Lesson Plan

Name of the Faculty : Ritu
Discipline : CIVIL
Semester : 6TH
Subject : RAILWAYS,BRIDGES AND TUNNELS
Paper Code :
Lesson Plan Duration :

Week	Theory	
	Lecture Day	Topic (including assignment/ test)
	1st	**PART – I: RAILWAYS:-**
	2nd	Introduction to Indian Railways
	3rd	Introduction to Indian Railways
	4th	Railway surveys:-
1st	5th	Factors influencing the railways route,
	1st	Brief description of various types of railway survey
	2nd	Classification of permanent way describing its component parts
	3rd	Classification of permanent way describing its component parts
	4th	Classification of permanent way describing its component parts
2nd	5th	Rail Gauge: Definition
	1st	Rail Gauge: Types,
	2nd	Rail Gauge: Practice in India
	3rd	Rails :-Explain
	4th	Rails – types of rails
3rd	5th	Rails – types of rails
	1st	Rail Fastenings: Rail joints
	2nd	Types of rail joints, Fastenings for rails
	3rd	Fish plates, Bearing plates
	4th	Sleepers: Functions of sleepers,
4th	5th	Types of sleepers
	1st	Requirements of an ideal material for sleepers.
	2nd	Ballast:- Explain
	3rd	Function of ballast,
	4th	Requirements of an ideal material for ballast
5th	5th	Crossings:- Brief description regarding different types of crossings
	1st	Signallings: Brief description regarding different types of signallings
	2nd	Crossings and signallings:- (Latest electronics operated signal devices)
	3rd	Maintenance of track: Necessity, maintenance of track,
	4th	Inspection of soil, track and fixtures
6th	5th	Maintenance and boxing of ballast maintenance gauges, tools
	1st	Earth work an drainage: Features of rail road, bed level,
	2nd	Width of formation, side slopes, drains,
	3rd	Methods of construction, requirement of drainage system
	4th	**PART-II: BRIDGES:-**
7th	5th	Introduction: Bridge – its function and component parts,
8th	1st	Difference between a bridge and a culvert

	2nd	Classification of Bridges:- Their structural elements and suitability
	3rd	According to life-permanent and temporary
	4th	According to deck level – Deck, through and semi-through
	5th	According to material –timber, masonry, steel, RCC, pre-stressed
	1st	According to structural form:-
	2nd	Grade Seperators-Railway Overbridges (ROB), Railway underbridge (RUB)
	3rd	Beam type –RCC, T-Beam, steel girder bridges,
	4th	Plate girder and box girder, balanced cantilever, Trussed bridges
9th	5th	Arch type – open spandrel and filled spandrel barrel and rib type
	1st	Suspension type – unstiffened and stiffened and table (its description with sketches)
	2nd	According to the position of highest flood level submersible and non submersible
	3rd	IRC classification
	4th	Bridge Foundations:- Introduction to open foundation
10th	5th	Bridge Foundations:- Pile foundation,
	1st	Bridge Foundations :-Well foundation
	2nd	Piers, Abutments and Wingwalls:-
	3rd	Piers-definition, parts;
	4th	Types –solid (masonry and RCC), open
11th	5th	Abutments and wing walls – definition
	1st	Types of abutments (straight and tee), abutment with wing walls (straight, splayed, return and curved)
	2nd	Launching of Equipment Bridges
	3rd	Bridge bearings:- Purpose of bearings
	4th	Types of bearings
12th	5th	Fixed plate
	1st	Rocker and roller
	2nd	Maintenance of Bridges
	3rd	Inspection of Steel and Equipment bridges
	4th	Routine maintenance
13th	5th	**PART - III: TUNNELS:-** Definition and necessity of tunnels
	1st	Typical section of tunnels for a national highway and single and double broad gauge railway track
	2nd	Typical section of tunnels for a national highway and single and double broad gauge railway track
	3rd	Ventilation –necessity and methods of ventilation
	4th	Ventilation –By blowing, exhaust and combination of blowing and exhaust
14th	5th	Drainage method of draining water in tunnels
	1st	Drainage method of draining water in tunnels
	2nd	Lighting of tunnels
	3rd	Lighting of tunnels
	4th	
15th	5th	

