.1. (b) What do you understand by worker's participation in management?

Ans. Workers Participation In Management: The word 'participation' means sharing the decision-making power with the lower ranks of the organization in an appropriate manner. Participation has a unique motivational power and a great psychological value. It promotes harmony and peace between workers and management. When workers participate in organizational decisions, they are able to see the big picture clearly, i.e., how their actions would contribute to overall growth of the company. They can offer feedback immediately based on their experiences and improve the quality of decisions significantly. Since they are involved in the decisions from the beginning, they tend to view the decisions as their own and try to translate the rhetoric into concrete action plans with zeal and enthusiasm. Participation makes them more responsible. They are willing to take initiative and contribute cost-saving suggestions and growth-oriented ideas. The feeling of being treated as equals, forces them to repose their confidence in management and accept plans of rationalization, expansion, etc., without raising serious objections. Since they are treated with respect now they begin to view the job and the organization as their own and commit themselves to organizational activities wholeheartedly.

Output cannot be increased unless there is effective co-operation between labour and management at all levels. The way of ensuring this is to satisfy their social and psychological need besides economic ones. Workers participation in management is one of the most significant modes of resolving industrial conflicts and encouraging among workers a sense of belongingness in establishment where they work.

Participation may take two forms. It may be: (1) ascending participation, and (2) descending participation. In case of ascending participation, the workers may be given an opportunity to influence managerial decisions at higher levels through their elected representatives to joint councils or the board of directors of the company. But in descending participation, they may be given more powers to plan and to make decisions about their own work (e.g. delegation and job enlargement). This form of participation is quite popular in many organizations.

Q.1. (c) Mention a few recognized trade unions in India.

Ans. Some prominent Trade Unions in India are:

- (1) The Indian National Trade Union Congress
- (2) The All-India Trade Union Congress
- (3) The Hind Mazdoor Sabha
- (4) The United Trade Union Congress
- (5) The Centre of India Trade Unions
- (6) Bharatiya Mazdoor Sangh
- (7) The National Front of India Trade Unions
- (8) The United Trade Union Congress (LS)
- (9) The National Federation of Independent Trade Unions
- (10) The Trade Union Co-ordination Committee
- (11) Indian Confederation of Labour
- (12) Hind Mazdoor Kisan Panchayat
- (13) National Labour Organization

Q.1. (d) Explain predetermined motion time system.

Ans. Predetermined Motion Time Study (PMTS): These systems utilize the time study and micro motion techniques of the earlier techniques to determine and assign times to specified basic motions. It is a work measurement technique whereby time established for basic human motions are used to build up the time for a job at a defined level of performance. PMTS is also called as Predetermined Time Standards (PTS). The motions and associated times are catalogued. Work measurement then becomes a matter of establishing the best basic motion pattern to perform a certain task and, from the catalog or data card, assigning the appropriate predetermined time for each basic motion in that pattern. Since times for all motions are predetermined, it is possible to accurately predict future task times.

Of all the predetermined motion time systems, the most well known is Methods-Time Measurement (MTM). Because it is a very detailed system and in the public domain, MTM has been recognized as the most accurate and widely accepted predetermined motion time system in use today. The MTM system has a detailed data card of basic motions (reach; Move; Grasp; Position; Release; body, leg, and foot motions; and so on), each concerned with particular variables. Basic motions are identified, and with the variables considered the appropriate times are chosen from the data card. Because of its detail, MTM can be a very exact system and also very slow to apply. Also, basic motion distances must be accurately measured and correctly classified because of the detail, applicator errors can be a problem.

MTM measures time in Time measurement Unit (TMU) and 1 TMU = 0.0006 minutes. MTM analyses an industrial job into basic human movements and standard time can be calculated by adding suitable allowances.

Synthesized versions or levels of MTM have been developed to reduce applicator errors and the time of analysis known as MTM-1, MTM-2 and MTM-3.

Q.1. (e) Define quality control in services.

Ans. In contrast to manufacturing, service organizations produce a product that is intangible. Usually, the complete product cannot be seen or touched. Rather, it is experienced. Examples include delivery of health care, experience of staying at a vacation resort, and learning at a university. The intangible nature of the product makes defining quality difficult. Also, since a service is experienced, perceptions can be highly subjective. In addition to tangible factors, quality of services is often defined by perceptual factors. These include responsiveness to customer needs, courtesy and friendliness of staff, promptness in resolving complaints, and atmosphere. Other definitions of quality in services include time—the amount of time a customer has to wait for the service; and consistency—the degree to which the service is the same each time. For these reasons, defining quality in services can be especially challenging. Dimensions of quality for manufacturing versus service organizations are shown in table given below:

Manufacturing Organizations	Service Organizations
Conformance to specifications	Tangible factors
Performance	Consistency
Reliability	Responsiveness to customer needs
Features	Courtesy/friendliness
Durability	Timelines/promptness
Serviceability	Atmosphere

UNIT-I

Q.2. What is an industrial dispute? Write the different methods of solving the industrial dispute through Conciliation, Arbitration and Adjudication.

(12.5)

Ans. Under the Industrial Disputes Act, 1947, an "Industrial Dispute" means a dispute (i) between employers and workmen or, (ii) between workmen and workmen or (iii) between employers and employers which is connected to employment or non-employment or terms of employment or with the conditions of labour.

Industrial Dispute's Settlement Machineries

Mediation: Mediations is a process available to the parties involved in contract negotiations by which an outside party is called in by union and management to help them reach a settlement. The neutral mediator does not ultimately resolve the dispute, but instead tries to move the parties towards agreement by maintaining communication and suggesting alternative solutions to dead-locked issues. The mediator's function is to provide a positive environment for dispute resolution by drawing on extensive professional experience in the field of labour management interaction.

Conciliation: Conciliation is a process by which representatives of workers and employers are brought together before a third person or a group of persons with a view to persuade them to come to a mutually satisfying agreement. The objective of this method is to settle disputes quickly and prevent prolonged work stoppages if they have already occurred. The essential hallmarks of this approach are:

1. The conciliator tries to bridge the gulf between the parties, if possible.
2. If he does not fully succeed, he tries to reduce the differences to the extent possible. He acts as a conduit through which messages are passed from one side to the other, coupled with his own interpretations facilitating the understanding of disputing parties.

3. He persuades parties to take a fresh look at the whole issues, through a process of give and take and explore the possibility of reaching a consensus.

4. He only advances possible lines of solutions for consideration by the disputants. He never tries to force the parties to accept his viewpoint. He never offers judgment on the issues. If parties feel that the suggestions offered by the conciliator are acceptable, they may strike a deal.

5. The conciliator need not follow the same path in each case. The process of conciliation, therefore, has a certain amount of flexibility and informality built around it.

Voluntary Arbitration: When conciliation proceedings fail to settle the dispute, the conciliation officer may persuade the conflicting parties to voluntary refer the dispute to a third party known as Arbitrator, appointed by the parties themselves. The arbitrator listens to the viewpoints of both parties and delivers an award or judgment on the dispute. He, however, does not enjoy judicial powers. The arbitrator submits his judgment on the dispute to the government. Thereafter the government publishes the award within 30 days of its submission. The award becomes enforceable after 30 days of its publication. The arbitration award is binding on all the parties to the agreement and all other parties summoned to appear in the proceedings as parties to dispute.

Arbitration is effective as a means of resolving disputes because it is:

1. Established by the parties themselves and the decisions is acceptable to them, and
2. Relatively expeditious when compared to courts or tribunals. Delays are cut down and settlements are speeded up.

Adjudication: Adjudication or compulsory arbitration is the ultimate remedy for the settlement of disputes in India. Adjudication consists of settling disputes through the intervention of a third party appointed by the government. An industrial dispute can be referred to adjudication by the mutual consent of the disputing parties. The government can also refer a dispute to adjudication without the consent of the parties. The Industrial Disputes Act, 1947, provides three-tier adjudication machinery - namely Labour Courts, Industrial Tribunals and National Tribunals - for the settlement of industrial disputes.

OR

Q.2. Describe the statutory welfare measures available in Indian context.

(12.5)

Ans. Labour legislation in India comprises both central and state legislations. There could be many bases for classification of legislation e.g. purpose, period of enactment,

legislative body that has enacted the laws, etc. On the basis of purpose, legislations can be categorized into groups pertaining to the regulation of working conditions, social-security, wage and bonus, IR and conflict prevention.

Regulation of working conditions

- The Factories Act, 1948
- The Shops and Establishment Acts, 1953
- The Contract Labour (Regulation and abolition Act), 1979

Social Security

- The Employees' State Insurance Act, 1948
- The Workmen's Compensation Act, 1923
- The Payment of Gratuity Act, 1972
- The Employees' Provident Fund and Miscellaneous Provisions Act, 1952

Wage and Bonus

- The Payment of Wages act, 1936
- The Minimum Wages Act, 1948
- The Payment of Bonus Act, 1965

IR and conflict prevention

- The Industrial Disputes Act, 1947
- The Industrial Employment (Standing Orders) Act, 1946
- The Trade Unions Act, 1926

The Factories Act, 1948: The objective of the act is to protect health, safety and welfare of the workmen, to regulate work hours, weekly offs and annual leave, to regulate the employment of women and young persons.

The Shops and Establishments Act, 1953: An act to guide states in enacting their own rules to provide statutory obligation and rights to employees and employers in the unorganized sector of employment, i.e. shops and establishments. Every state has enacted its own rule.

The Contract Labour (Regulation and Abolition) Act, 1970: This Act seeks to regulate the employment of contract labour in certain establishments and to provide for its abolition under certain circumstances.

The Employees' State Insurance Act, 1948: The Act aims to provide security (financial and medical) to employees and their dependents during contingencies that may affect their earning capacities, temporarily or permanently.

The Workmen's Compensation Act, 1923: It is the first piece of legislation towards social security. It deals with compensation for workers who are injured in the course of duty. Under the Workmen's compensation act, it is the employer who is responsible to pay compensation if the worker is injured by an accident that arises out of work.

The Payment of Gratuity Act, 1972: It is a beneficent piece of social-security legislation that aims at providing a scheme for providing gratuity to employees engaged in factories, mines, oil fields, plantations, ports, railways, shops and other establishments.

The Employees' Provident Fund and Miscellaneous Provisions Act, 1952: It mainly provides for retirement or old-age benefits, such as provident fund, superannuation, pension, invalidation pension, family pension and deposit linked insurance.

The Payment of Wages act, 1936: was enacted to regulate the payment of wages and to ensure a speedy and effective remedy against illegal deductions and/or unjustified delay in the payment of wages.

The Minimum Wages Act, 1948: aimed at establishing a mechanism for fixing minimum wage rates in various kinds of employments. The appropriate government is empowered to fix minimum rate of wages and to review at intervals not exceeding five years.

The Payment of Bonus Act, 1965: imposes statutory liability upon employer to pay bonus to employees. Provides limit for the maximum and minimum bonus liable.

The Industrial Disputes Act, 1947: This act is one of the most important piece of statutory measures for prevention and settlement of Industrial Disputes.

The Trade Unions Act, 1926: Enacted mainly in deference to the ILO convention, in recognition of the right of workers to organize and also to strengthen the bargaining power of the workers. The Act aims to provide for the registration of trade unions and, in certain respects, to define the law relating to registered trade unions.

UNIT-II

Q.3. Explain the Structures and types of Trade Unions in India? (12.5)

Ans. Structure of Trade Unions in India: In India, the structure of trade union consists of three levels: plant/shop or local, the state and the centre. It is generally from the central level that the ideology of the important central federations of labour in India percolates down to the state and local levels. Every national or central federation of labour in India has state branches, state committees or state councils, from where its organization works down to the local level. There are two types of organizations to which the trade unions in India are affiliated:

(i) National Federations, and

(ii) The Federations of Unions

1. The National Federations have all the trade unions in a given industry as their affiliated members. Every trade union, irrespective of the industry to which it belongs, can join a general national federation. Such federations are the apex of trade union policies a national character. The central union organizations are national federations of labour based on different political ideologies.

Because of their political leanings, the affiliated trade unions in the field of labour relations follow either a militant policy or a policy of cooperation with the employers and the government, or a policy of continuous strife and litigation.

The trade union leadership to these national organizations is generally provided by the politicians. Such leaders are found leading a dozen or more unions in a particular state. These unions may be in the petroleum industry, the transport industry, electricity supply undertakings or craft unions, such as the rickshaw pullers union or taxi drivers union. The national/central federations are empowered to decide the question of jurisdiction of the various local and national unions.

A majority of these federations allow their affiliates to bargain independently with their respective employers. The federations only act as coordinating authorities for different unions under their control. They also select delegates to represent workmen in international conferences organized by the International Labour Organisation or the International Confederation of Free Trade Unions. The all-India federation of trade unions has a regular structure. For example:

The INTUC consists of a central organization, affiliated unions, industrial federation, regional branches and councils functioning under the direct control or supervision of the central organization, the assembly of delegates, the general council and the working committees.

The INTUC functions through its affiliated unions, delegates, assembly, general council (including office-bearers), the working committees of the general council and the Pradesh bodies.

The UTUC consists of the general body (delegates assembly) general council, and the working committee of general council.

The Hind Mazdoor Sabha (HMS) works through the general council, the working committee and affiliated organization.

2. Federations of Unions: These are combinations of various unions for the purpose of gaining strength and solidarity. They can resort to concerted action, when the need for such action arises, without losing their individuality. Such federations may be local, regional, state, national and international. There are a few organizations which are local in character, such as the Bharatiya Kamgar Sena, the Labour Progressive Federation, Chennai, the National Front of Indian Trade Unions and the Co-coordinating Committee of Free Trade Unions. Many Unions are affiliated to one or the other type of the following central organizations of workers:

(1) The Indian National Trade Union Congress

(2) The All-India Trade Union Congress

(3) The Hind Mazdoor Sabha

(4) The United Trade Union Congress

(5) The Centre of India Trade Unions

(6) Bharatiya Mazdoor Sangh

Besides the affiliated unions and their federations, there are a large number of associations and federations which have not joined any one of the central workers' organizations. Some of these are:

(1) The All India Bank Employees' Association;

(2) The All India Bank Employees' Federation;

(3) The All India Insurance Employees' Association;

(4) The All India Defense Employees' Federation;

(5) The All India Railway men's Federation;

(6) The National Federation of Posts and Telegraphs Employees;

OR

Q.3. Explain the process of registration of trade union in India. (12.5)

Ans. Registration Of Trade Unions: Appointment of Registrars: As regards registration of a trade union, the Act empowers the appropriate Government to appoint a person to be the Registrar of Trade Union for each state. The appropriate Government may appoint as many additional and deputy registrar's trade union as it thinks fit. They shall work under the superintendence and direction of the Registrar.

The appropriate Government shall specify and define the local limits within which any additional and Deputy Registrar shall exercise and discharge his powers and functions.

Mode of Registration

A Trade Union can be registered only under the Trade Union Act., 1926. The Societies Registration Act, 1860, the Co-operative Societies Act, 1012, and the Companies Act, 1956, shall not apply to any registered Trade Union, and the registration of a Trade Union under any such Act shall be void (Section 14)

Any seven or more members of a Trade Union may apply for registration of the Trade Union. All the members applying for registration must subscribe their names to the rules of the Trade Union and also comply with the provisions of the Act relating to registration.

Application for Registration (Section 5)

Every application for registration of a Trade Union shall be made to Registrar. It shall be accompanied by a copy of the rules containing matters as given in Section 6. It also contains a statement of the following particulars.

- (a) The names, occupations and addresses of members making the application
- (b) The name of the Trade Union and the address of its head office; and

The titles, names, ages, addresses and occupations of the office-bearers of the Trade Union

Where a Trade Union has been in existence for more than one year before its registration, a general statement of the assets and liabilities of the Trade Union in the prescribed form must be submitted along with the application.

Rules of Trade Union - To provide the following (Section 6)

- (a) Name of the Trade Union
- (b) Objects
- (c) Purposes for which the general funds shall be applicable
- (d) Maintenance of a list of its members - facilities for its inspection
- (e) Admission of the number of honorary or temporary members
- (f) Payment of subscription - not less than 25 paise per month per member
- (g) Conditions under which members can enjoy the benefits and under which fines may be imposed on them
- (h) Manner in which rules may be amended
- (i) Manner of appointment and removal of the members

(j) Safe custody of the funds, an annual audit, facilities for inspection of the accounts

(k) Manner in which Trade Union may be dissolved

Registration (Section 7)

The Registrar will register the Trade Union, if he is satisfied that the trade union has complied with all the requirements of this Act in regard to registration. The Registrar shall register; the Trade Union by making necessary entries in the register, to be maintained in such form as may be prescribed. The particulars relating to the Trade Union contained in the statement accompanying the application for registration shall be entered in the register.

Where the Registrar takes no action on an application for more than three months, writ under Article 226 can be issued commanding the Registrar to deal with the application.

Certificate of Registration (Section 9)

The Registrar, on registering a Trade Union, shall issue a certificate of registration which shall be conclusive evidence that the Trade Union has been duly registered under the Act.

It is obligatory on the part of the Registrar to register a Trade Union provided the provisions of the Act are complied with. He is not entitled to question whether the Union is lawful or unlawful.

Advantages of Registration

1. A Trade Union becomes a body corporate by name under which it is registered and it a legal entity distinct from its members of which it is composed.
2. It gives perpetual succession and common seal.
3. It can acquire and hold both movable and immovable property.
4. It can enter into a contract.
5. It can sue and be sued in its registered name.

UNIT-III**Q.4. Define and explain technique of method analysis.**

(12.5)

Ans. Method Study: Method study is the systematic recording and critical examination of existing and proposed ways of doing work. It is concerned with the reduction of work content of a job or operation.

Procedure of method analysis

1. Make an initial investigation of the operation under consideration.
2. Decide what level of analysis is appropriate.
3. Talk with workers, supervisors, and others who are familiar with the operation. Get their suggestions for better ways to do work.
4. Study the present methods. Use process charts, time study and appropriate techniques of analysis.
5. Apply the questioning attitude and the suggestions of others. Devise a new proposed method by using process charts and other appropriate techniques of analysis.

6. Use time study if necessary. Compare new and present methods. Obtain supervisors' approval to proceed.

7. Modify the proposed method as required after reviewing the details with workers and supervisors.

8. Train one or more workers to perform the proposed method on a trial basis. Evaluate the proposed method. Modify the method as required.

9. Train workers and install the proposed method.

10. Check periodically to ensure that the expected savings are being realized.

In performing method analysis, certain diagrams and charts can be useful.

Diagrams and Charts: Flow diagrams and Process charts are the most versatile techniques available for analyzing work methods. They are usually used together to eliminate or reduce delays, eliminate or combine tasks, or reduce travel time or distance.

Multiactivity Charts: show how one or more workers work together and/or with machines. A worker and machine chart, for example, could show how a clerk in a grocery store works with a customer and with a coffee-grinding machine to produce ground coffee for the customer. These charts are helpful for minimizing worker and machine delay and for determining the optional number of machines per worker.

OR

Q.4. Define work sampling. Name three uses of work sampling. (12.5)

Ans. Work Sampling is a work measurement technique that randomly samples the work of one or more employees at periodic intervals to determine the proportion of the total operation that is accounted for in one particular activity. Work sampling is less expensive than time study, but it usually offers less precision. Work Sampling is usually preferred when many workers perform a single operation that is spread out over a large geographic area.

Uses of Work Sampling:

- These studies are frequently used to estimate the percentage of employees time spent in such activities as these: unavoidable delays, repairing finished products from an operation; or supplying material to an operation.

- The results of these studies are commonly used to set allowances used in computing labor standards, in estimating cost of certain activities, and in investigating work methods.

- Work sampling is also used to set a labor standard, which are used as benchmarks against which actual performance is measured. The objective is to improve labour productivity.

UNIT-IV

Q.5. Explain what total quality management means. What are the major benefits of TQM? Explain why TQM efforts fail?

Ans. A management philosophy embracing all activities through which the needs and expectations of the CUSTOMER and COMMUNITY, and the objectives of the organization are satisfied in the most efficient and cost effective manner by maximizing the potential of ALL employees in a continuing drive for improvement."

Major benefits of TQM:

- Improves Quality of Product/Service
- Increase Productivity due to less rejects leading to faster job
- Lower Costs of products/services and consequently leads to higher profit
- Leads to Business Growth, strong Competitive position

Why TQM efforts fail?

The most important factor in the success or failure of TQM efforts is the genuineness of the organization's commitment. Often companies look at TQM as another business change that must be implemented due to market pressure without really changing the values of their organization. TQM is a complete philosophy that has to be embraced with true belief, not mere lip service. Looking at TQM as a short-term financial investment is a sure recipe for failure.

Another mistake is the view that the responsibility for quality and elimination of waste lies with employees other than top management. It is a "let the workers do it" mentality. A third common mistake is over- or under-reliance on statistical process control (SPC) methods. SPC is not a substitute for continuous improvement, teamwork, and a change in the organization's belief system. However, SPC is a necessary tool for identifying quality problems. Some common causes for TQM failure are

- Lack of a genuine quality culture
- Lack of top management support and commitment
- Over- and under-reliance on statistical process control (SPC) methods

Companies that have attained the benefits of TQM have created a quality culture. These companies have developed processes for identifying customer-defined quality. In addition, they have a systematic method for listening to their customers, collecting and analyzing data pertaining to customer problems, and making changes based on customer feedback.

OR

Q.5. Explain the procedure of constructing X-bar chart and R-chart. (12.5)

Ans. Construction of X-bar & R-chart:

- Choice of variable (X) - choose the characteristic which gives maximum possible scope for cost reduction through process control.

- Selection of rational sub groups.

- Choice of frequency: Frequency is the time interval between successive measurements of quality characteristic.

- Collect about 'k' number of subgroups (usually $k = 25$) each of convenient sample size 'n' (say 4 to 10)

- For each sub-group, calculate mean X-bar; mean $X\bar{=}$ $\Sigma X/n$

Formulae For X-Bar Chart

x-bar chart Example

$$\bar{x} = \frac{\Sigma x}{k} = \frac{50.09}{10} = 5.01 \text{ cm}$$

$$UCL = \bar{x} + \bar{R} = 5.01 + (0.58)(0.115) = 5.08$$

$$UCL = \bar{x} - A_2 R = 5.01 - (0.58)(0.115) = 4.94$$

X = central line of the chart and the average of past sample mean's, and

A_2 = constant to provide three-sigma limits for the process mean.

R Chart

$$UCL = D_4 \bar{R}$$

$$LCL = D_3 \bar{R}$$

$$\bar{R} = \frac{\sum R}{k}$$

where

\bar{R} = range of each sample

k = number of samples

Formulae For R-Chart as Given Above.

