LESSON PLAN

Discipline:CIVIL	Semester: 5TH	Name of Teaching Faculty:-JYOTIRMAYEE SABAR, SR. LECT
Subject:-RAILWAY & BRIDGE ENGINEERING	No of Days/Week Class alloted:- 04	Semester from date: 15/09/2022 To Date: 22/12/2022 No of weeks:14 weeks
Week	Claas Day	THEORY
1st	1st	**INTRODUCTION:** Railway terminology, advantages of railways
	2nd	Classification of indian railways
	3rd	**PERMANENT WAY**: Definition and component of permanent way
	4th	concept of gauge
2nd	1st	different gauges prevalent in india
	2nd	suitability of these gauges under different condition
	3rd	**TRACK MATERIALS**:Rails, functions and requirment of rails, type of rail section
	4th	Length of rails, Rail joints-types
3rd	1st	Requirement of an ideal rail joint
	2nd	purpose of welding of rails & its advantages , creep-definitions, cause and prevention
	3rd	sleepers: definitions ,fuction & requirements of sleepers ,
	4th	Classification of sleepers
4th	1st	Advantages &disadvantages of different types of sleepers
	2nd	Ballast : function and requirment ,materials for ballast
	3rd	Fixture of broad gauge: connection of rails to rail fish plate, fish bolt
	4th	connection of rails to sleepers
5th	1st	**GEOMETRIC FOR BROAD GAUGE**:Typical cross section of single and double board gauge railway track in cutting and embankment
	2nd	Typical cross section of single and double board gauge railway track in cutting and embankment
	3rd	permanent and temporary land width
	4th	permanent and temporary land width
6th	1st	gradient for drainage
	2nd	gradient for drainage
	3rd	gradient for drainage
	4th	super elevation - necessity &limiting valued
7th	1st	super elevation - necessity &limiting valued
	2nd	**POINTS AND CROSSINGS** :Definition , necessity of points and
	3rd	defination ,necessity of point and crossing
	4th	types of point and crossing with tie diagram
8th	1st	types of point and crossing with tie diagram

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	2nd	**LAYING AND MAINTENANCE OF TRACK:** Methods of laying &
	3rd	Methods of laying &maintenance of track
	4th	Duties of a permanent way inspector
9th	1st	Duties of a permanent way inspector
	2nd	**INTRODUCTION TO BRIDGES:** Definitions, components of a bridge
	3rd	Classification of bridges, requirements of an ideal bridge
	4th	**BRIDGE SITE INVESTIGATION, HYDROLOGY & PLANNING:**
10th	1st	Determination of flood discharge
	2nd	Waterway & economic span
	3rd	Afflux, clearance& free board
	4th	**BRIDGE FOUNDATION:** Scour depth minimum depth of
11th	1st	Types of bridge foundations- Spread foundations
	2nd	Types of bridge foundations- Spread foundations
	3rd	Pile foundation
	4th	Pile foundation
12th	1st	Well foundation-sinking of wells
	2nd	Well foundation-sinking of wells
	3rd	Caission foundation
	4th	Cofferdams
13th	1st	**BRIDGE SUBSTRUCTURE AND APPROACHES:** Types of piers
	2nd	Types of piers
	3rd	Types of abutments
	4th	Types of wings walls
14th	1st	Approaches
	2nd	**CULVERT & CAUSE WAYS:** Types of culverts-brief description
	3rd	Types of culverts-brief description
	4th	Types of causeway-brief description

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Jyotirmayee Sabar
Sr. lect. (Civil)