Lesson Plan

Name of the Faculty : Parveen
Discipline : CIVIL
Semester : 6TH
Subject : QUANTITY SURVEYING AND VALUATION
Paper Code :
Lesson Plan Duration :

Week	Theory	
	Lecture Day	Topic (including assignment/ test)
1st	1st	Introduction to quantity surveying and its importance
	2nd	Duties of quantity surveyor
	3rd	Types of estimates :- Preliminary estimates, Plinth area estimate
	4th	Types of estimates :- Cubic rate estimate, Estimate per unit base
	5th	Detailed estimates :- Definition, Stages of preparation – details of measurement and calculation of quantities and abstract
2nd	1st	Measurement :- Units of measurement for various items of work as per BIS:1200
	2nd	Rules for measurements
	3rd	Different methods of taking out quantities – centre line method and long wall and short wall method
	4th	Preparation of Detailed and Abstract Estimates from Drawings for:-
	5th	A small residential building with a flat roof
3rd	1st	A small residential building with a flat roof
	2nd	Pitched roof building comprising of:- Two rooms with W.C.
	3rd	Pitched roof building comprising of:- Bath, kitchen
	4th	Pitched roof building comprising of:- verandah
	5th	Earthwork for unlined channel
4th	1st	Earthwork for unlined channel
	2nd	WBM road
	3rd	Pre-mix carpeting
	4th	Single span RCC slab culvert
	5th	Single span RCC slab culvert

	1st	Earthwork for plain
	2nd	Earthwork for hill roads
	3rd	Earthwork for plain and hill roads
	4th	RCC work in beams,
5th	5th	RCC work in beams,
	1st	RCC work in column,
	2nd	RCC work in column,
	3rd	RCC work in lintel,
	4th	RCC work in lintel,
6th	5th	RCC work in foundations
	1st	RCC work in foundations
	2nd	users septic tank - 10 users
	3rd	users septic tank - 50 users
	4th	Calculation of quantities of materials for :-
7th	5th	Cement mortars of different proportion
	1st	Cement concrete of different proportion
	2nd	Brick/stone masonry in cement mortar
	3rd	Plastering and pointing
	4th	White washing, painting
8th	5th	R.C.C. work in slab, beams
	1st	Analysis of Rates :- Steps involved in the analysis of rates. Requirement of material
	2nd	Analysis of Rates :- labour,sundries, contractor's profit and overheads
	3rd	Analysis of rates for finished items when data regarding labour, rates of material and labour is given:
	4th	Earthwork in excavation in hard/ordinary soil and filling with a concept of lead and lift
9th	5th	RCC in roof slab/beam/lintels/columns
	1st	Brick masonry in cement mortar
	2nd	Cement Plaster
	3rd	White washing, painting
	4th	Stone masonry in cement mortar
10th	5th	Running and maintenance cost of construction equipment
	1st	Contractorship :- Meaning of contract
	2nd	Qualities of a good contractor and their qualifications
	3rd	Essentials of a contract
	4th	Types of contracts, their advantages, dis-advantages and suitability, system of payment
11th	5th	Single and two cover-bids; tender, tender forms and documents, tender notice, submission of tender and deposit of earnest money, security deposit, retention money, maintenance period
	1st	Classification and types of contracting firms/construction companies
	2nd	Preparation of Tender Document based on Common Schedule Rates (CSR) :- Introduction to CSR and calculation of cost based on premium on CSR
12th	3rd	Exercises on writing detailed specifications of different types of