6. Calculate average of different ranges for 'k' sub-groups.

Test for homogeneity: Compare all individual average values for 'k' subgroups with the values of Upper control limit of X-bar chart and lower control limit. If these individual average values fall in between the values of control limits, process is in control.

If the subgroups are not homogeneous, remove the sample results which are out of the range limits and compute modified average of ranges, modified upper control limit and modified lower control till homogeneity is obtained.

Calculate control limit, upper control limit and lower control limit for X-bar chart.

Test for homogeneity: R-chart; compare all individual range values for 'k' subgroups with the values of Upper control limit and lower control limit. If these individual range values fall in between the values of upper control limit and lower control limit of R-bar chart, the process is in control.

If the subgroups are not homogenous, remove the sample results which are out of the limits and compute modified upper control limit and modified lower control limit till homogeneity is obtained.

FIRST TERM EXAMINATION [SEPT. 2015] FIFTH SEMESTER (B.TECH) INDUSTRIAL MANAGEMENT [ETMS-311]

Time : 1½ Hrs.

M.M. : 30

Note: Question No. 1 is compulsory and attempt any two more questions from the remaining.

Q.1. Write Short Notes on following (Any five)

2 × 5 = 10

(i) Various measures to improve industrial relations.

(ii) Strike & its forms

(iii) Concept of Industrial Democracy

(iv) India and ILO

(v) Activities and weakness of trade Unions in India

(vi) The Apprenticeship Act

Ans. (i) IR is concerned with the relationship between management and workers and the role of the regulatory mechanism in resolving any industrial dispute.

Methods to improve industrial relations focus on collective bargaining, workers participation in the industrial relations schemes, discipline procedure, grievance redressal machinery, dispute settlements machinery working of closed shops, union reorganization, organizations of protests through methods like revisions of existing rules, regulations, policies, procedures, hearing of labour courts, tribunals etc.

Trade unions should be strengthened democratically so that they can understand and toe with the main stream of the national industrial activities. They can drop the somehow survive attitude by promising impossible and consequent perpetual strain. Employers should have more transparency in their dealings with workers to build confidence and have progressive outlook. They should have open minded flexible collective Bargaining. Workers should be allowed to participate in the management through forums, committees and councils. Sound labour policy, planning. Proper leadership and communication. Enforcement of discipline, Try to have union with in workers fold and equity in distribution of wealth by acknowledging workers as team members can also enforce good industrial relations.

(ii) Strike and its forms: Strike is a very powerful weapon used by trade unions and other labour associations to get their demands accepted. It generally involves quitting of work by a group of workers for the purpose of bringing the pressure on their employer so that their demands get accepted. When workers collectively cease to work in a particular industry, they are said to be on strike.

Strike action, also called labour strike, on strike, greve (of French: grève), or simply strike, is a work stoppage caused by the mass refusal of employees to work. A strike usually takes place in response to employee grievances. No doubt strike is the ultimate weapon in the hands of worker and labour laws also support strikes if it does in accordance with law.

TYPES OF STRIKES

(1) Economic Strike: Under this type of strike, labours stop their work to enforce their economic demands such as wages and bonus. In these kinds of strikes, workers ask for increase in wages, allowances like travelling allowance, house rent allowance, dearness allowance, bonus and other facilities such as increase in privilege leave and casual leave.

(2) Sympathetic Strike: When workers of one unit or industry go on strike in sympathy with workers of another unit or industry who are already on strike, it is called a sympathetic strike. The members of other unions involve themselves in a strike to support or express their sympathy with the members of unions who are on strike in other undertakings. The workers of sugar industry may go on strike in sympathy with their fellow workers of the textile industry who may already be on strike.

(3) General Strike: It means a strike by members of all or most of the unions in a region or an industry. It may be a strike of all the workers in a particular region of industry to force demands common to all the workers. These strikes are usually intended to create political pressure on the ruling government, rather than on any one employer. It may also be an extension of the sympathetic strike to express generalized protest by the workers.

(4) Sit down Strike: In this case, workers do not absent themselves from their place of work when they are on strike. They keep control over production facilities. But do not work. Such a strike is also known as 'pen down' or 'tool down' strike. Workers show up to their place of employment, but they refuse to work. They also refuse to leave, which makes it very difficult for employer to defy the union and take the workers' places. In June 1998, all the Municipal Corporation employees in Punjab observed a pen down strike to protest against the non-acceptance of their demands by the state government.

(5) Slow Down Strike: Employees remain on their jobs under this type of strike. They do not stop work, but restrict the rate of output in an organized manner. They adopt go-slow tactics to put pressure on the employers.

(6) Hunger strike: in this form of industrial protest, workmen resort to fasting near the workplace in order to demand the employer to redress their grievances.

On 18, July, 2012, India's leading car manufacturer Maruti Suzuki Udyog Ltd in Manesar factory workers in an agitation at factory an HR manager was burned to death by workers, they made severe damage to company's property and hurt severely several other workers. Thereby MSUL (Maruti Suzuki Udyog Ltd) sacked all of its workers who ever involved in that incident and filed a police complaint against those employees on 8, November, 2012, few workers who were dismissed but claimed that they were not involved resorted to hunger strike demanding to reinstate them.

(7) Wild cat strikes: These strikes are conducted by workers or employees without the authority and consent of unions. In 2004, a significant number of advocates went on wildcat strike at the City Civil Court premises in Bangalore. They were protesting against some remarks allegedly made against them by an Assistant Commissioner.

(iii) Concepts of Industrial Democracy: It means the application of democratic principle in managing industrial units." In industrial democracy, worker are treated as responsible partners of the enterprise and are allowed to participate in the decision-making process through different methods. Workers are given the right of self-expression and an opportunity to communicate their views on framing the policies of the company.

Industrial democracy brings effective communication between workers and management, and thereby joint decisions acceptable to both parties are possible

Industrial democracy leads to cordial labour – management relations industrial peace. It gives higher status to worker and makes them more responsible in their outlook and behaviour.

Workers feel committed to the decision taken by them jointly with the management. It gives training in democratic norms and traditions to workers through participation in the affairs of their company. This develops the spirit of tolerance and co-operation

which is useful in a democratic society. This creates true democratic spirit in the minds of workers and make political strong and stable.

(iv) INDIA & ILO: India has been one of the founder members of the ILO and has been taking active part in its deliberations. The ILO has so far adopted 173 conventions and 180 recommendations. India has ratified 36 conventions. The ILO standards have a decisive have been incorporated in the labour legislation. The ILO standards have a decisive impact on the factory, mines, social security and wage legislation in India. The AJTUC owes its immediate origin to it. India's commitment to the ILO is reflected in its adherence to the institution of tripartism as a novel method of researching labour management conflicts. The ILO standards have influenced Indian labour legislation. The ILO conventions have formed the sheet anchor of Indian labour legislation especially after 1947 when the Indian national government assumed office at the centre.

(v) The Apprenticeship Act: The Apprenticeship Act, 1961, was enacted by the Government of India to regulate and control the training of apprentices. The act intends to achieve two objectives:

(i) promotion of new skills

(ii) improvement/refinement of old skills through theoretical and practical training in a number of trade and occupations. Employers covered by this act are under a statutory obligation to provide training to a prescribed number of people. However the employer is not bound to offer employment to the apprentice upon completion of training, nor is the trainee bound to accept any employment offer, unless the apprenticeship contract specifies it.

(vi) Activities and weakness of trade unions in India:

- To safeguard workers against all sorts of exploitation by the employers, by union leaders and by political parties.
- To protect workers from the atrocities and unfair practices of the management.
- To ensure healthy, safe and conducive working conditions, and adequate conditions of work.
- To exert pressure for enhancement of rewards associated with the work only after making a realistic assessment of its practical implications.
- To ensure a desirable standard of living by providing various types of social service – health, housing, educational, recreational, cooperative, etc. and by widening and consolidating the social security measures

The following are some of the most important weakness of the trade unions in India:

- Multiplicity of Trade Unions and Inter-union Rivalry
- Small Size of Unions
- Financial Weakness
- Leadership Issues
- Politicalisation of the Unions
- Problems of Recognition of Trade Union

Q.2. Explain in detail the importance of Industrial relations in context of present Indian industrial set up. (10)

Ans. Industrial Relations: is concerned with the relationships between management and workers and the role of regulatory mechanism in resolving any industrial dispute. A good Industrial Relations increases the morale of employers and goods them to give their maximum, each think of their mutual interest which paves way

for introduction of new methods, developments and leading to adoption of modern technology. This progressive ways when designed with their mutual interest and consensus develops many incentive propositions, effective participants forum is created i management. Profit are shared, workers get their dues in the organization leading job satisfaction-which is needed for good relations. Good industrial relation increases production, improves quality of work and products efficiency of workers increased. Co of production lowered. Bad Industrial Relations leads to industrial unrest industrial dispute and a downward trend to industries workers and the nation. Of course the firm will be on the employers, who has invested

OR

Q.2. (i) Discuss the causes of industrial disputes in India.

(ii) Explain the preventive machinery to check the settlement of disputes in India.

Ans. (i) General causes of industrial disputes strains which results in bad industrial relations are.

1. Close mindedness of employers and employees one thinking to extract maximum work with minimum remuneration, other thinking to avoid work and get more enhancement in pay and wages.

2. Irrational wage, wage system and structure not mutually acceptable.

3. Poor working environment, low presence of safety, hygiene conditions vital atmosphere for smooth working

4. Poor human relations, and lack of dexterity on the part of management personnel

5. Lack of control over the situations erosion of discipline, which rebounds.

6. Introduction of new technology or automation mechanization, Computerization etc. without proper consultations, preparations and discussion with workers and creating climate.

7. Nepotism, unequal workloads, disproportionate wage, and responsibilities.

8. Adoption of unfair labour practices either by employer or employees and unions

9. Unjustifiable profit sharing, and not considering workers as a coshares of the gains of the industry.

10. Frequent union rivalries over membership foisting up of fake unions.

11. Strikes lock out, lay off, and resulting retrenchment due to high handedness the part of the concerned.

12. Throwing away the agreements and arrived settlements

13. Militancy of the unions

14. Attitude of government and political parties who may indirectly control some the unions for their own gains or to get a hold on the industry

Ans. (ii) Under the Industrial Disputes Act, 1947, an "Industrial Dispute" means dispute

(i) between employers and workmen or,

(ii) between workmen and workmen or (iii) between employers and employers which is connected to employment or non-employment or terms of employment or with the conditions of labour.

INDUSTRIAL DISPUTE'S SETTLEMENT MACHINERIES

Mediation: Mediations is a process available to the parties involved in contract negotiations by which an outside party is called in by union and management to help

them reach a settlement. The neutral mediator does not ultimately resolve the dispute, but instead tries to move the parties towards agreement by maintaining communication and suggesting alternative solutions to dead-locked issues. The mediator's function is to provide a positive environment for dispute resolution by drawing on extensive professional experience in the field of labour management interaction. .

Conciliation: Conciliation is a process by which representatives of workers and employers are brought together before a third person or a group of persons with a view to persuade them to come to a mutually satisfying agreement. The objective of this method is to settle disputes quickly and prevent prolonged work stoppages if they have already occurred. The essential hallmarks of this approach are:

1. The conciliator tries to bridge the gulf between the parties, if possible.

2. If he does not fully succeed, he tries to reduce the differences to the extent possible. He acts as a conduit through which message are passed from one side to the other, coupled with his own interpretations facilitating the understanding of disputing parties.

3. He persuades parties to take a fresh look at the whole issues, through a process of give and take and explore the possibility of reaching a consensus.

4. He only advances possible lines of solutions for consideration by the disputants. He never tries to force the parties to accept his viewpoint. He never offers judgment on the issues. If parties feel that the suggestions offered by the conciliator are acceptable, they may strike a deal.

5. The conciliator need not follow the same path in each case. The process of conciliation, therefore, has a certain amount of flexibility and informality built around it.

Voluntary Arbitration: When conciliation proceedings fail to settle the dispute, the conciliation officer may persuade the conflicting parties to voluntary refer the dispute to a third party known as Arbitrator, appointed by the parties themselves. The arbitrator listens to the viewpoints of both parties and delivers an award or judgment on the dispute. He, however, does not enjoy judicial powers. The arbitrator submits his judgment on the dispute to the government. Thereafter the government publishes the award within 30 days of its submission. The award becomes enforceable after 30 days of its publication. The arbitration award is binding on all the parties to the agreement and all other parties summoned to appear in the proceedings as parties to dispute.

Arbitration is effective as a means of resolving disputes because it is:

1. Established by the parties themselves and the decisions is acceptable to them, and

2. Relatively expeditious when compared to courts or tribunals. Delays are cut down and settlements are speeded up.

Adjudication: Adjudication or compulsory arbitration is the ultimate remedy for the settlement of disputes in India. Adjudication consists of settling disputes through the intervention of a third party appointed by the government. An industrial dispute can be referred to adjudication by the mutual consent of the disputing parties. The government can also refer a dispute to adjudication without the consent of the parties. The Industrial Disputes Act, 1947, provides three-tier adjudication machinery – namely Labour Courts, Industrial Tribunals and National Tribunals – for the settlement of industrial disputes.

Q.3. Explain the meaning and importance of Collective Bargaining. Suggest some measures for effective functioning of collective bargaining. (10)

Ans. **Collective Bargaining:** Collective bargaining is a method by which trade unions protect and improve the conditions of their members working lives. Collective bargaining brings the employer and the employees around one table to discuss and settle many contentious issues effectively. It enables both the parties to know each other and their views, and to define their rights and obligations regarding terms of employment, working conditions, etc., through negotiations, discussions and bargains.

Forms of Collective Bargaining: At the outset it should be stated that there is a great deal of variation in the collective bargaining practices ranging from an informal oral agreement to very formal and detailed agreement.

Collective Bargaining takes the following forms:

(i) It may be a single plant bargaining, that is, bargaining may be between a single trade union. This type of collective bargaining prevails in the United States and India.

(ii) It may be a multiple plant bargaining, that is, bargaining may be between a single factory or establishment having several plants and the workers employed in all these plants.

(iii) It may be a multiple employer bargaining, that is, bargaining between all the trade unions of workers in the same industry through their federal organizations, and the employer's federation. This is possible both at the local and regional levels and is generally resorted to in the textile industry.

In India, collective bargaining has been classified under four categories. These are:

(i) Agreements which are negotiated by officers during the course of conciliation proceedings and are called settlements under the Industrial Disputes Act.

(ii) Agreements which are concluded by the parties themselves without reference to a Board of Conciliation and are signed by them. Copies of such agreements, however, are sent to appropriate governments and to conciliation officers.

(iii) Agreements which are negotiated by the parties on a voluntary basis when disputes are sub judice and which are later submitted to industrial tribunals, labour courts or labour arbitrators for incorporation into the documents as parts of awards. These are known as consent awards.

(iv) Agreements which are drawn up after direct negotiation between labour and management and are purely voluntary in character. These depend for their enforcement on moral force and on the goodwill and co-operation of the parties.

Tactics or Strategies in Collective Bargaining: The tactics or strategies to be adopted in any collective bargaining situation vary depending upon the culture of the organization and different environmental factors, particularly the type of union operating in an industrial establishment. But the following are some of the common strategies to make collective bargaining exercise more meaningful:

1. The management has to anticipate the demands and also understand the main directions in which the demands are going to be placed. Generally speaking, negotiations are best done if both the parties do their home work well. The representatives must come to the bargaining table equipped with the necessary information and supportive data regarding the company's economic status and prospects, the prevailing rates of pay and conditions of employment in comparable industries in the local areas. The management team should take into consideration the financial liability involved, the past agreements, and the impact of present negotiations in future years.

2. It is essential that a real team spirit is maintained throughout the negotiations. For this purpose, it is necessary that the roles to be played by each member of the team are properly pre-assigned, and each member knows when to take over the discussions. The team must have the confidence of facing any eventuality which may come up during negotiations. The team must have the power of taking decisions. The team must consist of people who have confidence of the workforce and unions. It is good to have a rehearsal among the team members on such points which can be anticipated to be made forcefully by the opposite team.

3. Any collective bargaining strategy should firstly separate the personalities from the problems for arriving at a workable and desirable agreement and secondly, explore the possibilities for harmony and compatibility.

4. Collective bargaining is two way traffic. The management as well as the union must gain out of collective bargaining. Hence, the management team should also present their counter-proposals. For instance, the union pressure for a wage-hike may be matched by a counter demand for an increase in production, reduction in absenteeism, avoidance of wasteful/restrictive practices, industrial peace, and so on.

5. There is a greater necessity on the part of the management representatives to give a patient hearing to the demands of the union and not to react even if there is a threat of strike or work-stoppage. A rational well reasoned approach can achieve better results than an emotionally charged loud-mouthed approach.

6. It is also a bad strategy to depute persons of low rank without authority to establish having several plants and the workers employed in all these plants.

OR

Q.3. Write an essay in detail on "Industrial unrest" in India citing suitable examples. (10)

Ans. Industrial conflict is a struggle between two organized groups which are motivated by the belief that their respective interests are endangered by the self-interested behaviour of the other. Industrial relations may be harmonious or strained and acrimonious. In the latter case, there may be many causes which are rooted in historical, political and socio-economic factors, and in the attitudes of workers and their employers.

Causes of industrial unrest in India can be classified mainly under four heads they are:

(1) Financial Aspects:

(a) Demand for increase of wages, salaries and other perks. Workers demand goes on increasing with the increase in cost of living

(b) Demand for more perks, and fringe benefits. Issue of bonus also has become a contentious one, even though Bonus Act has come fixing minimum rate payable as 81.3% of their total salary in spite of profit or loss incurred by the industry.

(c) Incentives, festivals allowances, concessions etc. requires a hike every now and then, workers compare these benefits with other industries and demand them – without comparing the capacity of the industry where they are working.

(2) Non-Financial Aspects:

(a) Working hours, rest hours, traveling hours are source of disputes. If houses are provided some section of workers want to include travel time also as working hours.

(b) Introduction of machines, computers modernisation, and automation – In effect any act of management which may result in economy in man power is resisted.

(c) More facilities like free meals free group travel etc are sought every now and then

(3) Administrators Causes:

(a) Non implementation of agreements awards and other local settlements – with full spirit

(b) Stifling with recognition of labour unions though registered,

(c) Attempt to weaken existing trade unions and trying to foist fake unions

(d) An unhealthy working conditions

(e) Lack of skill on the part of leaders supervisors

(f) Disproportionate works loads, favouritism

(g) Victimisation, nepotism attitude of management in recruitment, promotion, transfer etc.

(h) Instead of re deployment or skill improvement easier way of retrenchment forced voluntary retirement schemes (C.R.S) are adopted.

(4) Government and Political Pressures:

(a) Industrial unions affiliating with political unions which are in power, resulting in frequent shift of loyalty and resultant unrest

(b) Politician influencing workers group closes examples is the Nalco – taken over by Sterlite, the state government supported (propped up) strike at Chhattisgarh state against Nalco, for months together resulting in total stoppage of the industry for some time.

(c) Sometime unions, workers strike against mergers, acquisition, taken over, disinvestments policies, of government and private sectors.

5. Other causes of strained relations:

(a) Refusal to have workers participation in the running of the industry.

(b) Non adherence to laid out standing orders grievances procedures

(c) Refusal to have free frank, and transparent collective bargaining.

(d) Sympathetic strike – a show of readership to workers of neighbouring industries, and conducting a token strike when they are in full strike. This may cause internal bitterness

Q.4. Define Workers participation in management & its significance in the context of Indian Economy. (10)

Ans. Workers Participation in Management: The word 'participation' means sharing the decision-making power with the lower ranks of the organization in an appropriate manner. Participation has a unique motivational power and a great psychological value. It promotes harmony and peace between workers and management. When workers participate in organizational decisions, they are able to see the big picture clearly, i.e., how their actions would contribute to overall growth of the company. They decisions significantly. Since they are involved in the decisions from the beginning, they tend to view the decisions as their own and try to translate the rhetoric into concrete action plans with zeal and enthusiasm. Participation makes them more responsible. They are willing to take initiative and contribute cost-saving suggestions and growth-oriented ideas. The feeling of being treated as equals, forces them to repose their confidence in management and accept plans of rationalization, expansion, etc., without raising serious objections. Since they are treated with respect now they begin to view

the job and the organization as their own and commit themselves to organizational activities wholeheartedly.

Output cannot be increased unless there is effective co-operation between labour and management at all levels. The way of ensuring this is to satisfy their social and psychological need besides economic ones. Workers participation in management is one of the most significant modes of resolving industrial conflicts and encouraging among workers a sense of belongingness in establishment where they work.

Participation may take two forms. It may be: (1) **Ascending participation**, and (2) **Descending participation**. In case of ascending participation, the workers may be given an opportunity to influence managerial decisions at higher levels through their elected representatives to joint councils or the board of directors of the company. But in descending participation, they may be given more powers to plan and to make decisions about their own work (e.g. delegation and job enlargement). This form of participation is quite popular in many organizations

In independent India, Several schemes have been developed and implemented by the Government of India to promote workers' participation in management.

OR

Q.4. What is a Trade Union? How can a Trade Union be made effective for securing good human relations in industry? Explain. (10)

Ans. Trade unions are voluntary organisations of employees or employers formed to promote and protect their interests through collective action. Though the terms employees and employers are used, when we say trade unions they generally refer to employees.

Employee associations constitute one of the stakeholders in Industrial relations. These associations are popularly known as trade unions. Trade unions are not confined to mere sticking and negotiating on behalf of workers. Their role is much wider.

Unions, for example, may make their presence felt in recruitment and selection. They may also decide who is to be hired and under what conditions. Unions can also play an important role in deciding who is to be promoted, given a new job assignment, sent for training, terminated or laid off. Many programmes which contribute to QWL and productivity are undertaken by the management in consultation with and with the co-operation of the unions. Unions decide wage and salary structure and negotiate revisions once in three or five years. Major unions have political affiliations too.

The effectiveness of any industrial relations system depends to a great extent on the attitude that unions and employers' organisations adopt towards each other. The intention in covering employers' organisations under the Trade Unions Act, 1926 was to place both workers' and employers' organisations on par in matters of rights and responsibilities. The principle of giving equal representation to capital and labour on all consultative bodies like the Indian Labour Conference, Standing Labour Committee and Industrial Committees recognises this basic tenant in employer-employee relationship.

Trade unions should be strengthened democratically so that they can understand and toe with the main stream of the national industrial activities. Organisational health can be diagnosed by methods evolved for grievance redressal and techniques adopted to reduce the rate of absenteeism and labour turnover and to improve the employee relations. Therefore Trade union by their effective working may achieve employee satisfaction. Therefore Trade unions help in reducing the rate of absenteeism, labour turnover and developing

systematic grievance settlement procedures leading to 46 harmonious industrial relations. Trade unions can thus contribute to the improvements in level of production, productivity and discipline thereby improving quality of work-life.