14/9

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Discipline:**CIVIL**	Semester: 5th	Name of Teaching Faculty:-**Tapas kumar Mallick**
Subject:- ESTIMATION & COST EVALUTION - 2	No of Days/Week Class alloted:- **04**	Semester from date: **15.09.2022 to 22.12.2022** No of Weeks: **15**
Week	Claas Day	Theory Topics
1st	1st	**1.DETAILED ESTIMATE FOR CULVERT AND BRIDGES**: Concept
	2nd	1.1-Detailed estimate of a RCC slab culvert with right angled wing walls with bar bending schedule.
	3rd	RCC slab -Basic ,plan ,layout
	4th	RCC Slab BAR Bending schedule
2nd	1st	BBS - Numerical Problems
	2nd	BBS - Numerical Problems
	3rd	RCC Culvert-Detailed estimate with example
	4th	RCC Culvert-Detailed estimate with example(Contd.)
3rd	1st	RCC Culvert-Detailed estimate with example(Contd.)
	2nd	1.2-:RCC Hume pipe culvert with splayed angled wing wall
	3rd	RCC Hume pipe culvert with splayed angled wing wall-Numerical Problem
	4th	RCC Hume pipe culvert with splayed angled wing wall-Numerical Problem
4th	1st	**2.Estimate of irrigation structures**
	2nd	2.1-Detailed estimate of simple type of vertical fall to given specification.
	3rd	Detailed estimate of simple type of vertical fall to given specification-Numerical Problem
	4th	Detailed estimate of simple type of vertical fall to given specification-Numerical Problem
5th	1st	Detailed estimate of simple type of vertical fall to given specification-Numerical Problem
	2nd	Detailed estimate of simple type of vertical fall to given specification-Numerical Problem
	3rd	2.2-Detailed estimate of drainage siphon to given specification.
	4th	Detailed estimate of drainage siphon to given specification-Numerical Problem 1
6th	1st	Detailed estimate of drainage siphon to given specification-Numerical Problem 1

14/9

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	2nd	Detailed estimate of drainage siphon to given specification- Numerical Problem 1
	3rd	Detailed estimate of drainage siphon to given specification- Numerical Problem 2
	4th	Detailed estimate of drainage siphon to given specification- Numerical Problem 2
7th	1st	Detailed estimate of drainage siphon to given specification- Numerical Problem 2
	2nd	Doubt clearing class
	3rd	**3.Detailed estimate of roads**
	4th	3.1-Detail estimate of a water bound macadam road
8th	1st	Detail estimate of a water bound macadam road
	2nd	Detail estimate of a water bound macadam road- Numerical Problem
	3rd	3.2-Detailed estimate of a flexible pavement in cutting / filling
	4th	Different Methods on Earthwork
9th	1st	Detailed estimate of a flexible pavement in cutting / filling- Numerical Problem
	2nd	Detailed estimate of a flexible pavement in cutting / filling- Numerical Problem
	3rd	3.3-Detailed estimate of septic tank and soak pit for 50 users
	4th	Detailed estimate of septic tank and soak pit for 50 users- Numerical Problem
10th	1st	Detailed estimate of septic tank and soak pit for 50 users- Numerical Problem
	2nd	Detailed estimate of septic tank and soak pit for 50 users- Numerical Problem
	3rd	**4.Miscellaneous estimates**
	4th	Detailed estimate- Tube well
11th	1st	Detailed estimate -Tube well
	2nd	Detailed estimate- Piles and Pile cap
	3rd	Detailed estimate- Piles and Pile cap
	4th	Detailed estimate- Piles and Pile cap
12th	1st	Detailed estimate- Piles and Pile cap
	2nd	Detailed estimate- Isolated Footings
	3rd	Detailed estimate- Isolated Footings
	4th	Detailed estimate- Isolated Footings
13th	1st	Detailed estimate- combined footings.

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	2nd	Detailed estimate- combined footings.
	3rd	**5.PWD Accounts works**
	4th	5.1 Works
14th	1st	5.1.1 Classification of work-original, major, petty, repair work, annual repair,
	2nd	5.1.2 Concept of Method of execution of works through the contractors anddepartment, contract and agreement, work order, types of contract, piece work agreement.
	3rd	5.2 Accounts of works –Administrative approval, technical sanction, tender, preparation of notice inviting tender, quotations, earnest money, E-tendering, security deposit,
	4TH	advance payment, intermediate payment, final payment, running bill, final bill,regular and temporary establishment, cash, major & subhead of account, temporary advance (imprest money),supervision charges, suspenseaccount, debit, credit, book transfer, voucher and related accounts
15th	1st	5.2.2 Measurement book use & maintenance, procedure of marking entries of measurement of work and supply of materials, labour employed, standard measurement books and common irregularity
	2nd	5.2.3 Muster roll : Its preparation & use for making payment of pay & wages 5.2.3 Muster roll : Its preparation & use for making payment of pay & wages
	3rd	5.2.5 Labour & labour report, method of labour payment, use of forms and necessity of Submission 5.2.6 Classification of stores, receipt / issue statement on standard form, method of preparation of stock account, preparation and submission of returns,verification of stocks, shortage and excess
	4TH	5.3 Building BYLAWS and REGULATORY Bodies, Development authorities,types and their levels, RERA etc.