		building works from excavation to foundations, superstructure and finishing operation
	4th	Exercises on preparing tender documents for the following:- Earth work
	5th	Exercises on preparing tender documents for the following:- Construction of a small house as per given drawing
	1st	Exercises on preparing tender documents for the following:- RCC works
	2nd	Exercises on preparing tender documents for the following:- Pointing, plastering and flooring
	3rd	Exercises on preparing tender documents for the following:- White-washing, distempering and painting
	4th	Exercises on preparing tender documents for the following:- Wood work including polishing
13th	5th	Exercises on preparing tender documents for the following:- Sanitary and water supply installations
	1st	Exercises on preparing tender documents for the following:- False ceiling, aluminum (glazed) partitioning
	2nd	Exercises on preparing tender documents for the following:- Tile flooring including base course
	3rd	Exercises on preparing tender documents for the following:- Construction of W.B.M/Concrete road
	4th	Exercises on preparation of comparative statements for item rate contract
14th	5th	Valuation :- Purpose of valuation, principles of valuation
	1st	Definition of various terms related to valuation like depreciation, sinking fund
	2nd	Definition of various terms related to valuation like salvage and scrap value, market value, fair rent, year's purchase etc
	3rd	Methods of valuation (i) replacement cost method
	4th	Methods of valuation (i i) Rental return method
15th	5th	

Lesson Plan

Name of the Faculty : Ritu
Discipline : CIVIL
Semester : 6TH
Subject : CONSTRUCTION MANAGEMENT AND ACCOUNTS
Paper Code :
Lesson Plan Duration :

Week	Theory

	Lecture Day	Topic (including assignment/ test)
	1st	Introduction: - Significance of construction management
	2nd	Main objectives of construction management and overview of the subject
	3rd	Functions of construction management, planning, organising, staffing, directing, controlling and coordinating, meaning of each of these with respect to construction job.
	4th	Classification of construction into light, heavy and industrial construction
1st	5th	Stages in construction from conception to completion
	1st	The construction team: owner, engineer, architect and contractors, their functions and inter-relationship
	2nd	Construction Planning:- Importance of construction planning
	3rd	Stages of construction planning:- Pre-tender stage, Contract stage
	4th	Scheduling construction works by bar charts:- Definition of activity, identification of activities
2nd	5th	Preparation of bar charts for simple construction work
	1st	Preparation of schedules for labour, materials
	2nd	Machinery and finances for small works
	3rd	Limitations of bar,
	4th	Charts Scheduling by network techniques:- Introduction to network techniques; PERT and CPM
3rd	5th	Differences between PERT and CPM terminology
	1st	Organization: - Types of organizations
	2nd	Line and their characteristics
	3rd	line and staff and their characteristics
	4th	Functional and their characteristics
4th	5th	Site Organization:- Explain
	1st	Principle of storing and stacking materials at site
	2nd	Location of equipment
	3rd	Preparation of actual job layout for a building
	4th	Organizing labour at site
5th	5th	Construction Labour: - Conditions of construction workers in India
	1st	Wages paid to workers in India,
	2nd	Important provisions of the following Acts:-
	3rd	Labour Welfare Fund Act 1936 (as amended)
	4th	Payment of Wages Act 1936 (as amended)
6th	5th	Minimum Wages Act 1948 (as amended)
	1st	Control of Progress: - Methods of recording progress
	2nd	Analysis of progress
	3rd	Taking corrective actions keeping head office informed
	4th	Cost time optimization for simple jobs - Direct and indirect cost, variation with time, cost optimization
7th	5th	Inspection and Quality Control:-
	1st	Need for inspection
8th	2nd	Quality control