Q.5. List the benefits (in detail) available to the employees covered by the Employees State Insurance (ESI) Act 1948. (10)

Ans. The Employees State Insurance Act, 1948: It has been enacted with the objective to secure financial relief in cases of sickness, maternity, disablement, and provide medical benefits to employees of factories and establishments (and to their dependents). The act is also applicable to non-seasonal factories using power and employing 10 or more employees and factories not using power and employing 20 or more employees. Employees and employers contribute to the scheme and various benefits are given to eligible employees, such as :

- (i) Sickness Benefit- in cash
- (ii) Maternity Benefit- in cash
- (iii) Disablement Benefit- in cash
- (iv) Dependents Benefits- in cash
- (v) Funeral expenses – in cash
- (vi) Medical benefits- as service and kind

ESI scheme- a total security for workmen

1. Medical care	Primary, secondary and tertiary medical care with no cap on individual expenditure
2. Sickness benefit	91 days
3. Extended sickness benefit	730 days (upto 2 years) for specified 34 diseases
4. Maternity benefit	84 days + 1 month (due to complications arising out of pregnancy, confinement, premature birth of child etc.)
5. Permanent disablement/ temporary disablement benefit	Based on loss of earning capacity/as long as the disability lasts
6. Dependents' benefit	On the death of the insured person to the wife till she is alive/remarried and to family members as per conditions with regard to age/marriage
7. Rajiv Gandhi Shramik Kalyan Yojna (unemployment allowance)	50% of daily average wages up to 12 months unemployment on account of closure of factories, retrenchment or permanent invalidity of not less than 40% arising out of non-employment injury
8. Incentive scheme to employees for employing persons with disabilities	The employer's share of contribution is paid by government for 3 years for providing employment to persons with disabilities drawing monthly wages up to 25,000
9. Medical care to retired IPs	Medical facility available within Employee' State Insurance Corporation (ESIC) on payment of Rs. 120 per annum

OR

Q.5. Discuss in detail the employer's liability to pay compensation to the workman under Employees Compensation Act. (10)

Ans. The Workmen's Compensation Act, 1923: It is the earliest social security legislation in India enacted with the purpose of making the employer liable to pay compensation to employees who are affected by personal injury arising out of accidents. Compensation is payable for partial disablement

The Act is applicable to all the workers irrespective of their salaries, status-whether employed directly or through a contractor. When the monthly wage is more than Rs. 4000 it will be deemed as Rs. 4000 for the purpose of calculation of the compensation. The employer is liable to pay the compensation to the person or the dependents in case of death, personal injury resulting into total or partial disablement or occupational disease caused to a workman out of and in the course of employment.

To be eligible for compensation, the necessary and sufficient condition is that the injury must have arisen out of employment and happened during the course of employment. It also includes the time period of coming and returning from office. But the employer is not liable if the injury does not last for more than 3 days. Employer is also not liable for any injury not resulting in death or permanent disablement, caused by accident which is attributable to the worker, such as acting under the influence of drugs or alcohol, wilful disobedience of rules or order, or removal of safety devices provided for the purpose.

No compensation is paid directly to the employee or his dependents. The whole amount is to be deposited with the Workmen's Compensation Commissioner, who will disburse it to the person or distribute it among the dependents. The compensation is dependent on the salary last drawn, age of the employee (relevant factor), and in case of partial disablement loss of earning capacity is also taken into account.

SECOND TERM EXAMINATION [NOV. 2015]
FIFTH SEMESTER [B.TECH]
INDUSTRIAL MANAGEMENT [ETMS-311]

MM : 30

Time : 1½ hrs.

Note: Question No. 1 is compulsory, attempt any two question from the remaining.

Q.1.(a) Explain the concept of Work Study. What is THERBLIG? Explain in brief. (2)

Ans. International Labour Organization (ILO) defines work study as the technique of method study and work measurement employed to ensure the best possible use of human and material resources in carrying out a specified activity.

Work study is an important management tool to achieve higher productivity. It is related to human work, method of doing work and standard of performance. The survival of any organization is dependent on use of latest technology and efficient methods of production. To improve efficiency of production it needs effective utilization of plant, equipment and labour. This can be achieved by using work study which studies method and evaluates the performance. It divides work into smaller elements, studies it, and rearranges it to get same or greater efficiency at reduced cost.

The Gilbreths pioneered the study of manual motions and developed basic laws of motion economy that are still relevant today. On analysing the result of several motion studies conducted, Gilbreths concluded that any work can be done by using a combination of some or all of 17 basic motions, called Therbligs (Gilbreth spelled backward). These can be classified as effective therbligs and ineffective therbligs. Effective therbligs take the work progress towards completion. Attempts can be made to shorten them but they cannot be eliminated. Ineffective therbligs do not advance the progress of work and therefore attempts should be made to eliminate them by applying the Principles of Motion Economy.

Q.1. (b) Explain concept of Work Measurement. What are the benefits of Time Study? Explain in brief. (2)

Ans. Work measurement: It evaluates the contents of a job and the time taken by a worker to perform that job against predefined level of performance. Work measurement is possible only after the standardization of job.

Work measurement can be referred to as establishing the job contents by determining the time required to complete a job against a predefined standard of performance by a qualified and normal worker.

Benefits of Time Study: It is systematic process of directly observing and measuring human work to establish the time required for completion of the work.

Time study is a very flexible technique, suitable for a wide range of work performed under a wide range of conditions. It is a direct observation technique; it considers specific and special conditions but it does rely on the use of subjective process of rating.

Q.1. (c) Define Quality Control & its significance in brief. (2)

Ans. Quality Control: Quality control is a process which aims to prevent the defects and errors rather than finding out and then removing defects. Quality control can objectively be achieved with the help of statistical tools, their application and proper analysis.

Proper implementation of quality control ensures the following benefits to the organization:

- Overhead cost of labour and material is reduced due to fewer defects.
- Minimum generation of scrap and wastage.
- Consistent quality can be achieved.
- Less inspection, so the cost of quality maintenance decreases.
- All resources are optimally utilized.
- Better customer satisfaction.
- Improved employee morale.
- Better quality consciousness among employees.
- Productivity and efficiency increases.

Q.1. (d) What is Total Quality management? Explain its objectives in brief. (2)

Ans. TOTAL QUALITY MANAGEMENT: TQM can be defined as an organization-wide effort to develop systems, tools, techniques, skills and the mind-set to establish a quality assurance system that is responsive to the emerging market needs.

A good TQM programme consists of the following important elements:

- (a) Role of the top management
- (b) Employee involvement for continuous improvement
- (c) Tools & techniques for quality assurance & continuous improvement
- (d) Addressing the training requirements of employees

Q.1. (e) Define the term "Six Sigma". Briefly explain its methodology. (2)

Ans. Six-Sigma is a highly disciplined process that helps us focus on developing and delivering near-perfect products and services. The word *Sigma* is a statistical term that measures how far a given process deviates from perfection. The central idea behind Six Sigma is that if you can measure how many "defects" you have in a process, you can systematically figure out how to eliminate them and get as close to "zero defects" as possible and specifically it means a failure rate of 3.4 parts per million or 99.9997% perfect.

Features of Six-Sigma: Six Sigma's aim is to eliminate waste and inefficiency, thereby increasing customer satisfaction by delivering what the customer is expecting. Six-Sigma follows a structured methodology, and has defined roles for the participants. It is a data driven methodology, and requires accurate data collection for the processes being analyzed. It is about putting results on Financial Statements.

Six Sigma offers six major benefits that attract companies: Generates sustained success, Sets a performance goal for everyone, Enhances value to customers, Accelerates the rate of improvement, Promotes learning and cross-pollination, Executes strategic change.

Q.2. What is meant by method study? What are its objectives and importance? Explain in detail. (10)

Ans. Method study is a systematic approach to job design. It can be defined as the systematic recording and critical examination of existing and proposed methods of doing work, involving easier and more effective methods and reducing costs. There are certain situations and factors prevailing in the organization:

- When production cost is high and management wants to reduce cost due to high competition.

- Frequent and high level of materials movement and workers.
- Quality complaints increase beyond limit.
- Safety of workers and machines.
- Increase in overheads due to excessive overtime.
- Poor workmanship and working conditions.

The above factors create a situation where it becomes necessary to apply method study for survival and meeting the competition.

Objectives of Method Study

The objectives of method study are listed below.

- To analyse existing and suggested method of doing a task or work.
- To find out new suggested method, how it is better to increase productivity and to reduce cost.
- Increase in productivity and reduction in cost is achieved by way of reducing material handling and movements, thus reducing fatigue to workers.

- To achieve optimum utilization of inputs.
- To develop new methods and, thus, standards of performance.

The above objectives must be achieved with detailed analysis and by implementation of method study.

Significance of Method Study: Method study has got lots of advantages. It helps in increasing the overall profitability of the organization by enhancing productivity. It provides the following:

- Work/job/tasks are made simple.
- Provides cost-effective methods.
- Less fatigue to the workers/operators.
- The quality of product is improved.
- Better design of workplace and equipment.
- Improved work flow due to smooth and cost-effective material handling.
- Better utilization of resources, particularly of manpower.
- Overall higher productivity is achieved.
- Less wastages and scrap generation.
- Due to reduction in unproductive motions, production cycle time is reduced.

OR

Q.2. What is Motion Study? Explain in detail, the role of THERBLIG analysis in motion study. (10)

Ans. Motion study is a technique of analysing the body motions employed in doing a task in order to eliminate or reduce ineffective movements and facilitates effective movements. By using motion study and the principles of motion economy the task is redesigned to be more effective and less time consuming.

The Gilbreths pioneered the study of manual motions and developed basic laws of motion economy that are still relevant today. They were also responsible for the development of detailed motion picture studies, termed as Micro Motion Studies, which are extremely useful for analysing highly repetitive manual operations. With the improvement in technology, of course, video camera has replaced the traditional motion picture film camera.

Therbligs: On analysing the result of several motion studies conducted, Gilbreths concluded that any work can be done by using a combination of some or all of 17 basic therbligs and ineffective therbligs. These can be classified as effective completion. Attempts can be made to shorten them but they cannot be eliminated. Ineffective therbligs do not advance the progress of work and therefore attempts should be made to eliminate them by applying the Principles of Motion Economy.

Through various methods of Motion Study (Micro-Motion Study (movie film) and the Chronocyclegraph) the Gilbreths were able to examine the smallest of motions. The Therbligs would then be plotted on a Simo Chart (Simultaneous Motion Chart) along with the time each motion took. The sequences of motions of each hand were plotted, as was a foot, if used for pedal controls. Then, by examining the charts, one could determine which Therbligs were taking too long or which could be eliminated by rearranging the work. They could also identify periods of delay caused by either the tool/part layout.

Q.3. Discuss the meaning and significance of Work Measurement in an industrial enterprise. Explain the Stop Watch Method for Work Measurement. (10)

Ans. Work Measurement is the application of techniques designed to establish the time for a qualified worker to carry out a specified job at defined level of performance. It is concerned with the investigation and reduction of any ineffective time associated with it. Work measurement provides a scientific method of fixing production standards i.e. standard time for a job. Amount of time a particular task should take to accomplish is calculated to accomplish planning, determine performance, establish costs and improve productivity.

Significance: It has wide applications in the industry. The data collected through work measurement can be used for the below mentioned purposes.

(i) **Planning:** Work measurement data enables management to determine manpower requirement, future requirements of equipment & machines as well as number of machines a worker can conveniently handle and to understand start and end time of a particular process.

(ii) **Estimation of costs:** Manufacturing time is required to estimate labour cost. Similarly, indirect costs like depreciation, rent, power charges, fuel, salaries of staff and supervisors etc. depends on time.

(iii) **Cost reduction and Cost control:** Work measurement data is helpful to reduce or control cost. Efficiency can be improved if information of men, machine utilization and time lost by men and machine is available. It provides labour costs standards which help to control labour costs.

(iv) **Basis for incentive:** Work measurement data acts as basis for incentives to prepare for standards that needs to be achieved by worker.

(v) **Improvement in existing methods:** Work measurement data helps to bring improvement in existing methods by eliminating unnecessary activities those results into waste of time.

(vi) **Comparison of alternative methods:** When method study gives two or more alternatives which are equally advantageous, work measurement data helps to select one alternative.

(vii) **Sub-standard Workers:** Work measurement data helps to set standards like production per hour or per shift by worker. Management needs to take decisions about workers like training, transfer of old workers to light jobs, action against workers who purposely work slow, etc.

(viii) Measuring employee performances: Work measurement data is useful to check employee performance. It enables line management to find out if employee is making satisfactory progress, fully trained or training period should be extended or if worker is suitable for job offered.

Stop Watch Method: Time study is the technique of work measurement to establish time for a qualified worker to carry out specified task under specified conditions and at defined level of performance. Basic time study equipment consists of – a stop-watch, a study-board and time study forms.

The time study procedure consist of steps such as

- (i) Selection of Job
- (ii) Standardization of Method
- (iii) Select the operator for study
- (iv) Recording of details
- (v) Measure the duration of each element
- (vi) Calculating representative time of each element
- (vii) Convert observed time into normal time
- (viii) Calculate relaxation and other allowances
- (ix) Calculate Standard time. Time study can be performed depending on the accuracy of stopwatch method, time recording machine and motion picture camera.

OR

Q.3. Explain Taguchi's philosophy of TQM (Total Quality Management). Also explain the concept of service quality and state the dimensions of service quality.

(10)

Ans. Dr. Genichi Taguchi is a Japanese quality expert known for his work in the area of product design. Taguchi viewed quality as an issue for the entire company and focused on the use of statistical methods to improve quality, particularly in the area of product design. Two of his concepts are particularly significant:

- Design characteristics and "noise"
- The loss function

Total Quality Management: A management philosophy embracing all activities through which the needs and expectations of the CUSTOMER and COMMUNITY, and the objectives of the organization are satisfied in the most efficient and cost effective manner by maximizing the potential of ALL employees in a continuing drive for improvement."

Major benefits of TQM:

- Improves Quality of Product/Service
- Increase Productivity due to less rejects leading to faster job
- Lower Costs of products/services and consequently leads to higher profit
- Leads to Business Growth, strong Competitive position

The most important factor in the success or failure of TQM efforts is the genuineness of the organization's commitment. Often companies look at TQM as another business change that must be implemented due to market pressure without really changing the values of their organization. TQM is a complete philosophy that has to be embraced with true belief, not mere lip service. Looking at TQM as a short-term financial investment is a sure recipe for failure.

Another mistake is the view that the responsibility for quality and elimination of waste lies with employees other than top management. It is a "let the workers do it" mentality. A third common mistake is over- or under-reliance on statistical process control (SPC) methods. SPC is not a substitute for continuous improvement, teamwork, and a change in the organization's belief system. However, SPC is a necessary tool for identifying quality problems. Some common causes for TQM failure are:-

- Lack of a genuine quality culture
- Lack of top management support and commitment
- Over- and under-reliance on statistical process control (SPC) methods

Companies that have attained the benefits of TQM have created a quality culture. These companies have developed processes for identifying customer-defined quality. In addition, they have a systematic method for listening to their customers, collecting and analyzing data pertaining to customer problems, and making changes based on customer feedback.

Q.4. "Quality Control is a system of inspection, analysis and action applied to a manufacturing process". Discuss and explain this statement with examples from any manufacturing industry. (10)

Ans. Quality control is essential to building a successful business that delivers products that meet or exceed customers' expectations. It also forms the basis of an efficient business that minimizes waste and operates at high levels of productivity. A quality control system based on a recognized standard, such as ISO 9001 published by the International Organization for Standardization, provides a strong foundation for achieving a wide range of marketing and operational benefits.

Competitiveness: The ability to offer customers quality products provides a strong competitive advantage. Quality helps you to win business from competitors who are not able to match your standards and gives you the opportunity to charge premium prices for a superior product. It can also open new business opportunities in market sectors where quality is critical.

Customer Loyalty: Providing the market with quality products helps to increase customer satisfaction and loyalty. Satisfied customers have confidence that your products will continue to provide reliable performance in the future, and that increases the likelihood that they will buy from you again. Satisfied customers may also recommend your products to other companies, either directly or by providing testimonials that you can use in your marketing communications.

Reputation: Quality makes an important contribution to your company's reputation, particularly with the growth of social media. Customers share their views on products and services on product review sites and social media, such as Facebook. Positive reviews and comments can reinforce your own marketing efforts, but quality problems can have a damaging effect on your reputation if the word spreads. A major quality issue, such as a product recall, may also attract media attention, causing further damage.

Compliance: Compliance with recognized quality standards may be essential for doing business with certain groups of customers. If you are part of a supply chain, for example, the lead manufacturer may impose consistent quality standards on all members of the chain. Some customers aim to reduce or eliminate the cost of inspecting incoming components or materials by insisting that their suppliers implement the same quality system. If you operate in a regulated sector, such as chemicals or food, you may have to comply with industry quality standards.

Costs: Quality control can help to reduce your production and product support costs. A quality control system helps to lower levels of waste and rework, cutting costs and improving productivity and production efficiency. Delivering quality products can also reduce the number of returns you have to handle or the cost of repairing or servicing products in the field.

Q.5. Write short notes on following

- (a) Quality Circle (b) Kaizen (c) Benchmarking (d) Name and Types of
 Manufacturing Activity Chart

Ans. (a) Quality Circle: Kaoru Ishikawa, The father of Quality Control (also called Quality Circle), defines it as "a small group to perform voluntary quality control activities within the same workshop."

Quality Circle has been defined by the International Association of Quality Circle (IAQC) as a group of factory workers from some workers who usually meet for an hour each week to discuss their quality problems, investigate causes, recommend solutions and takes corrective action within the same workshop.

Quality Circles allow workers to participate, make suggestions and solve quality problems. Most of their suggestions are implemented without much hassle. As the product quality improves, so does the company's reputation in the world and as a result the sales generally increase.

(b) Kaizen: Continuous improvement in quality, technology, processes, company culture, productivity, safety and leadership can be achieved by the concept of 'kaizen'

The word 'kaizen' means continuous improvement. It comes from the Japanese words "Kai" which means "change" or "to correct" and "zen" which means good.

Kaizen is a system that involves every employee from upper management to the cleaning crew. Everyone is encouraged to come up with small improvement suggestions on a regular basis. This is not once a month or once a year activity. It is continuous. In the Japanese companies such as Toyota and Canon, a total of 60-70 suggestions per year are written down, shared & implemented.

Kaizen is based on making little changes on a regular basis: always improving productivity, safety and effectiveness while reducing waste. Suggestions are not limited to a specific area such as production or marketing. Kaizen is based on making changes anywhere that improvements can be made. Western philosophy may be summarized as, "if it ain't broke, don't fix it." The kaizen philosophy is to "do it better, make it better, improve it even if it isn't broken, because if we don't, we can't compete with those who do."

Quality circles, Automation, suggestion systems, just-in-time delivery, Kanban and 5S are all included within the Kaizen system of running a business.

Kaizen involves setting standards and then continually improving those standards. To support the higher standards kaizen also involves providing the training, materials and supervision that is needed for employees to achieve the higher standards and maintain their ability to meet those standards on an on-going basis.

(c) Benchmarking: Benchmarking process is defined as "a systematic way to identify superior products, services, processes and practices that can be adopted into an organisation to reduce costs, decrease cycle time, cut inventory and provide greater satisfaction to customers."

Objectives: It aims at a goal setting process to facilitate comparison with the best.

It aims at motivating and stimulating company employees by continuously working for improved performance and turns their entire energy towards single focus.

It aims at external orientation of the company.

BENCHMARKING PROCESS

5-step methodology for conducting a benchmarking study in an organization:

1. PLAN PHASE: What can be benchmarked? Almost everything can be benchmarked like manufacturing methodologies, inventory control and management, warehousing and delivery services, quality systems, marketing techniques, product development process, understanding and collecting customer needs, process of quick design and introduction to market.

To whom or what shall we compare? Identify the world-class or leading edge companies that have a similar product or process. These are businesses or processes of our direct product competitors. But they are not enough benchmarking must be conducted against leadership companies and business functions regardless of where they exist.

Determine data collection method and collect data, there are indefinite variety of ways to obtain the required data. Methods of data collection may include primary and secondary data sources. Data collection is done using a structured questionnaire & interviews with some executives. Site visits are also undertaken. One major problem that generally arises in benchmarking practice is the unwillingness on the part of the competitor to provide detailed information.

2. ANALYSE: The analysis phase encompasses two steps: a) determine current performance gap and b) project future performance levels.

Determine the current performance gap: The benchmarking process is a comparative analysis. What is desired is an understanding of internal performance on which to assess strengths and weaknesses. Are the benchmarking partners better? Why are they better? By how much? What best practices are being used now? How can their practices be incorporated or adopted for implementation? Answers to these questions will be the dimensions of any performance gap: negative, positive or parity. The gap provides an objective basis on which to act to close the gap or capitalise on a positive note.

What is needed is not only an understanding of today's practices but also an understanding of where performance will be in future. The benchmarking should be continuous process so that performance is constantly recalibrated to ensure superiority.

3. INTEGRATION: Integration is the process of using benchmark findings to get operational targets for change.

(A) *Communicate benchmark findings and gain acceptance;* benchmark findings must be communicated to all organisational levels to obtain support, commitment and ownership.

(B) *Establish functional goals.* On the basis of communicated data and acceptance of analysis, we should develop the functional goals and achieve them through the benchmarking process.

4. ACTION: After the integration phase, action phase starts. It has two steps as follows:

(a) *Implement specific action and monitor progress.* After implementing the plans, one has to periodically assess and report the progress.

(b) *Recalibrate benchmarks.* The updating may require the recalibration of the competitive benchmarking data. It should be sufficient to indicate what is happening as a result of your actions.

5. MATURITY: Maturity would be reached when best industry practices are incorporated in all business processes, thus ensuring superiority. Superiority can be tested in several ways, for example when services are sold to external customers in addition to serving the internal customers.

Q.5. (d) Name and type of multiple activity chart.

Ans. A chart showing the coordinated synchronous or simultaneous activities of a work system comprising one or more machines or individuals;

Recording Techniques in Method Study- :**Process Charts**

1. Outline Process chart (or operation process chart)
2. Flow Process chart (Man type; Material type; Equipment type)
3. Multiple activity chart
4. Two handed process chart (or Left hand-Right hand chart)
5. SIMO chart (Simultaneous Motion Cycle chart)

(i) Outline Process Chart : Gives bird's eye view of the process; considers only main operations and inspections

(ii) Flow Process Chart: Detailed version of operation process chart shows the "OTIDS" Operation (transforms or performs work that the customer may see as Value which is the product or service Function at a Cost); Transport/Move; Inspection/Check; Delay/Wait and Store/File. Recent "OTIDS" have added another D being Decision to become "OTIDDS".