14/09/22

14/09/22

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LESSON PLAN OF 5TH SEMESTER CIVIL ENGINEERING

Discipline :- CIVIL	Semester:- 5TH	Name of the Teaching Faculty:- SWAYAN RANJAN MISRA
Subject:- Structural Design-2	No of Days/per Week Class Allotted :- 04	Semester From:- **15.09.2022 TO 22.12.2022** No of Weeks:- **15**

Week	Class Day	Theory Topics
1st	1st	**Introduction** Common steel structures, Advantages & disadvantages of steel structures
	2nd	Types of steel, properties of structural steel.
	3rd	Rolled steel sections, special considerations in steel design.
	4th	Structural analysis and design philosophy.
2nd	1st	Loads and load combinations, Brief review of Principles of Limit State design.
	2nd	**Structural Steel Fasteners and Connections** Bolted Connections Classification of bolts, advantages and disadvantages of bolted connections
	3rd	Different terminology, spacing and edge distance of bolt holes.
	4th	Types of bolted connections. Types of action of fasteners, assumptions and principles of design.
3rd	1st	Strength of plates in a joint, strength of bearing type bolts (shear capacity& Bearing capacity), reduction factors, and shear capacity of HSFG bolts with example problem.
	2nd	Analysis & design of Joints using bearing type and HSFG bolts
	3rd	Efficiency of a joint
	4th	Welded Connections: Advantages and Disadvantages of welded connection
4th	1st	Types of welded joints and specifications for welding
	2nd	Design stresses in welds.
	3rd	Strength of welded joints.
	4th	Numerical problem on welded connection
5th	1st	**Design of Steel tension Members** Common shapes of tension members
	2nd	Common shapes of tension members
	3rd	Analysis and Design of tension members
	4th	Gross Strength of Tension Member
6th	1st	Net Strength of Tension Member
	2nd	Block Shear Strength of Tension Member
	3rd	Numerical Problem on Tension Member
	4th	Numerical Problem on Tension Member
7th	1st	Numerical Problem on Tension Member
	2nd	Lug angle
	3rd	**Design of Steel Compression members** Common shapes of compression members.
	4th	Buckling class of cross sections
8th	1st	slenderness ratio
	2nd	Design compressive stress and strength of compression members.

15/9

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	3rd	Design compressive stress and strength of compression members.
	4th	Analysis and Design of compression members
9th	1st	Analysis and Design of compression members
	2nd	Numerical problem solving
	3rd	Numerical problem solving
	4th	Numerical problem solving
10th	1st	**Design of Steel beams:** Common cross sections and their classification.
	2nd	Common cross sections and their classification.
	3rd	Deflection limits According To IS-800
	4th	web buckling and web crippling.
11th	1st	Design of laterally supported beams against bending and shear
	2nd	Design of laterally supported beams against bending and shear.
	3rd	Design of laterally supported beams against bending and shear.
	4th	Numerical Problem solving
12th	1st	Numerical Problem solving
	2nd	Numerical Problem solving
	3rd	**Design of Tubular Steel Structures:** Round Tubular Section
	4th	Permissible Stresses
13th	1st	Tubular Compression & Tension Members
	2nd	Joints in Tubular trusses
	3rd	Numerical Problem
	4th	Numerical Problem
14th	1st	**Design of Masonry Structures:** Design considerations for Masonry walls & Columns
	2nd	Design considerations for Masonry walls & Columns
	3rd	Load Bearing & Non-Load Bearing walls
	4th	Permissible stresses, Slenderness Ratio
15th	1st	Effective Length, Height & Thickness.
	2nd	Numerical Problem
	3rd	Numerical Problem
	4th	Numerical Problem

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Signature of the concerned Lecturer