	3rd	Principles of inspection
	4th	Stages of inspection and quality control for :- Earth work
	5th	Stages of inspection and quality control for :- Masonry
	1st	Stages of inspection and quality control for :- RCC
	2nd	Stages of inspection and quality control for :- Sanitary and Water supply services
	3rd	Accidents and Safety in Construction:-
	4th	Accidents – Causes
9th	5th	Accidents – Remedies
	1st	Safety measures for:- Excavation work
	2nd	Safety measures for:- Drilling and blasting
	3rd	Safety measures for:- Hot bituminous works
	4th	Safety measures for:- Scaffolding, ladders, form work
10th	5th	Safety measures for:- Demolitions
	1st	Safety campaign and safety devices
	2nd	**ACCOUNTS :** Public Work Accounts:- Introduction, technical sanction,
	3rd	Administrative approval, allotment of funds
	4th	Reappropriation of funds bill, contractor ledger
11th	5th	Measurement book running and final account bills complete
	1st	Preparation of bill of quantities (BOQ),
	2nd	Completion certificate & report,
	3rd	Hand receipt, aquittance roll.
	4th	Muster Roll labour,
12th	5th	Casual labour roll-duties and responsibility of different cadres
	1st	Budget-stores, returns,
	2nd	Account of stock
	3rd	Misc. P.W. advances T & P – verification
	4th	Survey report,
13th	5th	Road metal material charged direct to works
	1st	Account - expenditure & revenue head
	2nd	Remittance and deposit head,
	3rd	Defination of cash,
	4th	Precaution in custody of cash book
14th	5th	Imprest account
	1st	Temporary advance,
	2nd	Treasury challan,
	3rd	Preparation of final bills.
	4th	Students must learn to prepare accounts register, stock register.
15th	5th	

Lesson Plan

Name of the Faculty : Parveen
Discipline : CIVIL
Semester : 6TH
Subject : EARTHQUAKE RESISTANT BUILDING CONSTRUC TION
Paper Code :
Lesson Plan Duration :

Week	Theory	
	Lecture Day	**Topic (including assignment/ test)**
	1st	Elements of Engineering Seismology :-
	2nd	
	3rd	
	4th	General features of tectonic of seismic regions
1st	5th	Causes of earthquakes
	1st	Seismic waves, earthquake size (magnitude and intensity),
	2nd	
	3rd	
	4th	Epicentre, Seismograph,
2nd	5th	Classification of earthquakes
	1st	Seismic zoning map of India
	2nd	
	3rd	
	4th	Static and Dynamic Loading, Fundamental period
3rd	5th	Seismic Behaviour of Traditionally-Built Constructions of India ;-
	1st	Performance of building during earthquakes
	2nd	
	3rd	
	4th	Mode of failure (Out-of-plane failure)
4th	5th	Mode of failure (in-plane failure)
	1st	Mode of failure (Diaphragm failure,)
	2nd	
	3rd	
	4th	Mode of failure (Connection failure,)
5th	5th	Mode of failure (Non-structural components failure)
	1st	Special construction method
	2nd	
6th	3rd	

	4th	Tips to be observed while planning
	5th	Precautions to be observed while planning
	1st	Precautions to be observed while planning Designing of earthquake resistant building.
	2nd	
	3rd	
	4th	Designing of earthquake resistant building.
7th	5th	Designing of earthquake resistant building.
	1st	Construction of earthquake resistant building.
	2nd	
	3rd	
	4th	Construction of earthquake resistant building.
8th	5th	Introduction to IS: 4326,
	1st	Introduction to IS: 13828
	2nd	
	3rd	
	4th	Introduction to IS: 1893(Part 1),
9th	5th	Introduction to 154326 and IS: 13920 (latest edition)
	1st	Seismic Provision of Strengthening
	2nd	
	3rd	
	4th	Seismic Provision of Strengthening
10th	5th	Retrofitting Measures for Traditionally- Built Constructions
	1st	Retrofitting Measures for Traditionally- Built Constructions
	2nd	
	3rd	
	4th	Brick Structures
11th	5th	Brick Structures
	1st	RCC Structures
	2nd	
	3rd	
	4th	RCC Structures
12th	5th	Provision of reinforcement detailing in masonry constructions
	1st	Provision of reinforcement detailing in masonry constructions
	2nd	
	3rd	
	4th	Provision of reinforcement detailing in masonry constructions
13th	5th	Provision of reinforcement detailing in RCC constructions
	1st	Provision of reinforcement detailing in RCC constructions
	2nd	
	3rd	
	4th	Disaster Management: Disaster rescue, psychology of rescue,
14th	5th	Rescue workers, Rescue plan, rescue by steps, rescue equipment
	1st	Safety in rescue operations
	2nd	
15th	3rd	