Person type – Sequence of activities performed by worker

Material type – Sequence of activities performed on material

Equipment type – Sequence of activities performed by equipment

(iii) Multiple Activity chart: Activities of more than one man or machine are recorded on a common time scale

(iv) Two handed Process chart: Activities performed by two hands of worker are recorded on a common time scale

(v) SIMO chart : Detailed version of two handed process chart (micro motion study)

END TERM EXAMINATION [DEC. 2015] FIFTH SEMESTER [B.TECH] INDUSTRIAL MANAGEMENT [ETMS-311]

Time : 3 Hours

M.M. : 75

Note: Attempt any five questions including Q.No. 1 which is compulsory. Select any one question from each unit.

Q.1. Write short notes on any five of the following: (5x5=25)

Q.1. (a) Industrial harmony

Ans. Industrial Harmony: It is a situation where the employees and management cooperate willingly for the company's objective. When the workers and management in an industry work hand in hand, without any friction Industrial Harmony can be achieved. Even if there are differences of opinion the same are sorted in an atmosphere of mutual trust and confidence.

Measures to achieve industrial harmony: Emphasis should be laid on measures for securing and preserving unity and better relations between workers and employers. Workers participation at all levels should be sought and encouragement on the adoption of the give and take principle in collective bargaining should be given.

Arrangement should be made to probe and settle industrial dispute between employer employee or employer and employer or employee and employee, give proper representation to workers union and industrial federations of employers. Both the ultimate weapons of employers and employee - strike and lock out should be prevented at any cost. Proper relief to workers after lock out or lay off through government agencies should be provided.

Q.1. (b) Collective Bargaining:

Ans. Collective Bargaining: Collective bargaining is a method by which trade unions protect and improve the conditions of their members working lives. Collective bargaining brings the employer and the employees around one table to discuss and settle many contentious issues effectively. It enables both the parties to know each other and their views, and to define their rights and obligations regarding terms of employment, working conditions, etc., through negotiations, discussions and bargains.

Forms of Collective Bargaining: At the outset it should be stated that there is a great deal of variation in the collective bargaining practices ranging from an informal oral agreement to very formal and detailed agreement.

Collective Bargaining takes the following forms:

(i) It may be a single plant bargaining, that is, bargaining may be between a single trade union. This type of collective bargaining prevails in the United States and India.

(ii) It may be a multiple plant bargaining, that is, bargaining may be between a single factory or establishment having several plants and the workers employed in all these plants.

(iii) It may be a multiple employer bargaining, that is, bargaining between all the trade unions of workers in the same industry through their federal organizations, and the employer's federation. This is possible both at the local and regional levels and is generally resorted to in the textile industry.

Q.1. (c) Worker's participation in Management.

Ans. Workers Participation In Management : The word 'participation' means sharing the decision-making power with the lower ranks of the organization in an appropriate manner. Participation has a unique motivational power and a great psychological value. It promotes harmony and peace between workers and management. When workers participate in organizational decisions, they are able to see the big picture clearly, i.e., how their actions would contribute to overall growth of the company. They can offer feedback immediately based on their experiences and improve the quality of decisions significantly. Since they are involved in the decisions from the beginning, they tend to view the decisions as their own and try to translate the rhetoric into concrete action plans with zeal and enthusiasm. Participation makes them more responsible. They are willing to take initiative and contribute cost-saving suggestions and growth-oriented ideas. The feeling of being treated as equals, forces them to repose their confidence in management and accept plans of rationalization, expansion, etc., without raising serious objections. Since they are treated with respect now they begin to view the job and the organization as their own and commit themselves to organizational activities wholeheartedly.

Output cannot be increased unless there is effective co-operation between labour and management at all levels. The way of ensuring this is to satisfy their social and psychological need besides economic ones. Workers participation in management is one of the most significant modes of resolving industrial conflicts and encouraging among workers a sense of belongingness in establishment where they work.

Participation may take two forms. It may be: (1) ascending participation, and (2) descending participation. In case of ascending participation, the workers may be given an opportunity to influence managerial decisions at higher levels through their elected representatives to joint councils or the board of directors of the company. But in descending participation, they may be given more powers to plan and to make decisions about their own work (e.g. delegation and job enlargement). This form of participation is quite popular in many organizations.

Q.1. (d) Different types of Strike

Ans. Strike is a very powerful weapon used by trade unions and other labour associations to get their demands accepted. It generally involves quitting of work by a group of workers for the purpose of bringing the pressure on their employer so that their demands get accepted. When workers collectively cease to work in a particular industry, they are said to be on strike.

Strike action, also called labour strike, on strike, greve (of French: grève), or simply strike, is a work stoppage caused by the mass refusal of employees to work. A strike usually takes place in response to employee grievances. No doubt strike is the ultimate weapon in the hands of worker and labour laws also support strikes if it does in accordance with law.

TYPES:

(1) **Economic Strike:** Under this type of strike, labours stop their work to enforce their economic demands such as wages and bonus. In these kinds of strikes, workers ask for increase in wages, allowances like traveling allowance, house rent allowance, dearness allowance, bonus and other facilities such as increase in privilege leave and casual leave.

(2) **Sympathetic Strike:** When workers of one unit or industry go on strike in sympathy with workers of another unit or industry who are already on strike, it is called a sympathetic strike. The members of other unions involve themselves in a strike to

support or express their sympathy with the members of unions who are on strike in other undertakings. The workers of sugar industry may go on strike in sympathy with their fellow workers of the textile industry who may already be on strike.

(3) **General Strike:** It means a strike by members of all or most of the unions in a region or an industry. It may be a strike of all the workers in a particular region of industry to force demands common to all the workers. These strikes are usually intended to create political pressure on the ruling government, rather than on any one employer. It may also be an extension of the sympathetic strike to express generalized protest by the workers.

(4) **Sit down Strike:** In this case, workers do not absent themselves from their place of work when they are on strike. They keep control over production facilities. But do not work. Such a strike is also known as 'pen down' or 'tool down' strike. Workers show up to their place of employment, but they refuse to work. They also refuse to leave, which makes it very difficult for employer to defy the union and take the workers' places. In June 1998, all the Municipal Corporation employees in Punjab observed a pen down strike to protest against the non-acceptance of their demands by the state government.

(5) **Slow Down Strike:** Employees remain on their jobs under this type of strike. They do not stop work, but restrict the rate of output in an organized manner. They adopt go-slow tactics to put pressure on the employers.

(6) **Hunger strike:** in this form of industrial protest, workmen resort to fasting near the workplace in order to demand the employer to redress their grievances.

On 18, July, 2012, India's leading car manufacturer Maruti Suzuki Udyog Ltd in Manesar factory workers in an agitation at factory an HR manager was burned to death by workers, they made severe damage to company's property and hurt severely several other workers. Thereby MSUL (Maruti Suzuki Udyog Ltd) sacked all of its workers who ever involved in that incident and filed a police complaint against those employees on 8, November, 2012, few workers who were dismissed but claimed that they were not involved resorted to hunger strike demanding to reinstate them.

(7) **Wild cat strikes:** These strikes are conducted by workers or employees without the authority and consent of unions. In 2004, a significant number of advocates went on wildcat strike at the City Civil Court premises in Bangalore. They were protesting against some remarks allegedly made against them by an Assistant Commissioner.

Q.1. (e) Quality-Circles:

Ans. Quality-Circles: Karou Ishikawa, The father of Quality Control (also called Quality Circle), defines it as "a small group to perform voluntary quality control activities within the same workshop."

Quality Circle has been defined by the International Association of Quality Circle (IAQC) as a group of factory workers from some workers who usually meet for an hour each week to discuss their quality problems, investigate causes, recommend solutions and takes corrective action within the same workshop.

Quality Circles allow workers to participate, make suggestions and solve quality problems. Most of their suggestions are implemented without much hassle. As the product quality improves, so does the company's reputation in the world and as a result the sales generally increase.

Q.1. (f) Predetermined Motion Time Study (PMTS).

Ans. Predetermined Motion Time Study (PMTS): These systems utilize the time study and micro motion techniques of the earlier techniques to determine and assign times to specified basic motions. It is a work measurement technique whereby time

established for basic human motions are used to build up the time for a job at a defined level of performance. PMTS is also called as Predetermined Time Standards (PTS). The motions and associated times are catalogued. Work measurement then becomes a matter of establishing the best basic motion pattern to perform a certain task and, from the catalogue or data card, assigning the appropriate predetermined time for each basic motion in that pattern. Since times for all motions are predetermined, it is possible to accurately predict future task times.

Of all the predetermined motion time systems, the most well-known is Methods-Time Measurement (MTM). Because it is a very detailed system and in the public domain, MTM has been recognized as the most accurate and widely accepted predetermined motion time system in use today. The MTM system has a detailed data card of basic motions (reach; Move; Grasp; Position; Release; body, leg, and foot motions; and so on), each concerned with particular variables. Basic motions are identified, and with the variables considered the appropriate times are chosen from the data card. Because of its detail, MTM can be a very exact system and also very slow to apply. Also, basic motion distances must be accurately measured and correctly classified because of the detail, applicator errors can be a problem.

MTM measures time in Time measurement Unit (TMU) and $1 \text{ TMU} = 0.0006$ minutes. MTM analyses an industrial job into basic human movements and standard time can be calculated by adding suitable allowances.

Synthesized versions or levels of MTM have been developed to reduce applicator errors and the time of analysis known as MTM-1, MTM-2 and MTM-3.

Q.1. (g) Sources of funding trade union activities in India.

Ans. Sources of funding trade union activities in India: India has the largest number of trade unions, yet their growth and effectiveness have not been very significant. Some of the primary reasons among them being their small size and financial insecurity. The small size of trade unions is an outcome of the Indian Trade Unions Act of 1926, which allows a large number of small unions to be registered. With multiple unions operating, the size gets reduced and with inter-union rivalry taking centre stage, new employees, shy away from becoming members.

The membership fee, which is the major source of revenue for the Indian trade unions, is low, given the low per capita income of the workers. More often than not "ad hoc" payments are made rather than regular payments. They do not get any financial support from any agency, as opposed to the situation in America, where the National Federation of Central America makes regular contributions. The insufficiency of funds affects their working, and their organization is dependent on honorary workers whose time availability to focus exclusively on workers' interest is limited.

Q.1. (h) Six-sigma.

Ans. Six-sigma: Six Sigma is a data driven method for achieving near-perfect quality through use of various quality tools. It is a disciplined effort that examines precisely a company's processes. Six Sigma eliminates the human element of decision-making based on intuition and for experience by quantifying issues and using statistics as a tool for interpretation and classification of data.

Six-Sigma is a customer focused philosophy that was first developed in Motorola. It is based on a comprehensive understanding of customers and the market. It reduces wasted efforts and is treated as a powerful tool for customer satisfaction and for increasing profits.

UNIT I

Q.2. Explain various internal and external factors that affect the industrial relations?

Ans. Industrial Relations is concerned with the systems, rules and procedures used by unions and employers to determine the reward for effort and other conditions of employment, to protect the interests of the employed and their employers, and to regulate the ways in which employers treat their employees.

It is necessary to have a clear cut strategy for IR, although the management of IR is essentially a knee-jerk reaction to events and problems. But the reactive strategy cannot continue for long. Growing competition, difficult economic environment, rising labour costs, and low productivity compel business leaders to plan proactive strategies towards IR.

Factors affecting IR: Two sets of factors, internal as well external, influence Industrial relations.

The internal factors are:

1. The attitudes of management to employees and unions.
2. The attitudes of employees to management.
3. The attitudes of employees to unions.
4. The extent to which the management can or wants to exercise absolute authority to enforce decisions affecting the interests of employees.
5. The inevitability of the differences of opinion between management and unions.
6. The present and likely future strength of the unions.
7. The extent to which there is one dominating union or the existence of multiple unions leading to inter-union rivalry.
8. The extent to which effective and agreed procedures for discussing and resolving grievances or handling disputes exist within the company.
9. The prosperity of the company, the degree to which it is expanding, stagnating or running down and the extent to which changes are likely to affect employment conditions and opportunities.
10. The effectiveness of managers and supervisors in dealing with problems and disputes related to IR.

The external factors affecting IR are:

1. The militancy of unions-nationally or locally.
2. The legal framework within which IR exists.
3. The employment and pay situation-nationally and locally.
4. The effectiveness of any national or local procedure agreements that may exist.
5. The extent to which bargain is carried out at national, local or plant level.
6. The authority and effectiveness of the employers' association.
7. The effectiveness of the union and its officials and the extent to which the officials can and do control the activities of supervisors within the company.

Q.3. Critically analyse the role of International Labour Organization (ILO) in promoting welfare of working class.

Ans. International Labour organization is the specialized agency of the United Nations (UN) dedicated to improving labour conditions and living standards throughout the world.

The functions of the ILO include the development and promotion of standards for national legislation to protect and improve working conditions and standards of living. The ILO also provides technical assistance in social policy and administration and in workforce training; fosters cooperative organizations and rural industries; compiles labour statistics and conducts research on the social problems of international competition, unemployment and underemployment, labour and industrial relations, and technological change (including automation); and helps to protect the rights of international migrants and organized labour.

The I.L.O Conventions and Recommendations have been greatly honoured by the working class all over the world for their humanitarian benefits and missionary zeal. These I.L.O standards are considered the embodiment of social justice by the underprivileged, a magna carta of their liberty and proclamation of their freedom and dignity against tyranny, whether social or economic or political.

It can be mentioned here that the I.L.O standards have been ratified by all the countries irrespective of their political complexions or economic development and also varying forms and number depending upon many factors. India is also greatly benefited by the I.L.O standards for the welfare of the workers.

The following Conventions/Recommendations of I.L.O. are important in recurring to basic human rights.

- (a) Freedom of association and protection of the right to organise.
- (b) Forced labour
- (c) Equality of opportunity and treatment

Freedom of Association and Protection of the Right to Organise Convention (No.87) 1948: This Convention provides that workers and employers shall have the right to establish and join organizations of their own choosing without previous authorization. The public authorities are to refrain from any interference which would restrict the right to form organisation or impede its lawful exercise. These organizations shall not be liable to be dissolved or suspended by administrative authority. It also provides protection against act of anti-union discrimination in respect of their employment. This convention has been ratified by Albania, Argentina, Austria, Belgium, Brazil, Byelorussia, Cuba, Denmark, Dominican Republic, Finland and France. Federal Republic of Germany and India have not ratified this particular convention. As regards the Trade Unions Act, 1926, it limits the number of outsiders in the executive of a trade union. Further there is restriction on outsiders in the federations of Government servants who cannot affiliate themselves with any central federations of workers.

Right to organise and collective bargaining convention (No.98) 1949: This convention enjoins on workers to join or not to join union with full freedom without fear of dismissed. It calls upon the member states to create conditions and institutions for promoting land ensuring the right to organise, negotiate between employers and workers organizations with a view to the regulation of terms of employment and conditions of employment by means of collective agreement. In India the right to collective bargaining has been greatly impinged by compulsory adjudication which leaves little chance or scope for collective bargaining in the industry. Moreover, the freedom of negotiation and bargaining is substituted by governmental circumventory procedures of compulsory conciliation and adjudication. Politicization of trade unions has impeded the growth of collective bargaining in India and the government using trade unions as pawns in their political game, do not like to promote collective bargaining. The Bombay Industrial Relations Act, 1947, the Madhya Pradesh Industrial Relations Act, 1960, the Code of Discipline in Industry, 1958 make half-hearted attempts for promoting collective bargaining yet the philosophy of these measures is shadowed by the spirit of compulsory adjudication. They are merely facade of collective bargaining.

Abolition of Forced Labour Convention (convention 105, 1957): It may be said that Article 23 of the Indian Constitution prohibits forced labour or involuntary labour and so an indirect constitutional compliance of the above convention. However, Article 23(2) empowers the state government to impose it compulsory for public purposes like flood and other national calamities.

Convention and Recommendations concerning Equity of Opportunity and Treatment
Equality in the matters of employment opportunities and treatment and in particular prevention of any discrimination on the grounds of sex, race, religion or place of birth, forms a golden rule of social justice.

UNIT II

Q.4. "The obstacles to the development of Trade Union in India are largely internal; they come from labour itself". Elucidate. (12.5)

Ans. Trade union movement in our country was started during the first quarter of the 20th century. Trade union movement has been on a decline in our country.

Workers associations in our country are highly fragmented and the consequence has been the multiplicity of trade unions. Multiplicity is caused by ideological rifts, personal ambition of leaders, craft division among workers, and the management's own myopia. The number of unions in some organisations is truly mind-boggling.

The shortcomings or the weakness of the trade union movement in India have been manifold namely the lack of balanced growth, low membership, poor financial position, political control, multiplicity of unions, inter-union rivalry, lack of able leaders, lack of recognition, opposition from employers and indifferent attitude of members.

It is too well known, that the federations of the unions are affiliated to one political party or the other, the unions were more engrossed in toeing the lines of their political bosses than protecting workers' interests.

Unions seem to relish affiliations. They are now formed on the basis of religion and caste. This is indicative of the current socio-political realities. One of the defects of the trade union movement in our country has been the phenomenon of outside leadership. Individuals who were not connected with a factory would assume the leadership mantle of the union. The clout of the central trade unions, which peaked during post nationalisation years, has started waning. Unions must come out with innovative ideas to regain their lost ground. To avoid self-decline, unions need to think harder about what they are good at and how to serve their services. This will mean moving beyond bargaining that was once their main purpose.

Q.5. Give a historical perspective on origin and growth of trade unionism in India. (12.5)

Ans. Trade union movement in our country has a century-long history. The first quarter of the last century saw the birth of the trade union movement, but the seeds of the movement were sown much earlier. The growth of trade unions in India has passed through a few distinctive phases, paralleling the political and economic development in the country.

The Pre-Independence Phase: The earliest known trade unions in India were the Bombay Millhand's Association formed in 1890. The trade-union movement began in India after the end of the First World War. All India Trade Union Congress was formed in 1920 on a national basis; the Central Labour Board, Bombay and the Bengal Trades Union Federation were formed in 1922. The Indian government passed the Trade Unions Act in 1926, which legalized the registered trade unions in India. The All India Trade Union Congress (AITUC) is the oldest trade union in India.

The First Post-Independence Phase: The first decade (1950-mid-1960s) corresponds to an era of State planning and import substitution, when public-sector employment and public-sector unionism rose phenomenally. The nationalist Indian National Trade Union Congress (INTUC) and the communist All India Trade Union Congress (AITUC). State intervention in the determination of wages and working conditions was the norm.

The Second Post-independence Phase (Mid-1960s-1980)

The 1960s to the 1980s represented the second post-independence growth phase of trade unions, characterized by:

- A period of economic stagnation and political turmoil.
- The emergence of many more unions.
- Employment slow down
- Inter-union rivalry
- An increase in industrial conflicts
- Pressure on centralized bargaining
- The railway strike of 1974 and severe curbs during emergency

The Third Post-independence Phase (1980-Pre-liberalization Era)

- Period of segmented and uneven economic growth
- Decentralized bargaining and independent trade unionism.
- Bangalore PSU strike and Mumbai textile workers' strike
- Inter-state and inter-regional variations in labour-management relations

The Fourth Post-independence Phase (Post-liberalization Era)

- Stabilization and structural adjustments
- Demands for labour market flexibility
- Recruitment freeze in public sector
- Right sizing of manpower through VRS
- Reducing the role of unions

As of today, there are more than 50,000 registered unions and most of them are affiliated to one or the other central trade union.

UNIT III

Q.6. Explain the theory of work sampling with the help of examples and its uses. (12.5)

Ans. Work Sampling was pioneered by L.H.C. Tippet in a British Textile Mill. It is a work measurement technique that randomly samples the work of one or more employees at periodic intervals to determine the proportion of the total operation that is accounted for in one particular activity. Work sampling is less expensive than time study, but it usually offers less precision. Work Sampling is usually preferred when many workers perform a single operation that is spread out over a large geographic area.

It is defined as a technique in which a statistically competent number of instantaneous observations are taken, over a period of time, of a group of machines, process or workers. Each observation records what is seen to happen and the percentage of observations recorded for a particular activity or delay is a measure of percentage of time observed by the occurrence. It is a method of finding the percentage occurrence of certain activity by statistical sampling and random observations.

These studies are frequently used to estimate the percentage of employees time spent in such activities as these: unavoidable delays, repairing finished products from an operation; or supplying material to an operation. The results of these studies are commonly used to set allowances used in computing labour standards, in estimating cost of certain activities, and in investigating work methods. Work sampling is also used to set a labour standard, which are used as benchmarks against which actual performance is measured. The objective is to improve labour productivity.

Work sampling can be applied and used for :

1. Work sampling data provides useful information on delays and interruptions in work process which helps to simplify work process.
2. Allowances that cannot be measured using time study method as they are small and infrequent can be economically measured by work sampling method.
3. Work sampling is used to measure the work load of heterogeneous work that involves long cycle jobs.
4. The information derived from work sampling can be used to compare the efficiency of two departments, to provide for a more equal distribution of work and reasons behind ineffective time.

Q.7. Explain the concept, definition, scope and component of method study. (12.5)

Ans. Method Study is the systematic recording and critical examination of existing and proposed ways of doing work. It is concerned with the reduction of work content of a job or operation.

Procedure of method analysis

1. Make an initial investigation of the operation under consideration.
2. Decide what level of analysis is appropriate.
3. Talk with workers, supervisors, and others who are familiar with the operation. Get their suggestions for better ways to do work.
4. Study the present methods. Use process charts, time study and appropriate techniques of analysis.
5. Apply the questioning attitude and the suggestions of others. Devise a new proposed method by using process charts and other appropriate techniques of analysis.
6. Use time study if necessary. Compare new and present methods. Obtain supervisors' approval to proceed.
7. Modify the proposed method as required after reviewing the details with workers and supervisors.
8. Train one or more workers to perform the proposed method on a trial basis. Evaluate the proposed method. Modify the method as required.
9. Train workers and install the proposed method.
10. Check periodically to ensure that the expected savings are being realized.

In performing method analysis, certain diagrams and charts can be useful.

Diagrams and Charts: Flow diagrams and Process charts are the most versatile techniques available for analysing work methods. They are usually used together to eliminate or reduce delays, eliminate or combine tasks, or reduce travel time or distance.

Multiactivity Charts: Show how one or more workers work together and/or with machines. A worker and machine chart, for example, could show how a clerk in a grocery store works with a customer and with a coffee-grinding machine to produce ground coffee

for the customer. These charts are helpful for minimizing worker and machine delay and for determining the optional number of machines per worker.