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LESSON PLAN

DISCIPLINE	SEMESTER 5TH Sem.	Name of the Teaching Faculty: Tapas Ranjan Mishra
Sub: WS&WWE Th.4	No. of Days Per Week: 5 Class Allotted	Semester From Date: 15/09/2022 To Date: 22/12/2022 No. of Weeks: 15 Weeks
Week	Class Day	Theory/Practical Topic
1st	1	Necessity of treated water supply
	2	Per capita demand, variation in demand and factors affecting demand
	3	Methods of forecasting population, Numerical problems using different methods
	4	Impurities in water – organic and inorganic, Harmful effects of impurities
	5	Analysis of water –physical, chemical and bacteriological
2nd	1	Water quality standards for different uses
	2	Surface sources – Lake, stream, river and impounded reservoir
	3	Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well
	4	Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well
	5	Yield from well- method s of determination, Numerical problems using yield formulae (deduction excluded)
3rd	1	Yield from well- method s of determination, Numerical problems using yield formulae (deduction excluded)
	2	Intakes – types, description of river intake, reservoir intake, canal intake
	3	Pumps for conveyance & distribution – types, selection, installation.
	4	Pipe materials – necessity, suitability, merits & demerits of each type
	5	Pipe joints – necessity, types of joints, suitability, methods of jointing Laying of pipes – method
4th	1	Flow diagram of conventional water treatment system
	2	Treatment process / units : Aeration ; Necessity Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
	3	Treatment process / units : Aeration ; Necessity Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
	4	Treatment process / units : Aeration ; Necessity Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
	5	Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier (Definition and concept only)
5th	1	Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier (Definition and concept only)
	2	Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features
	3	Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features
	4	Disinfection : Necessity, methods of disinfection Chlorination – free and combined chlorine demand, available chlorine, residual chlorine, pre-chlorination, break point chlorination, super-chlorination
	5	Disinfection : Necessity, methods of disinfection Chlorination – free and combined chlorine demand, available chlorine, residual chlorine, pre-chlorination, break point chlorination, super-chlorination
6th	1	Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method (Concept Only)
	2	General requirements, types of distribution system-gravity, direct and

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		combined
	3	Methods of supply – intermittent and continuous
	4	Distribution system layout – types, comparison, suitability
	5	Valves-types, features, uses, purpose-sluice valves, check valves, air valves, scour valves, Fire hydrants, Water meters
7th	1	Valves-types, features, uses, purpose-sluice valves, check valves, air valves, scour valves, Fire hydrants, Water meters
	2	Method of connection from water mains to building supply
	3	General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.
	4	General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.
	5	Aims and objectives of sanitary engineering
8th	1	Definition of terms related to sanitary engineering
	2	Systems of collection of wastes– Conservancy and Water Carriage System – features, comparison, suitability
	3	Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage.
	4	Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage.
	5	Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage.
9th	1	Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage.
	2	Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring
	3	Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring
	4	General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological
	5	General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological
10th	1	Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD
	2	Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD
	3	Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD
	4	Types of system-separate, combined, partially separate , features, comparison between the types, suitability
	5	Types of system-separate, combined, partially separate , features, comparison between the types, suitability
11th	1	Types of system-separate, combined, partially separate , features, comparison between the types, suitability
	2	Shapes of sewer – rectangular, circular, avoid-features, suitability
	3	Laying of sewer-setting out sewer alignment
	4	Manholes and Lamp holes – types, features, location, function
	5	Inlets, Grease & oil trap – features, location, function
12th	1	Storm regulator, inverted siphon – features, location, function
	2	Disposal on land – sewage farming, sewage application and dosing, sewage sickness-causes and remedies
	3	Disposal on land – sewage farming, sewage application and dosing, sewage sickness-causes and remedies
	4	Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream
	5	Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream
13th	1	Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream
	2	Principles of treatment, flow diagram of conventional treatment
	3	Primary treatment – necessity, principles, essential features, functions
	4	Secondary treatment – necessity, principles, essential features, functions

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	5	Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
14th	1	Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
	2	Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
	3	Plumbing arrangement of single storied & multi storied building as per I.S. code practice
	4	Plumbing arrangement of single storied & multi storied building as per I.S. code practice
	5	Plumbing arrangement of single storied & multi storied building as per I.S. code practice
15th	1	Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe
	2	Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe
	3	Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe
	4	Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe
	5	Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe

28/09/2022

14/09/22

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14/9/22

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LESSION PLAN

Discipline:	Semester:5th sem.	Name of the Teaching Faculty: Hirendra Kumbhar (Lect. In English)
Subject: **Entrepreneurship Mnagement & Smart Technology**	No. Of Day /per week: 4 class allotted.	Semester From date : 15.09.2022 To Date: 22.12.2022 No of weeks:15 weeks
Week	Class Day	Theory/practical Topics
1st	1st	ENTREPRENEURSHIP: Concept /meaning of entrepreneurship
	2nd	Need of entrepreneurship
	3rd	Characteristics , qualities and types of entrepreneur , functions
	4th	Barriers in entrepreneurship
2nd	1st	Entrepreneur vrs.Manager
	2nd	forms of bussiness ownership : sole proprietorship , partnership forms and others
	3rd	Types of industries , concept of start ups
	4th	Entrepreneurial support agencies at national, state ,district level: DIC,NSIC ,OSIC, SIDBI,NABARD ,commersial bank ,KVIC etc
3rd	1st	technology business incubators (TBI) and science and technology entrepreneur park
	2nd	MARKET SURVEY AND OPPORTUNITY INDENTIFICATION 9BUSINESS PLANNING): -Bussiness planning
	3rd	ssi ,ancillary units , tiny units ,service sector units
	4th	time schedule plan , agencies to be contacted for project implementation
4th	1st	Assessment of demand and supply and potential areas of growth
	2nd	Identifying business opportunity
	3rd	final product selection
	4th	PROJECT REPORT PREPARATION: Defination of managment
5th	1st	principle of management
	2nd	function of management
	3rd	Level of management in an organisation
	4th	FUNCTION AREAS AND OF MANAGEMENT : PRODUCTION MANAGEMENT :function ,activities & productivity
6th	1st	quality control ,production planning and control
	2nd	INVENTORY MANAGEMENT:need for inventory management,models /techniques of inventory management
	3rd	Financial management : function of financial management : function of financial management,management of working capital,coasting,break even enelysis
	4th	brief idea about according terminologies : book keeping , journals entry petty cash book , P & L ACCOUNTS, Balances sheets
7th	1st	brief idea about according terminologies : book keeping , journals entry petty cash book , P & L ACCOUNTS,
	2nd	marketing management : concept of marketing marketing management KET SURVEY AND OPPORTUNITY
	3rd	INDENTIFICATION 9BUSINESS PLANNING): -Bussiness planning
	4th	concept of 4p s,maketing techniquies
8th	1st	human reasource management ,function of personal manage manent
	2nd	man power planning ,requirment ,sources of man power, selection process ,methods of testing methods of training & development ,payment of wages
	3rd	LEADERSHIP &MOTIVATION : LEADERSHIP: defination need /importance
	4th	qualities and function of a leader
9th	1st	importance of motivation
	2nd	factors affecting motivation
	3rd	theorities of motivation
	4th	method of improving motivation
10th	1st	importance of communication in bussiness
	2nd	types and barriers of communications inbussiness
	3rd	WORK ,CULTURE ,TQM & SAFETY: human relationship and performance in organization
	4th	WORK ,CULTURE ,TQM & SAFETY: human relationship and performance in organization
11th	1st	relationships with peers ,superiors and sub ordinatets
	2nd	relationships with peers ,superiors and sub ordinatets
	3rd	TQM concepts : qualities policy ,quality management ,quality system
	4th	TQM concepts : qualities policy ,quality management ,quality system
12th	1st	Accident and safety , causes ,preventatives ,measures general safety ,rural personal protection equipment
	2nd	Accident and safety , causes ,preventatives ,measures general safety ,rural personal protection equipment
	3rd	Accident and safety , causes ,preventatives ,measures general safety ,rural personal protection equipment
	4th	legislations : intellecutual property , patents ,trade mark , copy right
13th	1st	legislations : intellecutual property , patents ,trade mark , copy right
	2nd	legislations : intellecutual property , patents ,trade mark , copy right
	3rd	feactures of factories act 1948 with amendenment
	4th	feactures of factories act 1948 with amendenment
		feactures of factories act 1948 with amendenment

14/9/22

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14th	1st	feactures of payment of wages act 1936 (only silents point)
	2nd	feactures of payment of wages act 1936 (only silents point)
	3rd	feactures of payment of wages act 1936 (only silents point)
	4th	SMART TECHNOLOGY : Concept of IOT ,how IOT works
15th	1st	SMART TECHNOLOGY : Concept of IOT ,how IOT works
	2nd	SMART TECHNOLOGY : Concept of IOT ,how IOT works
	3rd	component of IOT,characteristics of IOT ,categories of IOT
	4th	applictions of IOT -smart cities ,smart aggriculture , smart enargy management etc.

14/09/2022

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15/9/22

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