	4th	Debris clearance
	5th	Casuality management

Lesson Plan

Name of the Faculty : Ritu
Discipline : CIVIL
Semester : 6TH
Subject : ENVIRONMENTAL ENGINEERING
Paper Code :
Lesson Plan Duration :

Week	Theory	
	Lecture Day	Topic (including assignment/ test)
1st	1st	Study of Importance of Environmental Engineering :- Importance of clean environment, control of environmental pollution with respect to air, land and water
	2nd	Conservation of natural resources, environmental education and awareness, sustainable development
	3rd	Environments and Ecology:- Definition and understanding of environment and ecology concept
	4th	
	5th	
2nd	1st	Ecosystem and types of ecosystems,
	2nd	Energy flow in an ecosystem
	3rd	Food chain, ecological pyramids,
	4th	
	5th	
3rd	1st	Consortium and ecological balance
	2nd	Water Pollution :- Causes of pollution in surface
	3rd	Underground water eutrophication of lakes

	4th	
	5th	
	1st	Underground water eutrophication of lakes and its preventing measure
	2nd	BIS standards for water quality
	3rd	Air Pollution :- Definition, principal air pollutants,
	4th	
4th	5th	
	1st	Atmospheric parameters influencing air pollution
	2nd	Types of air contaminants and their sources,
	3rd	Effects of air pollution on human beings,
	4th	
5th	5th	
	1st	Effects of air pollution on Plants, animals
	2nd	Automobile pollution
	3rd	BIS ambient air quality standards and measures to combat air pollution
	4th	
6th	5th	
	1st	Noise Pollution :- Definition, unit of measurement of noise
	2nd	Sources and effects of noise pollution
	3rd	Control of noise pollution
	4th	
7th	5th	
	1st	Effects of mining, blasting and deforestation :-
	2nd	Ill effects of mining, blasting and deforestation on the environment human life and wild life.
	3rd	Land Use :- Effect of land use on environmental quality
	4th	
8th	5th	
	1st	Land use and natural disasters,(land slides etc)
	2nd	Soil degradation problems - erosion
	3rd	Soil degradation problems - water logging,
	4th	
9th	5th	
	1st	Soil degradation problems - soil pollution
	2nd	Environmental Impact Assessment :-
	3rd	Environmental Impact Assessment :- Definition and requirements
	4th	
10th	5th	
	1st	Environmental impact assessment.
	2nd	Flour chart of environmental impact assessment methodology
	3rd	Describe the need of EIA.
	4th	
11th	5th	
12th	1st	Describe the importance of EIA.

	2nd	Legislation to Control Environmental Pollution (idea) :-
	3rd	Indian legislative acts for water
	4th	
	5th	
	1st	Indian legislative acts for land and air pollution control provisions, scope and implementation
	2nd	Global Issues of Environmental Engineering :-
	3rd	Global warming, ozone depletion,
	4th	
13th	5th	
	1st	Acid rain, oil pollution
	2nd	Radiation hazards and their control
	3rd	Concept of clean technology and carbon credits
	4th	
14th	5th	
	1st	Renewable Source of Energy :-
	2nd	Role of non-conventional sources of energy (biogas, solar, wind etc) in environmental protection
	3rd	Conservation of energy resources like coal, oil etc., alternative fuels, bio-diesel etc.
	4th	
15th	5th	