UNIT IV

Q.8. What do you mean by Taguchi's Philosophy? Explain "Loss Function" proposed by Taguchi. (12.5)

Ans. Dr. Genichi Taguchi is a Japanese quality expert known for his work in the area of product design. Taguchi viewed quality as an issue for the entire company and focused on the use of statistical methods to improve quality, particularly in the area of product design. Two of his concepts are particularly significant:

- Design characteristics and "noise"
- The loss function

He estimated that as much as 80 percent of all defective items are caused by poor product design. Taguchi stressed that companies should focus their quality efforts on the design stage, as it is much cheaper and easier to make changes during the product design stage than later during the production process. Taguchi is known for applying a concept called *design of experiment* to product design. This method is an engineering approach that is based on developing robust design, a design that results in products that can perform over a wide range of conditions.

Taguchi's philosophy is based on the idea that it is easier to design a product that can perform over a wide range of environmental conditions than it is to control the environmental conditions.

Taguchi has also had a large impact on today's view of the costs of quality. He pointed out that the traditional view of costs of conformance to specifications is incorrect, and proposed a different way to look at these costs.

Dr. Taguchi's view of quality costs.

Conformance to specification specifies a target value for the product with specified tolerances, say 5.00 ± 0.20 . According to the traditional view of conformance to specifications, losses in terms of cost occur if the product dimensions fall outside of the specified limits. However, Dr. Taguchi noted that from the customer's view there is little difference whether a product falls just outside or just inside the control limits. He pointed out that there is a much greater difference in the quality of the product between making the target and being near the control limit. He also stated that the smaller the variation around the target, the better the quality. This is called the Taguchi loss function.

He postulated the concept of a Loss Function, which measures the social cost of deviating from a target value.

$$\text{The Loss} = L = D^2 C$$

Where D is the deviation from the target and C is the cost to society due to the deviation.

According to the function, smaller differences from the target result in smaller costs: the larger the differences, the larger the cost. The Taguchi loss function has had a significant impact in changing the view of quality cost.

Q.9. (a) Define quality and explain various dimensions of quality. (7.5)

Ans. The term "Quality" has been defined in various ways by various persons. However, to be very precise, the definition of quality given by American Society for Quality Control (ASQC) is...

"The totality of features and characteristics of a product or service, that bears on its ability to satisfy given needs."

Dimensions of quality: An alternative method to define quality is to understand its various dimensions. Garvin proposed that quality has eight dimensions.

(a) **PERFORMANCE:** It relates to operational characteristics of the product. An industrial cooling application, for instance, requires that the fan be operational for a certain duration, without stopping at a particular temperature.

(b) **FEATURES:** In addition to meeting the basic performance requirements of the product features provide additional attributes that enhance the quality.

(c) **RELIABILITY:** The expectation that the product will perform satisfactorily for a period of time is known as reliability. For instance, if a two-wheeler performs without any major repair or maintenance for five years, it may indicate a certain level of reliability.

(d) **CONFORMANCE:** Meeting the specifications and standards of design.

(e) **DURABILITY:** How long a product lasts before it requires a replacement?

(f) **SERVICEABILITY:** The ease with which the product can be serviced.

(g) **AESTHETICS:** Customers also value the aesthetics of the product. One can relate this idea to the various feel good factors that a customer evaluates before making a choice of say competing brands of passenger cars.

(h) **SAFETY:** Safety aspects denote the assurance to the customer that there are no hazards to the customer that there are no hazards in using the product.

Q.9. (b) Give critical perspectives on TQM philosophy. (5)

Ans. ISO 8402, 1994 defines total quality management (TQM) as a management approach of an organization's control on quality, based on the participation of all its members and aiming at long-term success.

In other words TQM is a management philosophy embracing all activities through which the needs and expectations of the CUSTOMER and COMMUNITY, and the objectives of the organization are satisfied in the most efficient and cost effective manner by maximizing the potential of ALL employees in a continuing drive for improvement."

Major benefits of TQM:

- Improves Quality of Product/Service
- Increase Productivity due to less rejects leading to faster job
- Lower Costs of products/services and consequently leads to higher profit
- Leads to Business Growth, strong Competitive position
- Adopting the TQM philosophy makes an organization more competitive
- Establishes a culture which will enable growth and longevity

Why TQM initiatives fail?

The most important factor in the success or failure of TQM efforts is the genuineness of the organization's commitment. Often companies look at TQM as another business change that must be implemented due to market pressure without really changing the values of their organization. TQM is a complete philosophy that has to be embraced with true belief, not mere lip service. Looking at TQM as a short-term financial investment is a sure recipe for failure.

Another mistake is the view that the responsibility for quality and elimination of waste lies with employees other than top management. It is a "let the workers do

it mentality. A third common mistake is over- or under-reliance on statistical process control (SPC) methods. SPC is not a substitute for continuous improvement, team work, and a change in the organization's belief system. However, SPC is a necessary tool for identifying quality problems. Some common causes for TQM failure are

- Lack of a genuine quality culture
- Lack of top management support and commitment
- Over- and under-reliance on statistical process control (SPC) methods

Companies that have attained the benefits of TQM have created a quality culture. These companies have developed processes for identifying customer-defined quality. In addition, they have a systematic method for listening to their customers, collecting and analysing data pertaining to customer problems, and making changes based on customer feedback.

FIRST TERM EXAMINATION FIFTH SEMESTER B.TECH. [SEPT. 2016] INDUSTRIAL MANAGEMENT (ETMS-311)

Time : 1.5 hrs.

M.M. : 30

Note: Question No. 1. compulsory, attempt any two questions from the remaining.

Q.1. (a) Collective Bargaining.

(2)

Ans. Collective Bargaining: Collective bargaining is a method by which trade unions protect and improve the conditions of their members working lives. Collective bargaining brings the employer and the employees around one table to discuss and settle many contentious issues effectively. It enables both the parties to know each other and their views, and to define their rights and obligations regarding terms of employment, working conditions, etc., through negotiations, discussions and bargains.

Forms of Collective Bargaining:

In India, collective bargaining has been classified under **four** categories. These are:

i. Agreements which are negotiated by officers during the course of conciliation proceedings and are called settlements under the Industrial Disputes Act.

ii. Agreements which are concluded by the parties themselves without reference to a Board of Conciliation and are signed by them. Copies of such agreements, however, are sent to appropriate governments and to conciliation officers.

iii. Agreements which are negotiated by the parties on a voluntary basis when disputes are sub-judice and which are later submitted to industrial tribunals, labour courts or labour arbitrators for incorporation into the documents as parts of awards. These are known as consent awards.

iv. Agreements which are drawn up after direct negotiation between labour and management and are purely voluntary in character. These depend for their enforcement on moral force and on the goodwill and co-operation of the parties.

Q.1. (b) Industrial disputes.

(2)

Ans. Industrial Dispute : Under the Industrial Disputes Act, 1947, an "Industrial Dispute" means a dispute (i) between employers and workmen or, (ii) between workmen and workmen or (iii) between employers and employers which is connected to employment or non-employment or terms of employment or with the conditions of labour.

Industrial dispute's settlement machineries:

(i) **Mediation:** Mediations is a process available to the parties involved in contract negotiations by which an outside party is called in by union and management to help them reach a settlement. The neutral mediator does not ultimately resolve the dispute, but instead tries to move the parties towards agreement by maintaining communication and suggesting alternative solutions to dead-locked issues.

(ii) **Conciliation:** Conciliation is a process by which representatives of workers and employers are brought together before a third person or a group of persons with a view to persuade them to come to a mutually satisfying agreement. The objective of this method is to settle disputes quickly and prevent prolonged work stoppages if they have already occurred.



(iii) Voluntary Arbitration: When conciliation proceedings fail to settle the dispute, the conciliation officer may persuade the conflicting parties to voluntary refer the dispute to a third party known as Arbitrator, appointed by the parties themselves. The arbitrator listens to the viewpoints of both parties and delivers an award or judgment on the dispute. He, however, does not enjoy judicial powers. The arbitrator submits his judgment on the dispute to the government. Thereafter the government publishes the award within 30 days of its submission. The award becomes enforceable after 30 days of its publication. The arbitration award is binding on all the parties to the agreement and all other parties summoned to appear in the proceedings as parties to dispute.

(iv) Adjudication: Adjudication or compulsory arbitration is the ultimate remedy for the settlement of disputes in India. Adjudication consists of settling disputes through the intervention of a third party appointed by the government. An industrial dispute can be referred to adjudication by the mutual consent of the disputing parties. The government can also refer a dispute to adjudication without the consent of the parties. The Industrial Disputes Act, 1947, provides three-tier adjudication machinery – namely Labour Courts, Industrial Tribunals and National Tribunals – for the settlement of industrial disputes.

Q.1. (c) List out various measures to improve industrial relations in brief. (2)

Ans. The various measures to improve industrial relations in brief are as follows:

- Strong, well-organized and democratic unions for balance of power
- Strong employers' organization
- Belief in cooperative collective bargaining
- Sound HR policies
- Sound preventive systems
- Management support to IR functions
- Well-trained IR staff/supervisors
- Systematic effort at building a collaborative culture

Q.1. (d) Workers participation in Management. (2)

Ans. Workers Participation in Management: Participation has a unique motivational power and a great psychological value. It promotes harmony and peace between workers and management. When workers participate in organizational decisions, they are able to see the big picture clearly, i.e., how their actions would contribute to overall growth of the company. They can offer feedback immediately based on their experiences and improve the quality of decisions significantly. Since they are involved in the decisions from the beginning, they tend to view the decisions as their own and try to translate the rhetoric into concrete action plans with zeal and enthusiasm. Participation makes them more responsible. They are willing to take initiative and contribute cost-saving suggestions and growth-oriented ideas. The feeling of being treated as equals, forces them to repose their confidence in management and accept plans of rationalization, expansion, etc., without raising serious objections. Since they are treated with respect now they begin to view the job and the organization as their own and commit themselves to organizational activities wholeheartedly.

Output cannot be increased unless there is effective co-operation between labour and management at all levels. The way of ensuring this is to satisfy their social and psychological need besides economic ones. Workers participation in management is one

of the most significant modes of resolving industrial conflicts and encouraging among workers a sense of belongingness in establishment where they work.

Participation may take two forms. It may be: (1) ascending participation, and (2) descending participation. In case of ascending participation, the workers may be given an opportunity to influence managerial decisions at higher levels through their elected representatives to joint councils or the board of directors of the company. But in descending participation, they may be given more powers to plan and to make decisions about their own work (e.g. delegation and job enlargement). This form of participation is quite popular in many organizations.

Q.1. (e) India and ILO

Ans. Refer Q.1(b) of End Term Exam. 2016.

Q.2. Explain the various internal and external factors which affect the industrial relations. (10)

Ans. Industrial relation means the relationship between employers and employees in course of employment in industrial organizations'. However, the concept of Industrial Relations has a broader meaning. In a broad sense, the term Industrial Relations includes the relationship between the various unions, between the state and the unions as well as those between the various employers and the government. Relations of all those associated in an industry may be called Industrial Relations.

According to International Labour Organization, Industrial relations comprise relationships between the state on one hand and the employer's and employee's organization on the other, and the relationship among the occupational organisations themselves.

External Factors

The history of industrial relations goes back to when workers felt that employer actions or market conditions caused them to have an unequal share of power in their relationship with their employer. Workers turned to collective bargaining in the public and private sectors to get better wages and working conditions from their employer's representatives. Today, there are many laws ensuring that U.S. workers receive a minimum wage and safe working environments. More labor regulation later decreased the need for collective bargaining.

Internal Factors

Another way to look at industrial relations is the impact of the company's human resources practices. These might include low productivity, absenteeism, high employee turnover, low job security, unsatisfactory or unsafe working environments, failure to recognize performance in pay plans, and lack of motivation, according to the International Labour Organisation. Small-business owners can address these problems by updating their HR practices and firing managers who create these problems. They can also address employee motivation, including rolling out more opportunities for training and advancement, pay for performance, performance incentives and worker recognition programs.

OR

Q.2. Explain the role of International Labour Organization in promoting welfare of workers. (10)

Ans. International Labour Organization (ILO) is the most important organization in the world level and it has been working for the benefit of the workers throughout the world. It was established in the year 1919. It is a tripartite body consisting of

representatives of the Government, Employer, workers. It functions in a democratic way by taking interest for the protection of working class throughout the world. It is also working at the international level as a 'savior of workers' 'protector of poor' and it is a beacon light for the change of social justice 139 and social security. The I.L.O examines each and every problem of the workers pertaining to each member country and discusses thoroughly in the tripartite body of all the countries. The I.L.O passes many Conventions and Recommendations on different subjects like Social Security, Basic Human Rights, Welfare Measures and Collective Bargaining. On the basis of Conventions and Recommendations of I.L.O. every country incorporates its recommendations and suggestions in its respective laws.

Q.3. Give a Historical perspective on origin and growth of Trade Unionism in India? Why do workers join trade unions? Explain. (10)

Ans. The growth of trade unions in India has passed through a few distinctive phases, paralleling the political and economic development in the country.

The Pre-independence Phase

The earliest known trade unions in India were the Bombay Millhand's Association formed in 1890. The trade-union movement began in India after the end of the First World War. All India Trade Union Congress was formed in 1920 on a national basis; the Central Labour Board, Bombay and the Bengal Trades Union Federation were formed in 1922. The Indian government passed the Trade Unions Act in 1926, which legalized the registered trade unions in India. The All India Trade Union Congress (AITUC) is the oldest trade union in India.

The First Post-Independence Phase

The first decade (1950-mid-1960s) corresponds to an era of State planning and import substitution, when public-sector employment and public-sector unionism rose phenomenally. The nationalist Indian National Trade Union Congress (INTUC) and the communist All India Trade Union Congress (AITUC). State intervention in the determination of wages and working conditions was the norm.

The Second Post-independence Phase (Mid-1960s-1980)

The 1960s to the 1980s represented the second post-independence growth phase of trade unions, characterized by:

- A period of economic stagnation and political turmoil.
- The emergence of many more unions.
- Employment slow down
- Inter-union rivalry
- An increase in industrial conflicts
- Pressure on centralized bargaining
- The railway strike of 1974 and severe curbs during emergency

The Third Post-independence Phase (1980-Pre-liberalization Era)

- Period of segmented and uneven economic growth
- Decentralized bargaining and independent trade unionism.
- Bangalore PSU strike and Mumbai textile workers' strike
- Inter-state and inter-regional variations in labour-management relations

The Fourth Post-independence Phase (Post-liberalization Era)

- Stabilization and structural adjustments
- Demands for labour market flexibility
- Recruitment freeze in public sector
- Right sizing of manpower through VRS

Workers join trade unions as the trade unions ensure security of workers by ensuring continued employment of workers, preventing retrenchment, layoffs or lockouts.

Need for Trade Union: Workers join trade unions to achieve certain objectives that they may not be able to achieve in their personal capacity. Trade unions are necessary.

1. To ensure job security and right pay for the members one of the basic needs of any employee is security of service. The main reason why an employee joins a union is to get him secured. Apart from job security and employees need to get pay commensurate with their qualifications and skills. Trade unions strive to get both job security and correct pay for all employees.

2. To ventilate the grievances of employees to the management: When the employees in general or some in particular have any grievance, they may not be able to convey the same to the management in their personal capacity. Such grievances may be brought to the knowledge of the management through the trade union. The members of the management may be indifferent to the demands of the individual employees but they cannot be so when it comes to union demands.

OR

Q.3. Explain the broad features of the Employees Compensation Act. Including provisions related to distribution of compensation under this act. (10)

Ans. The Workmen's Compensation Act is the first piece of legislation towards social security. It deals with compensation for workers who are injured in the course of duty. The general principle is that a worker who suffers an injury in the course of his employment, which results in a disablement, should be entitled to compensation and in the case of a fatal injury, his dependents should be compensated. Under the Workmen's Compensation Act, it is the employer who is responsible to pay compensation.

The Workmen's Compensation Act is an act for payment of compensation for injury by accident or occupational disease arising out of and in course of employment. It extends to the whole of India.

Compensation is something that constitutes an equivalent or recompense; specifically payment to an unemployed or injured person or his dependents.

Section 3 of the Act makes the employer liable to pay compensation for injury to a workman by accident arising out of and in course of his employment.

Any payment or allowance that the workman may have received from the employer towards his medical treatment shall not be deemed to be payment or allowance received by him by way of compensation.

In case of death, the minimum amount of compensation fixed is INR 80,000 and INR 90,000 in case of permanent disablement.

COMPENSATION: The compensation to be paid by the employer for injuries caused depends on the extent of disablement suffered by the worker; more severe disablements

naturally receive higher compensation. The guiding principle in the payment of compensation is: the higher the age of the injured worker, the lower the compensation.

Wages are the basis for the amount of compensation paid. Two workers earning different salaries, therefore, will get different amounts of compensation even though the injury suffered might be identical. The Act prescribes the manner in which "compensation" is to be computed and paid in the event of death or disablement resulting from accidents arising out of and in the course of employment.

Death: In case of death of an employee, the compensation due to the dependents is an amount equal to 50% of the monthly salary of the deceased worker multiplied by the relevant factor or an amount of INR 80,000 whichever is more. The *relevant factor* is mentioned in the Schedule IV of the Act. The factor depends on the age of the deceased person, i.e., the number of years the person could have worked for, if he did not die on the job.

Permanent Total Disablement: Where there is total permanent disablement resulting from the injury suffered, the worker is entitled to be paid 60% of his monthly salary, multiplied by the relevant factor, or an amount of INR 90,000, whichever is more.

Temporary Disablement: In case of temporary disablement, payments equal to 25% of the workers' wages shall be made at fortnightly intervals. In case the disablement lasts for more than 28 days, the employer should make the payment on the 16th day from the day of the disablement.

Under the Act, the state governments are empowered to appoint commissioners for workmen's compensation for (i) the settlement of disputed claims, (ii) the disposal of cases of injuries involving death, and (iii) the revision of periodical payments.

Q.4. Write short notes on the following (2.5)

(a) Benefits order of ESI Act.

Ans. Benefits order of ESI Act. Employees State Insurance Corporation (ESIC) was constituted under the Employees' State Insurance Act, 1948, and Employees' State Insurance (Central) Rules, 1950. The benefits under the ESI Act include:

- Sickness Benefit:** At the rate of 7/12th of the daily average wage, benefit is given to the employee for a maximum period of 91 days in one year. In diseases such as tuberculosis, leprosy, fracture and malignancy, the sickness benefits are extended to one year at half the rate of sickness.

- Maternity Benefit:** The benefit is given at the rate of full wages for a period of 84 days in case of pregnancy and 6 weeks in case of miscarriage or MTP.

- Disablement Benefit:** In cash, 72% of the wages is given to the temporary disabled person during the period of disablement. In case of permanent disablement, the payment is made at the same rate for the whole of his life in the form of pension.

- Dependent Benefit:** Widow or legitimate or adopted child (upto the age of 18 years or till the daughter gets married) of the diseased person gets the cash payment may be in the form of pension.

- Funeral Benefit:** An amount of INR 2,500 is paid to the eldest surviving member for the funeral purpose.

- Medical Benefit:** All the members of the worker gets the medical cover including the outdoor treatment, domiciliary treatment facilities by the panel system, specialist services, ambulance services and indoor services.

Q.4. (b) The Apprentice Act, 1961.

Ans. The Apprentice Act, 1961: The Apprentices Act 1961

The object

- To meet the increasing demand for skill craftsmen.
- To utilize facilities available for training apprentices.
- To ensure their training in accordance with plan programme.
- Promotion of new man power skill.
- Improvement and refinement of old skill.

Standard of education for apprentices: He shall satisfy the minimum educational qualifications as specified in schedule, a person shall be eligible for been engaged as graduate or technician or technician vocational apprentices.

Period of apprenticeship training: who undergone institutional training in a school or other institution recognised by national council period of apprenticeship training shall be such as determine by council or institution recognize by that council.

Who undergoes institutional training in a school or other institution recognised by board or authority notified in official gazette period of apprenticeship training shall be as may be prescribed.

Obligations of an apprentice to accept employment from employer: it is not obligatory on the part of the employer to offer any apprentice who has completed his period of apprenticeship

Obligations of the apprentice: Every trade apprentice undergoing apprenticeship training shall have the following obligations, namely:-1) To learn his trade conscientiously and diligently and Endeavour to qualify himself as a skilled craftsmen before the expiry of the period of training;2) To attend practical and instructional classes regularly;3) To carry out all lawful orders of his employer and superiors in the establishment and4) To carry out his obligations under the contract of apprenticeship.

Q.4. (c) Joint Management councils. (2.5)

Ans. JOINT MANAGEMENT COUNCIL represent a higher form of workers participation in management. The aim is to change the social structure of enterprises from inside. They lead the private sector to fit into the framework of socialist order – the idea that socialist order should be achieved by gradual and peaceful changes. AN UNDERTAKING MUST MEET THE FOLLOWING REQUIREMENTS FOR SETTING UP JMCS: It must have 500 or more employees. It should have a fair record of industrial relations. It should have a strong and well organized trade union. Willingness of employers, workers and trade unions. The union should be affiliated to one of the central federations.

FEATURES:

Each organization shall decide about the councils. The tenure of the councils should be 2 years. Chief executive shall be the chairman. A Secretary should be appointed. Meeting at least once in a quarter. Decisions based on consensus not by voting.

FUNCTIONS:

Settlements of matters. Unit level matters having bearing in/on other branches or on enterprise. Development of skills, safety measures. Improvement of general conditions of work. Preparation of schedules of working hours and holidays. Proper recognition and appreciation of useful suggestions of workers. All matters, such as, wages, bonus etc, which are subjects for collective bargaining are excluded from the scope of the council. Individual grievances are also excluded from its scope.

Q.4. (d) Rights of a registered Trade Union under the Trade Union Act. (2.5)

Ans. Rights of a registered trade Union: While the main clauses of the Trade Union Act of 1926, concern the formation of unions, certain other features are also worth noting. Registration, which means formal recognition of a representative body, also entails certain preconditions. A registered union must allow membership to anyone over 15 years of age and have 50% of the office bearers from within the industry. It must keep its books of account in order and send its income and expenditure statements to the registrar of trade unions on or before 31st March. The union can spend its funds on salaries of office bearers, prosecution, defense, etc. for protecting its trade union rights, to provide compensation to members, levy subscription fees, publish periodicals, etc. More important, a registered union can claim protection from being prosecuted for legitimate trade union activities. This protection is under Section 120 B, subsection 2 of the Indian Penal Code. The issue that arises, therefore, is the distinction between a recognized union under the Code of Discipline and a registered union under the Trade Union Act of 1926. The former is a voluntary act and may well concern a representative union, while the latter may not always cover a representative union, especially in multi-union situations where there are many small unions or two or three factions. In the absence of any statute, the recognition of a majority bargaining union of the workers still remains a cumbersome process.

**END TERM EXAMINATION
FIFTH SEMESTER B.TECH. [DEC. 2016]
INDUSTRIAL MANAGEMENT
(ETMS-311)**

Time : 3 hrs.

M.M. : 75

Note: Question No. 1. compulsory, attempt any five questions. Select one question from each unit.

Q.1. Write short notes on any five of the following: (5x5=25)

Q.1. (a) Gherao and its legality.

Ans. Gherao and its legality: Gherao in Hindi means to surround. The workers may gherao the members of the management by blocking their exits and forcing them to stay inside their cabins. The main object of gherao is to inflict physical and mental duress on the person being gheraoed. This started as a political pressure tactics in West Bengal in the 1960s, and, thereafter, has been used by trade unions in the industry as a means of putting pressure on the management.

Gherao cannot be treated as a form of labour unrest since it involves physical coercion rather than economic pressure. It is harmful to the working class, and in the long run may affect national interest.

Q.1. (b) Industrial Management and Industrial Relation.

Ans. Industrial management deals with the analysis, design and control of productive systems. A productive system is any system that produces either a product or a service on the other hand, production management attempts to familiarize a person with concepts and techniques specific to the analysis and management of a production activity.

The ultimate objective of industrial management is to produce the right quantity of right quality goods at the right time. The concept of industrial management is continuously developing and spreading. In the world of cut throat competition only those product can survive which can be proved to be the best. Now organisations are focusing on quality control, standardization and use of modern techniques in their production systems. The production function is based upon the effective plans that serves organization for achieving the organizational objectives. So we can say that the industrial management is the key function that plays a vital role in the success of organization.

Industrial relations: It looks at the relationship between the management and the workers, particularly groups of workers represented by a union. Its purpose is to maintain industrial peace. It also concerns itself with the two-way interaction that the State may have in influencing the relationship. These relationships are shaped in a larger context of societal, economic, political and technological forces that are in existence. The study encompasses the players and their objectives, the structures and their functions, the conflicts and their origins and resolutions, the contexts and their impact, the "processes" and their outcome.

Q.1. (c) Worker's participation in Management

Ans. Refer Q.1(d) of First Term 2016.

Q.1. (d) Therbligs

Ans. Therbligs: Frank Gilbreth and his wife Lillian Gilbreth, through their various experiments, institutionalized motion and time study through their famous motion economy principles. If one can study the motions and micro motions performed in carrying out an activity and economize on them- try to reduce them, the time taken for the activity can be significantly reduced.

For this, the movements are classified in 5 classes as given below:

Class 1: Body members moved in this class are fingers and the pivot is knuckle

Class 2: Body members moved in this class are hands and fingers and the pivot is wrist.

Class 3: Body members moved in this class are forearms, hands. Forearms, hands and fingers and the pivot is shoulder

Class 4: Body members moved in this class are upper arms, forearms, hands and fingers and the pivot is shoulder.

Class 5: Body members moved in this class are torso, upper arms, forearms, hands and fingers and the pivot is trunk

Further, Gilbreth came out with the idea of conducting micro motion study. To facilitate it, a set of fundamental motions required for a worker to perform a manual operation was defined. The set consists of 18 elements, each describing a standardized activity.

The set is called "therblig" (read Gilbreth in reverse order and you get this term "therblig" with 't' treated as one letter).

These are listed below: § Search § Find § Select § Grasp § Hold § Position § Assemble § Use § Disassemble § Inspect § Transport loaded § Transport unloaded § Pre-position for next operation § Release load § Unavoidable delay § Avoidable delay § Plan § Rest to overcome fatigue

Q.1. (e) Quality Control

Ans. Quality Control: "Quality control may be defined as the industrial management techniques or group of techniques by means of which products of uniform acceptable quality are manufactured".

The quality of manufactured goods is a variable with an upward trend under conditions of competitive manufacture. Control of quality increases out of saleable good as it decreases cost of production and distribution and makes economic mass production possible.

Following are the important objectives of quality control:

1. To establish the desired quality standards which are acceptable to the customers?
2. To discover flaws or variations in the raw materials and the manufacturing processes in order to ensure smooth and uninterrupted production.
3. To evaluate the methods and processes of production and suggest further improvements in their functioning.
4. To study and determine the extent of quality deviation in a product during the manufacturing process.
5. To analyse in detail the causes responsible for such deviation.

6. To undertake such steps which are helpful in achieving the desired quality of the product.

Q.1. (f) Flow Process Chart

Ans. Flow process chart: is a symbolic representation that illustrates the sequence of actions within a process. It records the steps of a process along a vertical line. It is used to show the steps of a process using symbols along with text. It is commonly used when analyzing the steps in a process to help identify and eliminate waste. It is also called Process Sequence Chart.

A useful feature of the flow process chart is that it can be drawn up as the process is happening, and thus, get an accurate description of the process. By watching and recording, a person for example can follow a part, noting how and when it is produced, moved, checked and stored. This ensures that what actually happens gets recorded. Later when analyzing the process, some steps become obvious candidates for improvement, such non-value-adding activities, long delays and excessive transportation.



The flow process chart uses different symbols to indicate the type of activity being undertaken. It also uses text to give details of those activities. Common symbols are:

Operation – produce or process something, or change one or more characteristics of the material.

Storage – storing materials or other items.

Transport – movement of people, materials or other items from one place to another.

Delay – idle time of people, material or machinery (may be accompanied by a time measurement).

Inspection – checking of items to ensure correct quality or quantity.

There are three common types of flow process charts based on what is being charted:

A man-type chart which shows the actions of a person.

A material-type chart which shows what happens to a product or item.

An equipment-type chart which shows how a tool or other piece of equipment is used.

Q.1. (g) Six Sigma

Ans. Six Sigma: The Six Sigma concept was developed by Bill Smith, a senior engineer at Motorola, in 1986 as a way to standardize the way defects were tallied.

Sigma is the Greek symbol used in statistics to refer to standard deviation which is a measure of variation. Adding "six" to "sigma" combines a measure of process performance (*sigma*) with the goal of nearly perfect quality (*six*).

Six Sigma is defined as a comprehensive and flexible system for achieving, sustaining and maximizing business success. Six Sigma is uniquely driven by close understanding of customer needs, disciplined use of facts, data, and statistical analysis, and diligent attention to managing, improving, and reinventing business processes.

The DMAIC Improvement Process: Six Sigma projects generally follow a well-defined process consisting of five phases.

- i define
- i measure
- i analyze
- i improve
- i control

Q.1. (h) ILO and India

Ans. India and ILO: India became the member of the I.L.O in the year 1919 which is from its inception. Though India had won independence by that year i.e. 1919, it was admitted to the membership of the I.L.O. However its membership, of the League of Nations and the I.L.O had not gone unchallenged. For it was argued that it would give an additional vote to the United Kingdom. The British Government gave an assurance that British India was democratically administered and upon this India along with China, Iran, Japan and Thailand were few Asian countries to be admitted to the I.L.O membership of the 24 States. Out of 40 States represented, India was one which sent a full delegation to the first session of the International Labour Conference held in the year 1919 at Washington. It is to be mentioned here that the Indian delegation comprised of Government representatives, Sir Atul Chaterjee, and Sir Louis, employers delegate Sir Alexander Murry, and working delegate Sri N.M. Joshi.

Thus Indian Membership of the League of Nations and the International Labour Organization was indeed a first step in elevating the status of assemblies in the states in spite of being a British Colony. 147 The I.L.O and India have common aims, goals and destiny, for, both of them are committed to world peace freedom and social justice. Both are striving for the socio economic betterment of the long suffering, long forgotten people, the people who are underprivileged and under nourished with the fullest realization that any further delay would fatal for themselves and the whole world.

UNIT-I

Q.2. Discuss the importance of collective bargaining as a method of regulating relations between employers and employees in the modern industrial set up. Give suggestions for making it strong and successful. (12.5)

Ans. Collective Bargaining Collective Bargaining is a process in which representatives of two groups (employers and employees) meet and try to negotiate an agreement which specifies the nature of future relationship (pertaining to employment) between the two. According to Beach, "Collective Bargaining is concerned with the relations between unions representing employees and employers (or their representatives). It involves the process of union organization of employees; negotiation, administration and interpretation of collective agreements covering wages, hours of work and other conditions of employment; engaging in concerted economic action; and dispute settlement procedures.

Importance of Collective Bargaining Collective Bargaining not only includes negotiation, administration and enforcement of the written contracts between the employees and the employers, but also includes the process of resolving labour-management conflicts. Thus, collective bargaining is a legally and socially sanctioned way of regulating in the public interest the forces of power and influence inherent in organized labour and management groups.

Importance of Employees Collective Bargaining helps the employees:

- (i) To develop a sense of self-respect and responsibility among the employees.
- (ii) To increase the strength of the workers. Their bargaining capacity as a group increases.

- (iii) To increase the morale and productivity of employees.

Unilateral actions by the management are discouraged.

- (iv) To restrict management's freedom for arbitrary action against the employees.

(v) To strengthen the trade union movement.

Importance to Employers

(i) The workers feel motivated as they can talk to the employers on various matters and bargain for higher benefits. As a result, their productivity increases.

(ii) It is easier for the management to resolve issues at the bargaining table rather than taking up complaints of employees individually.

(iii) Collective bargaining promotes a sense of job security among the employees and thereby tends to reduce cost of labour turnover to management, employees as well as the society at large.

(iv) Collective bargaining opens up the channels of communications between the top and bottom levels of organization which may be difficult otherwise.

Importance to society Collective Bargaining helps the society:

- (i) To attain industrial peace in the country.

(ii) To establish a harmonious industrial climate which supports the pace of a nation's efforts towards economic and social development since the obstacles to such development can be largely eliminated or reduced. As a vehicle of industrial peace or harmony, collective bargaining has no equal.

(iii) To extend the democratic principle from the political to the industrial field. It builds up a system of industrial jurisprudence by introducing civil rights in industry and ensures that management is conducted by rules rather than by arbitrary decisions.

- (iv) To check the exploitation of workers by the management.

(v) To distribute equitably the benefits derived from industry among all the participants including the employees, the unions, the management, the customers, the suppliers and the public.

Q.3. Discuss the preventive machinery to check the industrial disputes in India. State the benefits of good industrial relations. (12.5)

Ans. Under the Industrial Disputes Act, 1947, an "Industrial Dispute" means a dispute (i) between employers and workmen or, (ii) between workmen and workmen or (iii) between employers and employers which is connected to employment or non-employment or terms of employment or with the conditions of labour.

INDUSTRIAL DISPUTE'S SETTLEMENT MACHINERIES

Mediation: Mediations is a process available to the parties involved in contract negotiations by which an outside party is called in by union and management to help them reach a settlement. The neutral mediator does not ultimately resolve the dispute, but instead tries to move the parties towards agreement by maintaining communication and suggesting alternative solutions to dead-locked issues. The mediator's function is to

provide a positive environment for dispute resolution by drawing on extensive professional experience in the field of labour management interaction.

Conciliation: Conciliation is a process by which representatives of workers and employers are brought together before a third person or a group of persons with a view to persuade them to come to a mutually satisfying agreement. The objective of this method is to settle disputes quickly and prevent prolonged work stoppages if they have already occurred. The essential hallmarks of this approach are:

1. The conciliator tries to bridge the gulf between the parties, if possible.
2. If he does not fully succeed, he tries to reduce the differences to the extent possible. He acts as a conduit through which message are passed from one side to the other, coupled with his own interpretations facilitating the understanding of disputing parties.
3. He persuades parties to take a fresh look at the whole issues, through a process of give and take and explore the possibility of reaching a consensus.
4. He only advances possible lines of solutions for consideration by the disputants. He never tries to force the parties to accept his viewpoint. He never offers judgment on the issues. If parties feel that the suggestions offered by the conciliator are acceptable, they may strike a deal.
5. The conciliator need not follow the same path in each case. The process of conciliation, therefore, has a certain amount of flexibility and informality built around it.

Voluntary Arbitration: When conciliation proceedings fail to settle the dispute, the conciliation officer may persuade the conflicting parties to voluntary refer the dispute to a third party known as Arbitrator, appointed by the parties themselves. The arbitrator listens to the viewpoints of both parties and delivers an award or judgment on the dispute. He, however, does not enjoy judicial powers. The arbitrator submits his judgment on the dispute to the government. Thereafter the government publishes the award within 30 days of its submission. The award becomes enforceable after 30 days of its publication. The arbitration award is binding on all the parties to the agreement and all other parties summoned to appear in the proceedings as parties to dispute.

Arbitration is effective as a means of resolving disputes because it is:

1. Established by the parties themselves and the decisions is acceptable to them,
2. Relatively expeditious when compared to courts or tribunals. Delays are cut down and settlements are speeded up.

Adjudication: Adjudication or compulsory arbitration is the ultimate remedy for the settlement of disputes in India. Adjudication consists of settling disputes through the intervention of a third party appointed by the government. An industrial dispute can be referred to adjudication by the mutual consent of the disputing parties. The government can also refer a dispute to adjudication without the consent of the parties. The Industrial Disputes Act, 1947, provides three-tier adjudication machinery – namely Labour Courts, Industrial Tribunals and National Tribunals – for the settlement of industrial disputes.

UNIT II

Q.4. Explain the rights of a registered trade union under the Trade Unions Act, 1926. Why do workers Join Trade Unions? Explain. (12.5)

Ans. While the main clauses of the Trade Union Act of 1926, concern the formation of unions, certain other features are also worth noting. Registration, which means formal recognition of a representative body, also entails certain preconditions. A registered union

must allow membership to anyone over 15 years of age and have 50% of the office bearers from within the industry. It must keep its books of account in order and send its income and expenditure statements to the registrar of trade unions on or before 31st March.

The union can spend its funds on salaries of office bearers, prosecution, defense, etc. for protecting its trade union rights, to provide compensation to members, levy subscription fees, publish periodicals, etc. More important, a registered union can claim protection from being prosecuted for legitimate trade union activities. This protection is under Section 120 B, subsection 2 of the Indian Penal Code. The issue that arises, therefore, is the distinction between a recognized union under the Code of Discipline and a registered union under the Trade Union Act of 1926. The former is a voluntary act and may well concern a representative union, while the latter may not always cover a representative union, especially in multi-union situations where there are many small unions or two or three factions. In the absence of any statute, the recognition of a majority bargaining union of the workers still remains a cumbersome process.

Need for Trade Union:

Workers join trade unions to achieve certain objectives that they may not be able to achieve in their personal capacity. Trade unions are necessary.

1. To ensure job security and right pay for the members'one of the basic needs of any employee is security of service. The main reason why an employee joins a union is to get him secured. Apart from job security and employees need to get pay commensurate with their qualifications and skills. Trade unions strive to get both job security and correct pay for all employees.

2: To ventilate the grievances of employees to the management: When the employees in general or some in particular have any grievance, they may not be able to convey the same to the management in their personal capacity. Such grievances may be brought to the knowledge of the management through the trade union. The members of the management may be indifferent to the demands of the individual employees but they cannot be so when it comes to union demands.

Q.5. Write short notes on the following: (4)

Q.5. (a) Size of Trade Unions.

Ans. Size of Trade Unions: The small size of trade unions is an outcome of the Indian Trade Unions Act of 1926, which allows a large number of small unions to be registered. With multiple unions operating, the size gets reduced and with inter-union rivalry taking center stage, new employees shy away from becoming members. It also needs to be noted that women employees, who now account for a large section of the workforce, refrain from joining any union and this has also impacted the size and growth of unions in India.

Q.5. (b) Outside leadership of trade unions (4)

Ans. Outside leadership in Trade Unions: The leadership provides the direction and goals for a particular union. The leader's task is to make the union effective, by improving the terms and conditions of employment of the worker and also by being concerned with the viability of the enterprise. The trade union organization based as it is, in many cases on individuals or the national federations and their ideologies, has not been able to evolve a professional cadre of leadership at the grass roots to the desired extent. In fact, quite often, a single union executive leader is responsible for running a large number of unions. A survey of trade union leadership in Bombay in 1960 showed

that one leader was president of 17 unions and secretary of two more. Another was an office bearer of 20 unions. R.J.Mehta is President of the Free Trade Unions which control more than 14 unions.

Outside leadership vs. internal leadership. In fact, the Trade Union Act of 1926 makes a provision for this and allows for 10% of the leadership to be from outside the sphere of the organization. An outside leader is one who is not a full time employee of the organization, whereas the internal leader is such a person. Many lawyers and politicians have been union leaders in the early part of their careers. The former President V.V.Giri, was one such example, so were former Central Ministers like G.L.Nanda and Khadilkar. There are advantages and disadvantages either in terms of policy or in terms of implementation of administrative action, especially if he belongs to or has linkages with the ruling party. On the other hand his involvement with the plant level problems is much less as he is not on the shop floor to understand the intricate issues applicable to a particular plant. Not being an employee of the enterprise or an insider, he lacks the required depth of understanding of local issues and specifics.

The outsider is a professional who has many units under his wing all of which demand his time, including the larger function of liaison. The insider would not only have greater knowledge of the enterprise specifics but also have more time for sustained work, being concerned as he is with just one enterprise. Also, external issues and ideologies are not unnecessarily induced, which could happen when outside leaders are in control for whom ideology may be more important than getting the best deal under the circumstances.

Q.5. (c) Functions of Trade Union

(4.5)

Ans. Functions of Trade Unions: Functions of Trade Unions in India As per the Indian Trade Union Act, 1926, the primary function of a trade union is to protect and promote the interests of the workers and the conditions of their employment. They can also have other objectives, which are not inconsistent with this primary purpose or opposed to any law. In India, trade unions generally undertake the following functions:

- (i) To achieve higher wages and better working and living conditions for the members.
- (ii) To acquire control over running of the industry by workers.
- (iii) To minimize the helplessness of the individual workers by making them stand up unitedly and increasing their resistance power through collective bargaining; protecting the members against victimization and injustice by employers.
- (iv) To raise the status of the workers as partners in industry and citizens of society by demanding an increasing share for them in the management of industrial enterprises.
- (v) To generate self-confidence among the workers.
- (vi) To encourage sincerity and discipline among workers.
- (vii) To take up welfare measures for improving the morale of the workers.

UNIT-III

Q.6. What is work study? What are its objectives and advantages? Work study is often resisted by workers. What steps management should take to overcome such resistance? (12.5)

Ans. Work Study: Work Study implies the study of human work. It investigates the work done in organization and it aims at finding the best and most efficient way of using available resources men, material, machine and money.

International Labor Organization (ILO) defines work study as the technique of method study and work measurement employed to ensure the best possible use of human and material resources in carrying out a specified activity. It is also a management service based on method study and work measurement used in examination of human work leading to investigation of all the resources that effect efficiency and economy of situation to affect improvement.

Work study is an important management tool to achieve higher productivity. It is related to human work, method of doing work and standard of performance. The survival of any organization is dependent on use of latest technology and efficient methods of production. To improve efficiency of production it needs effective utilization of plant, equipment and labor. This can be achieved by using work study which studies method and evaluates the performance. It divides work into smaller elements, studies it, and rearranges it to get same or greater efficiency at reduced cost.

Scope of Work Study:

The amount of work in a given job is referred to as work content. The work study consists of two techniques:

(a) Method Study: Method study is the systematic recording and critical examination of existing and proposed ways of doing work. It is concerned with the reduction of work content of a job or operation.

(b) Work Measurement: Work Measurement is the application of techniques designed to establish the time for a qualified worker to carry out a specified job at defined level of performance. It is concerned with the investigation and reduction of any ineffective time associated with it.

Objectives of Work Study: The objectives of the work study are as follows:

- (i) Analysis of existing method
- (ii) Finding weakness in existing production process
- (iii) Most effective utilization of existing or proposed report and resources
- (iv) To set and measure performance standard
- (v) Use of performance standard to pay incentives
- (vi) To standardize method, material and equipment's used in the production process.

Advantages

- Improved Productivity.
- Manufacturing cost is reduced.
- Quicker and accurate delivery dates
- Good employee employer relationship.
- Job satisfaction to workers

Q.7. Differentiate between time study and motion study. Discuss the benefits and limitations of time study. Explain the steps in time study. (12.5)

Ans. (a) Motion study comes first before the setting of time standards. Motion study is a detailed analysis of the work method in an effort to improve it.

(b) Motion study is for cost reduction, and time study is for cost control. Motion study is the creative activity of motion and time study.

(c) Motion study is design, while time study is measurement.

Motion and time study is considered to be the backbone of industrial engineering, industrial technology, and industrial management programs because the information that time studies generate affects so many other areas, including the following:

1. Cost estimating
2. Production and inventory control
3. Plant layout
4. Materials and processes
5. Quality
6. Safety

Motion studies are performed to eliminate waste. Before any improvement in quality or quantity of output, any study of operations time, any scheduling of work or balancing of workload or any calculation of standard time, a study of the current and proposed method is required.

Studies of overall factory flow or process, called macro motion studies, and then additional studies of detail or operations, called micro motion studies, should be completed for a project.

Motion studies were conducted by Frank and Lillian Gilbreth about a century ago in a search for the "one best way." It is important to note that such studies seek to minimize and simplify manual efforts.

Technique of Motion study:

- Flow diagrams
- Multi activity charts
- Operation charts
- Flow process charts
- Process charts
- Operations analysis chart
- Work station design
- Motion economy
- Flow patterns
- Predetermined time standards system (PTSS).

Motion Study: Motion study offers a great potential for savings in any area of human effort. We can reduce the cost by combining elements of one task with elements of another. Motion study uses the principles of motion economy to develop work stations that are friendly to the human body and efficient in their operation. Motion study must consider the operator's safety.

Motion studies are used to

1. Develop the best work method.
2. Develop motion consciousness on the part of all employees.
3. Develop economical and efficient tools, fixtures, & production aids.
4. Assist in the selection of new machines and equipment.

5. Train new employees in the preferred method.
6. Reduce effort and cost.

Time study is the technique of work measurement to establish time for a qualified worker to carry out specified task under specified conditions and at defined level of performance. Basic time study equipment consists of – a stop-watch, a study-board and time study forms.

The techniques of time study start with the last motion study technique, which shows the close relationship between motion study and time study. The techniques of time study are:

Procedure for conducting stop watch time study: Generally, the following procedure is followed in conducting stop watch time study:

1. Selection of task to be timed: Select the task or job that needs to be timed for study purpose. There are various priorities on the basis of which task or job to be studied is selected such as bottleneck or repetitive jobs, jobs with longer cycle time, to check correctness of existing time, comparison of two methods etc.

2. Standardize the Method of Working: To achieve performance standard accuracy it is necessary to record the correct method of working.

3. Select the operator for study: Select the consistent worker whose performance should be average or close to average so that observed times are close to normal times.

4. Record the details: The following information is recorded on observation sheet: Name of labour, task/job performed, department, section of work activity, general information about activity performed etc.

5. Break the task into element: Each operation is divided into a number of elements. This is done for easy observation and accurate measurement.

6. Determine number of cycles to be measured: It is important to determine and measure the number of cycles that needs to be observed to arrive at accurate average time.

7. Measure the time of each element using stop watch: The time taken for each element is measured using a stop watch. There are two methods of measuring, viz., Fly back method and Cumulative method. The time measured from the stop watch is known as observed time.

8. Determine standard rating: Rating is the measure of efficiency of a worker. The operator's rating is found out by comparing his speed of work with standard performance. The rating of an operator is decided by the work study man in consultation with the supervisor. Various rating methods used are speed rating, synthetic rating and objective rating.

9. Calculate the Normal time: The observed time cannot be the actual time required to perform the work for a worker. Therefore, Normal time needs to be calculated. Normal time is the time that a worker takes when working at normal pace. It is calculated as below: Normal Time = Observed time * Rating.

10. Determine the allowance: A worker cannot work all the day continuously. He will require time for rest going for toilet, drinking water etc. Unavoidable delays may occur because of tool breakage etc. So some extra time is added to the normal time. The extra time is known as allowance. It is generally allotted as per the company policy.

11. Determine the standard time: The standard time is the sum of Normal time and allowances. Thus it is calculated as below: Standard Time = Normal Time + Allowances.

UNIT-IV

Q.8. Define statistical quality control. Explain the benefits and limitations of statistical quality control. (12.5)

Ans. Statistical quality control is the application of statistical technique to determine how far the product conforms to the standards of quality and precision and to what extent its quality deviates from the standard quality.

Statistical process control methods extend the use of descriptive statistics to monitor the quality of the product and process. There are common and assignable causes of variation in the production of every product. Using statistical process control we determine the amount of variation that is common or normal. Then we monitor the production process to make sure production stays within this normal range. That is, we want to make sure the process is in a state of control. The most commonly used tool for monitoring the production process is a control chart. Different types of control charts are used to monitor different aspects of the production process.

A critical aspect of statistical quality control is evaluating the ability of a production process to meet or exceed preset specifications. This is called process capability. Product specifications, often called tolerances, are preset ranges of acceptable quality characteristics, such as product dimensions. For a product to be considered acceptable, its characteristics must fall within this preset range. Otherwise, the product is not acceptable. Product specifications, or tolerance limits, are usually established by design engineers or product design specialists.

Benefits of Statistical Quality Control

- (1) It provides a means of detecting error at inspection.
- (2) It leads to more uniform quality of production.
- (3) It improves the relationship with the customer.
- (4) It reduces inspection costs.
- (5) It reduces the number of rejects and saves the cost of material.
- (6) It provides a basis for attainable specifications.
- (7) It points out the bottlenecks and trouble spots.
- (8) It provides a means of determining the capability of the manufacturing process.
- (9) It promotes the understanding and appreciation of quality control.

The disadvantages of statistical quality control include the time it adds to the overall production process and the cost of the extra manpower needed to carryout the quality control.

Since it is a sampling technique so the limitations of sampling would be applicable in statistical quality control.

Q.9. Illustrate the procedure of introducing quality circle in an industrial organization. What problems hinder the implementation of quality circles in an organization? What are the requirements of effective quality circles? (12.5)

Ans. Quality Circle is a small group of 6 to 12 employees doing similar work who voluntarily meet together on a regular basis to identify improvements in their respective

work areas using proven techniques for analyzing and solving work related problems coming in the way of achieving and sustaining excellence leading to mutual upliftment of employees as well as the organisation. It is "away of capturing the creative and innovative power that lies within the work force".

The concept of Quality Circle is primarily based upon recognition of the value of the worker as a human being, as someone who willingly activists on his job, his wisdom, intelligence, experience, attitude and feelings. It is based upon the human resource management considered as one of the key factors in the improvement of product quality & productivity.

Quality Circle concept has three major attributes:

- Quality Circle is a form of participation management.
- Quality Circle is a human resource development technique.
- Quality Circle is a problem solving technique.

ORGANIZATION STRUCTURE

The structure of a Quality Circle consists of the following elements.

A steering committee: This is at the top of the structure. It is headed by a senior executive and includes representatives from the top management personnel and human resources development people. It establishes policy, plans and directs the program and meets usually once in a month.

Co-ordinator: He may be a Personnel or Administrative officer who co-ordinates and supervises the work of the facilitators and administers the programme.

Facilitator: He may be a senior supervisory officer. He co-ordinates the works of several quality circles through the Circle leaders.

Circle leader: Leaders may be from lowest level workers or Supervisors. A Circle leader organises and conducts Circle activities.

Circle members: They may be staff workers. Without circle members the programme cannot exist. They are the lifeblood of quality circles. They should attend all meetings as far as possible, offer suggestions and ideas, participate actively in group process, and take training seriously with a receptive attitude. The roles of Steering Committee, Co-ordinator, Facilitator, Circle leader and Circle members are well defined.

Problems:

Different attitude of managers and workers to perceive the same problem.

a. Higher level managers may find it as dilution to their authority for decision-making.

b. Workers perceive quality circles as contributors to organisational growth and profits and not providing personal benefits to them in the form of sharing higher profits.

Workers and managers should view QC's as a positive contributor to organisation growth whose benefits would be shared by both managers and workers and not by management only.

2. Workers may not have requisite knowledge, skills and qualities to analyse and solve the organisational problems. They may prefer the directions to come from higher levels than to be self-directed.

The very purpose of QC's is to enhance the decision-making abilities of workers and therefore, workers should be trained to make decisions on their own rather than depending on their superiors.

3. Though workers give suggestions in QC, they may not be acceptable and implemented by the management. This can affect the efficiency of QCs.

In case the suggestions are not worthy of implementation, managers should convince the members in this regard. Workers should take the arguments positively rather than feeling offended for the same.

Requirements of effective quality circles

Quality circles are effective in achieving the goals if they are framed with the following factors in mind:

- (a) They start with the analysis of small problems and gradually move to bigger problems.
- (b) Members of the QCs are voluntary and not mandatory to get their maximum support.
- (c) Members of the QC are taught the basic techniques of problem-solving in an informal way.
- (d) Before members' proposal to solve the problem is put to implementation, it is checked by the supervisors.
- (e) Management supports QC activities rather than leave them totally to the employees.
- (f) Members are recognised for their contribution to organisational problems.

**FIRST TERM EXAMINATION [SEPT. 2017]
FIFTH SEMESTER [B.TECH]
INDUSTRIAL MANAGEMENT [ETMS-311]**

Time : 1½ hrs.

M.M. : 30

Note: Q.No. 1 is compulsory. Attempt any two from the remaining questions.

Q.1. Write short notes on:

(a) IR as a tripartite body

(4x2.5=10)

Ans. IR as a tripartite body- INDUSTRIAL RELATIONS SYSTEMS ARE TRIPARTITE

Nearly all industrial relations system are tripartite i.e. they are made of three parties. They are:

- The employer
- The employees and
- The government

The need and evolution of these tripartite bodies are based on the recommendations of ILO (itself tripartite in nature) and the Royal Commission on Labour in 1931.

The different ways these three parties interact account for variations in different countries' systems of industrial relations.

The key variable is in the decision-making in the areas relating to work-life.

The rules and regulations on compensation, worker's rights, discipline, and the duties and performance of employees can be made in any of the three ways-unilaterally, bilaterally or in a tripartite manner.

When decisions are made unilaterally, they are made by the management on behalf of the employer without any interference from the worker or other parties.

If the workers have some right to participate in such decision making as when they are organized into trade unions, the process is bilateral.

Governments of the country can play a role in drafting and presenting to parliament labor laws that affect work life.

Q. 1. (b) Industrial disputes.

Ans. Industrial Dispute: Industrial dispute or difference between employers and employees employers and employers or employees and employees which is connected with the employment or non employment or the terms of employment or with the condition of labour of any person.

The term industrial dispute connotes a real and substantial difference having some elements of persistency and continuity, till resolved and likely, if not, adjusted to endanger the industrial peace of the undertaking or the community.

General causes of industrial disputes strains which results in bad industrial relations are.

1. Close mindedness of employers and employees one thinking to extract maximum work with minimum remuneration, other thinking to avoid work and get more enhancement in pay and wages.
2. Irrational wage, wage system and structure not mutually acceptable.
3. Poor working environment, low presence of safety, hygiene conditions vitiated atmosphere for smooth working
4. Poor human relations, and lack of dexterity on the part of management personnel.
5. Lack of control over the situations erosion of discipline, which rebounds.

6. Introduction of new technology or automation mechanization, Computerization etc. without proper consultations, preparations and discussion with workers and creating climate.

Q. 1. (c) Conciliation.

Ans. Conciliation is a process by which representatives of workers and employers are brought together before a third person or a group of persons with a view to persuade them to come to a mutually satisfying agreement. The objective of this method is to settle disputes quickly and prevent prolonged work stoppages if they have already occurred. The essential hallmarks of this approach are:

1. The conciliator tries to bridge the gulf between the parties, if possible.
2. If he does not fully succeed, he tries to reduce the differences to the extent possible. He acts as a conduit through which message are passed from one side to the other, coupled with his own interpretations facilitating the understanding of disputing parties.
3. He persuades parties to take a fresh look at the whole issues, through a process of give and take and explore the possibility of reaching a consensus.
4. He only advances possible lines of solutions for consideration by the disputants. He never tries to force the parties to accept his viewpoint. He never offers judgment on the issues. If parties feel that the suggestions offered by the conciliator are acceptable, they may strike a deal.
5. The conciliator need not follow the same path in each case. The process of conciliation, therefore, has a certain amount of flexibility and informality built around it.

Q. 1. (d) Factory.

Ans. A factory or manufacturing plant is an industrial site, usually consisting of buildings and machinery, or more commonly a complex having several buildings, where workers manufacture goods or operate machines processing one product into another.

Factories arose with the introduction of machinery during the Industrial Revolution when the capital and space requirements became too great for cottage industry or workshops.

Most modern factories have large warehouses or warehouse-like facilities that contain heavy equipment used for assembly line production. Large factories tend to be located with access to multiple modes of transportation, with some having rail, highway and water loading and unloading facilities.

Factories may either make discrete products or some type of material continuously produced such as chemicals, pulp and paper, or refined oil products. Factories manufacturing chemicals are often called plants and may have most of their equipment – tanks, pressure vessels, chemical reactors, pumps and piping – outdoors and operated from control rooms.

Discrete products may be final consumer goods, or parts and sub-assemblies which are made into final products elsewhere. Factories may be supplied parts from elsewhere or make them from raw materials. Continuous production industries typically use heat or electricity to transform streams of raw materials into finished products.

Q. 2. (a) What are the problems of Industrial Relations in India? Suggest measures to improve and create an effective IR system. (5)

Ans. Industrial relations is the study of the interactions among industry, its employees and the governments that oversee them. It is also the study of the various institutions and organizations that are formed as a result of these interactions, such as labor unions and business unions. Many problems lie central to the study of industrial relations.

(1) Achieving Competitiveness: Increasingly, one of the central problems of industrial relations in the modern world is how to achieve competitiveness. The modern globalized economy requires more than ever that each individual achieve his maximum level of competitiveness. In general, the primary problem is how companies manage to achieve the levels of innovation and flexibility required by the global economy.

(2) Employer Flexibility: Employer flexibility is another problem faced in modern industrial relations, especially in developing countries. In order for companies to achieve their maximum potential in the modern market, employers must learn how to marry traditional cultural values such as respect for authority with a greater amount of openness and respect in how employers deal with their workers. In general, the requirements of modern business include more flexible management and work organization, focusing on creating a smarter and more motivated work force and culturally sensitive management techniques.

(3) Role of government & Union: The global economy also means a different sort of role for government and labor unions in the management of industrial relations. Governments are faced with the task of deciding how to best encourage foreign involvement in their economies that will benefit their own nations but still be attractive to the foreign companies. Labor unions are faced with the need to work more collaboratively and less antagonistically with employers.

(4) Ethical Theory: Ethical theory is another extremely important area of industrial relations, and presents some of the field most pressing and demanding problems. The Western world is steeped within the libertarian and utilitarian view of industrial relations, while Asia, India and the Middle East are all working from the ethical institutions that are primary to their culture. The collisions and relationships between these different systems of thought are very important to modern industrial relations.

(5) Technology: The presence of technology in the workplace can create ethical quandaries in industrial relations, such as the loss of privacy and the replacement of jobs by machinery. Industrial relations takes on the task of figuring out how to balance technical innovation with fairness to the humans affected by it.

Q. 2. (b) Briefly describe the various welfare provisions given in the Factories Act, 1948. (5)

Ans. The Factories Act, 1948

- The Factories Act, 1948 is the principal legislation, which governs the health, safety and welfare of workers in factories.
- The act extends to the whole of India. Mine and railway workers are not included as they are covered by separate Acts.
- However, it was not until 1987 that the elements of occupational health and safety, and the prevention and protection of workers employed in hazardous processes, got truly incorporated in the Act (after the Bhopal Gas Tragedy)
- The act does not permit the employment of women and young persons in a dangerous process or operation*
- There is provision for one weekly holiday, and an adult worker should work not more than 48 hours in a week.
- There is at least half-an-hour rest after a stretch of five hours of continuous work.
- No women should be employed between 7 p.m. and 6 a.m.
- No person less than 14 years of age should work in the factory. No child should work for more than 4 hours a day and should not work in the night between 10 p.m. and 6a.m.

- One full-day wage leave should be given to an adult worker for every 20 days of work and one for every 15 days to the child worker. Twelve weeks of maternity leave should be given to a woman.

Q. 3. (a) "Strike is considered a very significant weapon in the hands of workers'. Do you agree? What are the provisions of holding a legal strike? (5)

Ans. Strike: Means a cessation of work by a body of persons employed in any industry acting in combination or a concerted refusal or a refusal under a common understanding of any number of persons who are or have been so employed to continue to work or to accept employment.

The ingredients can be summed up as

1. A cessation of work
2. This abstinence of work must be by a body of persons employed in an industry
3. The strikers must have been acting in combination.
4. They must be persons working in an industry as per this 1.D Act 1947.

5. There must be concerted refusal or refusal in a common understanding, they must stop work for some demands relating to this employment or its terms, or conditions of labour.

The strike may be manifested in different forums like, hunger, sit down, solve down, pen down, lighting etc.

Q. 3. (b) "Collective Bargaining is the system of bringing both workers and management on the common platform'. In the light of the given statement briefly describe the features and process of collective bargaining. (5)

Ans. Collective Bargaining is a process in which representatives of two groups (employers and employees) meet and try to negotiate an agreement which specifies the nature of future relationship (pertaining to employment) between the two.

Features of Collective Bargaining:

The essential features of collective bargaining are as follows:

(i) It is joint or collective process. The representatives of both the management and the employees participate in it.

(ii) It is a continuous process. It establishes regular and stable relationship between the parties involved. It involves not only the negotiation of the contract, but also the administration of contract.

(iii) It is a dynamic process. The parties have to adopt a flexible attitude throughout the process of bargaining.

(iv) It is a form of industrial democracy.

(v) It is an adjustment formula based on give and take approach of both sides

(vi) It is an attempt to achieve and maintain discipline in industry.

Collective Bargaining Process

There are two stages in collective bargaining, viz., (i) the negotiation stage and (ii) the stage of contract administration.

(i) Negotiation

(a) Identification of Problem: The nature of the problem influences whole process. Whether the problem is very important that is to be discussed immediately or it can be postponed for some other convenient time, whether the problem is minor that it can be solved with the other party's acceptance on its presentation and does not need to involve long process of collective bargaining process etc. It also influences selection of representatives, their size, period of negotiations and period of agreement that is reached

ultimately. As such it is important for both the parties to be clear about the problem before entering into the negotiations.

(b) Preparing for Negotiations: When it becomes necessary to solve the problem through collective bargaining process, both the parties prepare themselves for negotiations. The preparation starts with selection of representatives. Such representatives should be selected who can carry out negotiations with patience, composure and who can present their view effectively. After selection they should be fed with complete problem and its pros and cons. His powers and authority during negotiations also should be clearly spelt out. Other preparations include fixing up time for negotiations, period of negotiations etc. But once the parties enter into negotiations the period of negotiations may vary depending upon circumstances.

(c) Negotiations of Agreement: usually there will be a chief negotiator who is from management side. He directs and presides the process. The chief negotiator presents the problem, its intensity and nature and the views of both the parties. Then he allows the representatives of both the parties to present their views. During negotiations, the representatives should be attentive as to find out what the other party is arguing for. The representatives tend to think about what counter arguments they can present and how to say no effectively, while the other party is presenting its own views. This is a major obstacle in the bargaining process. By understanding their problems and weighing them, sometimes a better solution may be reached, which is more acceptable to both the parties. So, it is important that representatives should reach negotiating table with positive attitudes. When a solution is reached at, it is put on the paper taking concerned legislations into consideration. Both the parties concerned sign the agreement which, in turn, becomes a binding contract for both the parties.

(d) Contract Administration: Implementation of the contract is as important as making a contract. Management usually distributes the printed contract, its terms and conditions throughout organization. The union takes steps to see that all the workers understand the contract and implement it. From time to time depending upon changing circumstances, both the parties can make mutually acceptable amendments.

Q. 4. (a) Define Trade Union. What are the differences between a registered and unregistered trade union. (5)

Ans. According to Section 2(b) of the Trade Unions Act of 1926, a trade union is any combination of persons, whether temporary or permanent, primarily for the purpose of regulating the relations between workers and employers, or between workers and workers and for imposing restrictive conditions on the conduct of any trade or business, and includes the federation of two or more trade unions.

Most Important Differences between Registered Trade Union and Unregistered Trade Union are listed below:

Registered Trade Union:

1. A registered Trade Union has several advantages.
2. It is a juristic person.
3. It can sue or can be sued on its own name.
4. It has perpetual succession.
5. It can be affiliated to any national or International Union Federation.
6. It can acquire properties on its own name.
7. It can contract on its own name.
8. The employers come forward for discussions and collective bargaining with the executives of a registered trade union.
9. Proper accounting, auditing and submission of Returns within the prescribed time, etc., are compulsory to the registered trade union.

10. Immunities from the Criminal Liabilities and Civil Liabilities under Sections 17 & 18 are provided only to the registered Trade Unions.

11. The General Fund and the Civic & Political Fund can be maintained by a registered Trade Union only.

Unregistered Trade Union:

1. An unregistered Trade Union has no advantages.
2. It is not a juristic person. It is only an association of persons.
3. It cannot sue or be sued on its own name.
4. It has no perpetual succession.
5. It cannot be affiliated to any national or International Union Federation.
6. It cannot acquire properties on its own name.
7. It cannot contract on its own name.
8. The employers do not come forward for discussions and collective bargaining with the executives of an unregistered trade union, as it has no legal status.

9. Proper accounting, auditing and submission of Returns within the prescribed time, etc., are not necessary to an unregistered trade union.

10. Immunities from the Criminal Liabilities and Civil Liabilities under Sections 17 & 18 cannot be provided only to the unregistered Trade Unions.

11. The General Fund and the Civic & Political Fund cannot be maintained by an unregistered Trade Union.

Q. 4. (b) What are the different forms of workers' participation in India? Briefly describe each one of them. (5)

Ans. WORKERS PARTICIPATION IN MANAGEMENT: The word 'participation' means sharing the decision-making power with the lower ranks of the organization in an appropriate manner. Participation has a unique motivational power and a great psychological value. It promotes harmony and peace between workers and management. When workers participate in organizational decisions, they are able to see the big picture clearly, i.e., how their actions would contribute to overall growth of the company. They can offer feedback immediately based on their experiences and improve the quality of decisions significantly. Since they are involved in the decisions from the beginning, they tend to view the decisions as their own and try to translate the rhetoric into concrete action plans with zeal and enthusiasm. Participation makes them more responsible. They are willing to take initiative and contribute cost-saving suggestions and growth-oriented ideas. The feeling of being treated as equals, forces them to repose their confidence in management and accept plans of rationalization, expansion, etc., without raising serious objections. Since they are treated with respect now they begin to view the job and the organization as their own and commit themselves to organizational activities wholeheartedly.

Output cannot be increased unless there is effective co-operation between labour and management at all levels. The way of ensuring this is to satisfy their social and psychological need besides economic ones. Workers participation in management is one of the most significant modes of resolving industrial conflicts and encouraging among workers a sense of belongingness in establishment where they work.

Participation may take two forms. It may be: (1) ascending participation, and (2) descending participation.

In case of **ascending participation**, the workers may be given an opportunity to influence managerial decisions at higher levels through their elected representatives to joint councils or the board of directors of the company. But in **descending participation**, they may be given more powers to plan and to make decisions about their own work (e.g. delegation and job enlargement). This form of participation is quite popular in many organizations.

END TERM EXAMINATION [DEC. 2017] FIFTH SEMESTER [B.TECH] INDUSTRIAL MANAGEMENT [ETMS-311]

M.M. : 75

Time : 3 hrs.

Note: Attempt any five questions including Q.No. 1 which is compulsory. Select one question from each unit.

Q.1. Attempt the following: (5x5=25)

(a) What are the major reasons behind strikes in an organization?

Ans. Major reasons behind strikes in an organization: Strike is a condition when workers agree to refuse working organized by a group of employees as a protest of attempting to have concessions from the employer. A strike usually takes place in response to employee grievances. Strikes became common during the Industrial Revolution, when mass labor became important in factories and mines.

Strikes are sometimes used to pressure governments to change policies. Occasionally, strikes destabilize the rule of a particular political party or ruler; in such cases, strikes are often part of a broader social movement taking the form of a campaign of civil resistance.

Most strikes are undertaken by labor unions during collective bargaining. The object of collective bargaining is to obtain a contract (an agreement between the union and the company) which may include a no-strike clause which prevents strikes, or penalizes the union and/or the workers if they walk out while the contract is in force. The strike is typically reserved as a threat of last resort during negotiations between the company and the union, which may occur just before, or immediately after, the contract expires.

The common causes of strike are to get improvements of workplace, money or wages, shorter working days, the unfair policy or conditions which might happen in company.

Q. 1. (b) Describe the origin of Trade Unionism in India.

Ans. Origin of Trade Unionism in India: The Indian trade-union movement is over a century old but is still coping with problems of small membership and financial insecurities. As in the rest of the world, in India too, there has been a decline in the growth of trade unionism as a consequence of the process of globalization and liberalization.

After independence of our country more and more industries were coming, trade unions became stronger. With Nationalization spree trade unions affiliated themselves to political parties more vigorously; rather unions became a pawn in the hands of politician. Real union leaders lost their faces. Masked politicians became the string pullers in industrial affairs. Almost after half a century after independence when the euphoria of independence waned – there was a sudden stop on nationalization, reversal started. More privatization disinvestments started, this created strain on industrial relations. Amalgamation, merger, takeover, N.R.I. Companies, Foreign Companies invasion, started with full speed, workers baffled, unions got submerged, global competition necessity was felt by one all as such industrial relations was at balance.

With the new pattern of employment in information Technology, computer world - the word workers disappeared hence unions become out of questions. If persons are posted as supervisors and managers straight away – they are not coming under workmen Act. The new employment set up of the country has money and comfort as such the relations of employer's employee is cordial.

Q. 1. (c) What are the objectives of employee participation in management?

Ans. Objectives of employee participation in management:

Participation implies mental and emotional involvement rather than muscular activity. It motivates the employees to contribute their maximum and provides an opportunity to workers to direct their initiative and creativity towards the objectives of the group. It encourages people to accept responsibility for an activity as they feel self involved in the group.

The basic idea of employee participation in management is to get the fullest co-operation of workers. The success of such participation depends on the existence of cordial industrial relations.

- (i) To raise productivity, production and efficiency of workers.
- (ii) To improve morale of workers.
- (iii) To satisfy the desire of workers for self-expression.
- (iv) To promote industrial peace in the concern.
- (v) To have better industrial relations and establish harmonious relations between the workers and management.
- (vi) To evoke the fullest collaboration of the employees.

Q. 1. (d) Explain most common grievances of workers in India.

Ans. Most common grievances of workers in India: Grievance can be defined as any discontent or dissatisfaction, with any aspect of organisation. It can be real or imaginary, legitimate or ridiculous, stated or unvoiced, written or oral.

A grievance represents a situation in which an employee feels that something unfavourable to him has happened or is going to happen. In an industrial enterprise, grievances may arise because of the following reasons:

- **Employment terms.** Such terms and conditions in labour agreements, which are too general, contradictory, or ambiguous, may give rise to many grievances later on.
- **Working conditions.** A large number of worker's grievances are about the bad and unhealthy or unhygienic working conditions
- **Unsatisfactory compensation.** Many grievances grow from lower wages, salaries and fewer allowances, lack of benefits and services.
- **Difference of opinion.** An important reason of grievances is the difference of opinion on any particular point or issue between workers and the management, between workers and workers, or between managers and managers.
- **Ineffective supervisors.** Sometimes, ineffective supervisors also prove to be a source of many grievances.
- **Lack of participation in management.** Lack of opportunity for participation of workers in Decision making in the firm results in greater number of grievances.
- **Attitude of management.** Many grievances arise due to conservative attitudes of managers and supervisors.

Thus, the sources of grievances may be grouped under three heads, viz.

- Management policies
- Working conditions
- Personal factors.

In a survey conducted in India, as reported by Rudrabasavaraj, analysis of causes of grievances are ranked in the following order:

Problems related to housing and accommodation- 23%

Problems on medical treatment and ESI coverage- 21%

Problems on leave - 8%

Problems of financial nature- 7%

Problems on transfer- 1%

Q. 1. (e) Explain the significance of AQL and LTPD in OC curve for sampling inspections.

Ans. AQL & LTPD:

Acceptable quality level is the level of quality at which the lot is defined as a good lot, meaning the lot will be accepted. It indicates the maximum permissible number of defectives in the sample if the lot is to be accepted.

Lot tolerance percentage defectives is the level of quality at which the lot is declared to be a bad lot, meaning it will be rejected. It indicates the rejection number 'r', which sets the limit for accepting the lot. This level is also called the unacceptable quality level.

There is a strong relationship between AQL and producer's risk as well as the LTPD and consumer's risk. The lower the value of AQL, the higher is the probability of accepting a good lot.

UNIT-I

Q. 2. Write in detailed note on 'International Labour Organisation', and elaborate its role in improving working conditions of workers around the world.

(12.5)

Ans. The International Labour Organization (ILO) is devoted to promoting social justice and internationally recognized human and labour rights, pursuing its founding mission that social justice is essential to universal and lasting peace. The International Labour Organisation (ILO), was established on April 19, 1919 by Versailles Peace Conference as an autonomous body associated with the League of Nations. It was born as a result of the peace conference at the end of World War I at Versailles. India became a member of ILO in 1919 as an original signatory to the treaty of peace. The unique feature of ILO is that it is a tripartite body consisting of representations of employers, labour and government. There are three constituents namely the governments which finance it, the workers, for whose benefit it is created and the employers who share responsibility for the welfare of the workers.

It is like other inter government agencies such as FAO or WHO working for the universal cause but differing from them in one aspect, namely in its tripartite structure.

Only tripartite U.N. agency, the ILO brings together governments, employers and workers representatives of 187 member States, to set labour standards, develop policies and devise programmes promoting decent work for all women and men. It helps advance the economic and working conditions that give all workers, employers and governments a stake in lasting peace, prosperity and progress.

Q. 3. What do you understand by Industrial relations? Explain how collective bargaining helps in protecting the interests of workers in an organization.

(12.5)

Ans. It is concerned with the relationships between management and workers and the role of regulatory mechanism in resolving any industrial dispute.

Key elements in IR

- Relations existing in industry
- Relations between; unions & management; employers & employees; unions themselves, management & the government, and unions & government
- Conflicts in relationships
- Regulation by the state

The activities relating to the above relationship would entail: structuring of labour-management relations and its regulation; labour legislative compliance; negotiating work related contracts

Collective bargaining is a method by which trade unions protect and improve the conditions of their members working lives. Collective bargaining brings the employer and the employees around one table to discuss and settle many contentious issues effectively. It enables both the parties to know each other and their views, and to define their rights and obligations regarding terms of employment, working conditions, etc., through negotiations, discussions and bargains.

It involves negotiations, between organizations of workers and employers, subject matter is working conditions, terms of employment, relationship between employers and employees.

The right to bargain collectively with an employer enhances the human dignity, liberty and autonomy of workers by giving them the opportunity to influence the establishment of workplace rules and thereby gain some control over a major aspect of their lives, namely their work. Collective bargaining is not simply an instrument for pursuing external ends rather it is intrinsically valuable as an experience in self-government. Collective bargaining permits workers to achieve a form of workplace democracy and to ensure the rule of law in the workplace. Workers gain a voice to influence the establishment of rules that control a major aspect of their lives.

UNIT-II

Q. 4. Explain in detail the process of formation of a Trade Union. Discuss its pros and cons. (12.5)

Ans. A trade union is a combination of persons. Whether temporary or permanent, primarily for the purpose of regulating the relations between workers and employers or between workers for imposing restrictive conditions on the conduct of any trade or business and includes the federations of two or more trade unions as per Sec. 2 (6) Trade Unions Act, 1926.

Trade Union Formation: Trade unions are formed on different criteria. Some of the criteria are:

(1) Craft basis, (2) Industrial Unions, (3) General grouping based on place and (4) Federations.

1. Craft Unions: In this organisation the labour class is grouped based on particular trade or occupation. This category is mainly amongst the white collared employees. The measures are mostly in horizontal system and craft conscious rather than class conscious.

This will have lot of commonality in thinking and approach to problems resolution. The bank employees' union, doctors' union, lawyers' association, teachers' association come under this category.

2. Industrial Unions: A particular category of industry will have their own unions. All crafts and trades coming under that industry are part of the union. Textile mill unions, steel industry unions, mill mazdoor sangh, grini kamgar unions are some of the examples of industrial unions in India.

They form a strong force in collective bargaining. They cover all welfare of similar industry workers in a city or industrial town. Industrial unions are more vocal, volatile and indulge in agitation and strikes. Similarly these industries face more lockouts and arbitration for disputes redressal.

3. General Union: This is a conglomerate group of different industry employees forming a union. This happens normally in industrial towns, ancillary units, and SSI units in a city or suburb. Examples are Peenya industrial workers' union, Thane industry employees' unions and Jamshedpur labour union.

4. Federations: These are apex bodies at national level. All trade unions like craft union, industrial unions and general union become members of federations to have

bigger identity. Central trade unions as federations help smaller unions and support at national level to address their cause.

Shortcomings of Trade Unions: Trade union movement in our country suffers from the following weaknesses:

1. Uneven Growth: Trade unions are concentrated in large scale industry sector and in big industrial centers. There is very little trade union activity in small sector, agricultural labour and domestic sector. Trade unionism has touched only a portion of the working class in India.

2. Small Size: Most of the unions have low membership though the number of unions and union membership are increasing, average membership is inadequate.

3. Weak Financial Position: The average yearly income of unions is very low and inadequate. The subscription rates are low and many members do not pay the subscription in time. Due to their financial weakness, most of the unions are not in a position to undertake welfare programmes for workers.

4. Political Leadership: Trade unions are under the leadership and control of political parties and outsiders. Politicians exploit unions and workers for their personal and political gains. Thus, the political leadership is very harmful to the trade union movement in India.

5. Multiplicity of Unions: There exist several unions in the same establishment or industry. The existence of rival unions with conflicting ideology is greatly responsible for unhealthy growth of trade union movement. In some cases employers encourage split in unions to undermine their bargaining power.

6. Problem of Recognition: Employers are under no obligation to give recognition to any union.

7. Absence of Paid Office-Bearers: Most of the unions do not have full-time paid office-bearers. Union activists working on honorary basis devote only limited time and energy to union activities. Union officers lack adequate knowledge and skill due to lack of proper training, weak financial position and political leadership are the main reasons for this state of affairs.

8. Apathy of Members: Majority of workers do not take keen interest in union activities. The attendance at the general meetings of unions is very poor.

9. Opposition from Employers: Trade unions in India have to face opposition from employers. Many employers try to intimidate or victimise labour leaders, start rival union and bribe union officials.

10. Inter-Union Rivalry: Multiple unions create rivalry. Unions try to play down each other in order to gain greater influence among workers. Employers take advantage of infighting. Inter-union rivalry weakens the power of collective bargaining and reduces the effectiveness of workers in securing their legitimate rights.

Q. 5. Which are the major trade unions in India? Discuss their sources of finance and ways to improve the same. (12.5)

Ans. There are at present more than 800 registered associations of employers in India. These are of three types:

1. Local associations to promote the interests of employers in a particular industry or city, e.g., Indian Jute Mills Association.

2. Regional associations such as the Southern India's Mill Owners' Association which serve the needs of employers in a particular region.

3. National or apex associations which co-ordinate the efforts of local and regional associations. These are federations to which local and regional associations are affiliated. FICCI, CII, are examples of these federations. These federations perform several functions such as advice, education, communication, representation.

Important Central Trade Unions of India

1. AITUC-A11 India Trade Union Congress, 1920: This union serves as the labour forum of Communist Party of India at present. It is considered as the second largest union in India.

2. INTUC-Indian National Trade Union Congress, 1947: The Congress Party and the top congress leaders formed the INTUC like Nehru and Patel were associated with it. Every union affiliated to INTUC has to submit its dispute to arbitration after exhausting other means of settlement of disputes

3. HMS-Hind Mazdur Sabha, 1948: It was formed in Calcutta by the socialists who neither approved INTUC nor AITUC. The HMS was organised with a view to keeping its members free from any political or other outside interference.

4. BMS-Bharathiya Mazdur Sabha, 1955

5. HMKP-Hind Muzdur Kisan Parishat, 1962

6. CITU-Center of Indian Trade Union, 1970: The Marxists separated from the AITUC in May 1970 and formed the CITU.

7. UTUC-United Trade Union Congress: 1971: Those persons who were dissident socialist formed it. It functions mainly in Kerala and West Bengal

In addition to above there are unions like All India Bank Employees' Association, National Federation of Indian Railway-men, All India Port and Dock Workers' Federations, National Federation of Post & Telegraph Workers, All India Mine Workers Federation and Indian Federation of Working Journalists.

Trade Union Finances

If an organization is to grow, survive and meet the needs of its rank and file members in terms of attaining their objectives etc. It needs money. For a variety of reasons, the finances of May trade unions have not been very bountiful. It must be noted that to every general statement, there are a number of exceptions and so is the case with some financially strong unions. Funds are needed for attracting and retaining competent staff for, however idealistic the cause, people do need to survive. It is only with competent staff that some of the objectives like research, comparative data generation, company studies, presenting demands and resolving workers problems can be achieved. Again, funds are necessary for political lobbying; for sending union representatives to the local bodies, state and central legislatures

- If inertia sets in, an organization will wither away or the rank and file will shift to a more active and useful organization. Funds therefore are needed to pursue activities, which will in turn benefit the members who will then contribute, not only financially but also in terms of their services and sustain their membership. Activities resulting in something worthwhile will arouse the enthusiasm of the members and make them concerned for the allocation and proper utilization of scarce resources. The divisive nature of Indian trade unionism has also led to the dissipation of funds amongst a large number of organizations, with the result that there are many small unions without much financial backing and without much staff to do any substantial work. The generation of funds has been wholly inadequate. In some cases, subscriptions are not collected promptly or are paid by members only when they have a problem. In the former case, it is overlooked by the trade union management for fear of losing membership. On the other hand, there are according to some trade union executives, shrewd members who do not mind paying subscription to more than one union in order to protect their interest in times of need.

One other mechanism employed nowadays besides the usual collection is the special levy at the time of distribution of bonus. Some national federations and independent unions often generate some reserves to pay at the time of strike as strike fund or to employ research staff to keep abreast with current trends, but this is not the case with all unions.

UNIT-III**Q. 6. What are the benefits of work study? How is it carried out? (12.5)**

Ans. Work Study is the body of knowledge concerned with the analysis of the work methods and the standard of proposed work methods. Work study is done to increase the productivity. Work study comprises of two techniques : Method Study & Work Measurement.

(a) Method study is systematic recording and critical examination existing and proposed ways of doing work, as a means of developing and applying easier and more effective methods and reducing costs.

(b) Work measurement is the application of techniques designed to establish the time for a qualified worker to carry out a specified job at a defined level of performance.

There is a close link between Method Study and Work Measurement. Method study is concerned with the reduction of the work content and establishing the one best way of doing the job where as work measurement is concerned with investigation and education of any ineffective time associated with the job and establishing time standards for an operation carries out as per standard method.

It helps to reduce the cost of the product by eliminating waste and unnecessary operations. It helps in reducing rejections and scrap, and higher utilization of resources of the organization. It helps in establishing the standard time for an operation or job which is used in manpower planning and production planning.

Advantages of Work Study**Following are the advantages of work study:**

- It helps to achieve the smooth production flow with minimum interruptions.
- It helps to reduce the cost of the product by eliminating waste and unnecessary operations.
- Better worker-management relations.
- Meets the delivery commitment.
- Reduction in rejections and scrap and higher utilization of resources of the organization.
- Helps to achieve better working conditions.
- Better workplace layout.
- Improves upon the existing process or methods and helps in standardization and simplification.
- Helps to establish the standard time for an operation or job which has got application in manpower planning, production planning.

Q. 7. If you are to advise on the method of determining the idle time of operators in a particular shop where more than thousand machine operators are working which method do you suggest and why do you suggest it? (12.5)

Ans. Work measurement refers to the estimation of standard time for an activity, that is the time allowed for completing one piece of job by using the prescribed method. Standard time can be defined as the time taken by an average experienced worker for the job with provisions for delays beyond the worker's control.

There are several techniques used for estimation of standard time in industry. These include time study, work sampling, standard data, and predetermined motion time system.

Applications:

- Standard times for operations are useful for several applications in industry, like
 - Estimating material, machinery, and equipment requirements.
 - Estimating production cost per unit as an input to
 - Preparation of budgets

- Determination of selling price
- Make or buy decision
- Estimating manpower requirements.
- Estimating delivery schedules and planning the work
- Balancing the work of operators working in a group.
- Estimating performance of workers and using that as the basis for incentive payment to those direct and indirect labor who show greater productivity.

Work sampling would be the appropriate method for the mentioned scenario. Work sampling, also called 'Activity Sampling' or 'Ratio Delay Study', is based on the statistical method first devised by L.H.S. Tippet in 1934. He used this technique firstly, in the British textile industry. Later Morrow carried out several investigations.

The results obtained by the all-day stop-watch time study and such other statistical methods were in most cases found to be in close agreement with the work sampling method, which places it on a sound reliable basis.

It states that the percentage of observations recorded on an operation in any state is a reliable estimate of the percentage time the operation is in that state, provided, "sufficient number of observations are taken at random". Here particular stress should be paid on the words "random" and "sufficient number of observations".

In this method, error is likely to occur but the error tends to diminish as the number of samples increases.

Theory of Work Sampling

1. Confidence Level: It is important to decide, as to what level of confidence is desired in the final "Work Sampling" results. The most common confidence level is 95%. The area under the curve at 2 sigma or two standard deviations is 95.45%, which is rounded off to 95%. This means that the probability is that 95% of the time the random observations will represent the facts and 5% of the time they will not.

For many cases, an accuracy of + 5% is considered satisfactory. This is sometimes referred as the standard error in percentage.

Sample size Determination: To get a desired accuracy, an analyst must take sufficient number of observations.

For calculating the number of observations required for achieving the desired accuracy, following formula is used:

Sample Size Determination:

$$S \times P = kX \sqrt{\frac{P(1-P)}{N}}$$

where $K = 1, 2$ or 3 for confidence level of 68% , 95% and 99.7% , respectively.

N = Total number of random observations (sample size)

S = Desired relative accuracy.

P = Percentage occurrence of an activity or delay, expressed in decimal e.g., $15\% = 0.15$

UNIT-IV

Q. 8. What do you understand by TQM? Explain its basic building blocks. Why TQM faces criticism from some professionals? (12.5)

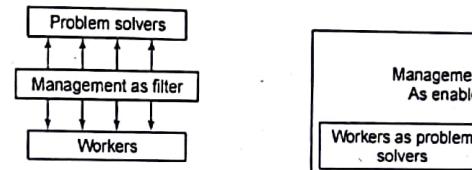
Ans. TOTAL QUALITY MANAGEMENT : TQM can be defined as an organization-wide effort to develop systems, tools, techniques, skills and the mindset to establish a quality assurance system that is responsive to the emerging market needs. A good TQM programme consists of the following important elements:

- (a) Role of the top management
- (b) Employee involvement for continuous improvement

- (c) Tools & techniques for quality assurance & continuous improvement
- (d) Addressing the training requirements of employees

TQM Role of the Top Management

- 'Total' connotes 'everyone', 'everywhere' and 'every time'.
- It involves everyone from CEO to the janitor, the responsibility for quality shifts to the production workers.



TQM, focus of middle & top in management shifts to one of facilitating production workers in maintaining quality assurance. It calls for shifting of process ownership to the workers & their supervisors.

Top management has to play an important role in ensuring that 'every time' is followed in letter and spirit. Top management also needs to play a vital role in communication. They should not miss even a single opportunity that comes their way to demonstrate their support & involvement in TQM implementation process.

A well defined quality policy signals the seriousness of an organization & nature of its commitment to various stakeholders in the system.

Employee Involvement: Process ownership should be incorporated in the system. Process ownership is defined as the transformation of the role of employees from the function of merely accomplishing the assigned tasks related to a process to one of thinking through the various aspects of the process and taking on a conscious role in overall management of the process itself.

Employee involvement invariably involves employee empowerment. Employees need to be trained in problem solving tools. Small group improvement projects are the basic building blocks of a TQM programme. Moreover employees need better communication skills to deal with one another in a group & with their subordinates and supervisors.

Addressing training requirements:

- Successful TQM programs demand substantial investment in communication.
- Communicating the need for alternative procedures, new methods of empowerment & benefits that accrue to the organization.
- Educating all the employees in using new quality control tools & techniques to be adopted for quality management.

Q. 9. Explain any two of the following:

- (a) Cost of quality

Ans. Cost of poor quality are generally classified into four categories which are as follows:

1. Prevention cost
2. Appraisal cost
3. Internal failure cost
4. External failure cost

Prevention cost: It includes the following: Quality training, quality planning, Quality data analysis, Vendor surveys, procurement planning, review of new product, process control, quality measurement and control equipment etc.

Appraisal Cost: It includes the cost of carrying out audit, laboratory services, set up cost for inspection, in-process training, field testing, inspection material, maintenance and calibration, final inspection cost.

Internal Failure cost: includes scrap cost, rework cost, fault of vendor, QC investigation of failure, material procurement, repair and troubleshooting.

External failure cost: includes complaints, loss of customer goodwill, warranty cost, replacement inventory, trade concessions, field maintenance and product service.

Q. 9. (b) Benefits of six sigma

Ans. Six Sigma is a highly disciplined process that helps us focus on developing and delivering near-perfect products and services. The word Sigma is a statistical term that measures how far a given process deviates from perfection. The central idea behind Six Sigma is that if you can measure how many "defects" you have in a process, you can systematically figure out how to eliminate them and get as close to "zero defects" as possible and specifically it means a failure rate of 3.4 parts per million or 99.9997% perfect.

Benefits of Six Sigma:

- Six Sigma's aim is to eliminate waste and inefficiency, thereby increasing customer satisfaction by delivering what the customer is expecting. Six Sigma is a business-driven, multi-dimensional structured approach for:

- Ø Improving Processes
- Ø Lowering Defects
- Ø Reducing process variability
- Ø Reducing costs
- Ø Increasing customer satisfaction
- Ø Increased profits

Q. 9. (c) Control charts

Ans. CONTROL CHART: To determine whether observed variations are abnormal, we can measure and plot the performance measure taken from the sample on a time ordered diagram called a control chart. Control chart is a graphic comparison of process performance and data with control limits drawn as limit lines on a chart.

The control chart distinguishes between chance causes and assignable causes of variations. A typical control chart consists of a control line corresponding to the average quality at which the process is to perform and two other lines corresponding to the upper and lower control limits, also called the tolerance limits.

Vertical scale indicates the quality variations. Horizontal scale has time, number of samples of product is taken at specified time intervals, quality checked, measured, averaged and plotted on the chart. If the values plotted are within the control limits, process is said to be under control. If values move away from control limits process is out of control.

In other words a sample statistic that falls between UCL & LCL indicates that the process is exhibiting common causes of variation; a statistic that falls outside the control limits indicates that the process is exhibiting assignable causes of variation. Observations falling outside the control limits do not always mean poor quality. For example assignable cause may be a new billing process introduced to reduce the number of incorrect bills sent to customers. If the proportion of incorrect bills, that is the performance measure from a sample of bills, falls below LCL of control chart the new procedure likely changed the billing process for the better & a new control chart should be constructed.