Name of the Faculty :

Discipline : Civil Engineering

Semester : 6th

Subject : Earthquake Resistant Building Construction

Lesson Plan Duration : 15 Weeks (from Jan 9 -2019 to Apr-2019)

Week	Theory	
	Lecture Day	**Topic (including assignment / test)**
1st	1	**Introduction to the Subject and its necessity**
	2	**1. Elements of Engineering Seismology :** General features of tectonic of seismic regions.
	3	Causes of earthquakes, Seismic waves,
2nd	1	Earthquake size (magnitude and intensity),
	2	Epicentre, Seismograph,
	3	Classification of earthquakes,
3rd	1	Seismic zoning map of India,
	2	Static and Dynamic Loading, Fundamental period.
	3	**2. Seismic Behaviour of Traditionally-Built Constructions of India :** Performance of building during earthquakes
4th	1	Mode of failure: Out-of-plane failure, in-plane failure,
	2	Mode of failure: Diaphragm failure, Connection failure,
	3	Mode of failure: Non-structural components failure
5th	1	**Revision/Assignment-I**
	2	**Sessional Test -I**
	3	**3. Special construction method :** Special construction methods
6th	1	Special construction methods
	2	Tips and Precautions to be observed while planning,
	3	Designing and Construction of earthquake resistant building.
7th	1	Designing and Construction of earthquake resistant building.
	2	Designing and Construction of earthquake resistant building.
	3	**4. Introduction to various Seismic IS codes :** IS: 4326, IS: 13828,
8th	1	IS: 1893(Part 1),
	2	IS: 154326 and
	3	IS: 13920 (latest edition)
9th	1	**Revision/Assignment-II**
	2	**5. Seismic Provision of Strengthening and Retrofitting :** Seismic Provision of Strengthening and Retrofitting
	3	Seismic Provision of Strengthening and Retrofitting
10th	1	Measures for Traditionally-Built Constructions,
	2	Brick and RCC Structures
	3	Brick and RCC Structures
11th	1	Revision/Quarries
	2	**Sessional Test -II**
	3	**6. Provision of reinforcement detailing in masonry and RC constructions :**

12th	1	Provision of reinforcement detailing in masonry constructions
	2	Provision of reinforcement detailing in RC constructions
	3	Provision of reinforcement detailing in RC constructions
13th	1	Provision of reinforcement detailing in RC constructions
	2	**7. Disaster Management :** Disaster rescue, Psychology of rescue,
	3	Rescue workers, Rescue plan,
14th	1	Rescue by steps,
	2	Rescue equipment,
	3	Safety in rescue operations,
15th	1	Debris clearance
	2	Casuality management
	3	**Sessional Test -III**

Name of the Faculty : M.P.SINGH

Discipline : **Civil Engineering**

Semester : **6th**

Subject : **RAILWAYS, BRIDGES AND TUNNELS**

Lesson Plan Duration : **15 Weeks (from Jan 9-2019 to Apr-2019)**

Week	Theory	
	Lecture Day	**Topic (including assignment / test)**
1st	1	**Introduction to the Subject and its necessity**
		1. Introduction to Indian Railways
	3	2. Railway surveys: Factors influencing the railways route
	4	brief description of various types of railway survey 3. Classification of permanent way describing its component parts
2nd	1	4. Rail Gauge: Definition, types, practice in India
	2	5. Rails – types of rails
	3	Revision/Quarries
	4	6. Rail Fastenings: Rail joints, types of rail joints, fastenings for rails,
3rd	1	fish plates, bearing plates
	2	7. Sleepers: Functions of sleepers, types of sleepers,
	3	Requirements of an ideal material for sleepers.
	4	8. Ballast: Function of ballast, Requirements of an ideal material for ballast
4th	1	**Revision**
	2	9. Crossings and signallings: Brief description regarding different types of crossings/signallings
	3	Crossings and signallings: Brief description regarding different types of crossings (Latest electronics operated signal devices)
	4	Crossings and signallings: Brief description regarding different types of signallings (Latest electronics operated signal devices) 10. Maintenance of track: Necessity, maintenance of track
5th	1	inspection of soil,
	2	Track
	3	Fixtures, maintenance and boxing of ballast maintenance gauges, tools
	4	**Test –I**
6th	1	11. Earth work and drainage: Features of rail road, bed level,
	2	width of formation, side slopes,
	3	Drains: methods of construction,
	4	requirement of drainage system, 12. Introduction, Bridge – its function and component parts, difference between a bridge and a culvert

7th	1	13. Classification of Bridges Their structural elements and suitability: 13.1 According to life-permanent and temporary
	2	13.2 According to deck level – Deck, through and semi-through
	3	13.3 According to material –timber, masonry,
	4	steel, RCC, pre-stressed
8th	1	13.4 According to structural form; - Grade separators-Railway Over-bridges (ROB), Railway under-bridge (RUB)
	2	- Beam type –RCC, T-Beam,
	3	steel girder bridges,
	4	plate girder and box girder, balanced cantilever,
9th	1	Trussed bridges.
	2	- Arch type – open spandrel and filled spandrel barrel and rib type
	3	- Suspension type – unstiffened and stiffened and table (its description with sketches)
	4	- According to the position of highest flood level submersible and non-Submersible
10th	1	13.5 IRC classification
	2	14. Bridge Foundations: Introduction to open foundation,
	3	pile foundation,
	4	Well foundation, 15. Piers, Abutments and Wing-walls: Piers-definition, parts; types –solid (masonry and RCC), open
11th	1	Revision
	2	**Test -II**
	3	15.2 Abutments and wing walls – definition, types of abutments (straight and tee),
	4	abutment with wing walls (straight and splayed), abutment with wing walls (return and curved)
12th	1	15.3 Launching of Equipment Bridges
	2	15.3 Launching of Equipment Bridges
	3	16. Bridge bearings Purpose of bearings;
	4	types of bearings – fixed plate, types of bearings –rocker and roller
13th	1	**Revision**
	2	17. Maintenance of Bridges 17.1 Inspection of Steel and Equipment bridges
	3	17.2 Routine maintenance
	4	18. Definition and necessity of tunnels 19. Typical section of tunnels for a national highway,
14th	1	Typical section of tunnels for single and double broad gauge railway track
	2	Practice of the typical cross-section of tunnels for highways and railway track

	3	20. Ventilation –necessity
	4	Methods of ventilation: Blowing and Exhaust combination of blowing and exhaust,
15th	1	21. Drainage method of draining water in tunnels
	2	Drainage method of draining water in tunnels
	3	22. Lighting of tunnels
	4	**Assignment-III, Test III**

Name of the Faculty :

Discipline : Civil Engineering

Semester : 6th

Subject : QUANTITY SURVEYING AND VALUATION

Lesson Plan Duration : 15 Weeks (from Jan-2019 to Apr-2019)

Week	Theory	
	Lecture Day	**Topic (including assignment / test)**
1st	1st	**Introduction to the Subject and its necessity**
	2nd	**1. Introduction to quantity surveying and its importance.**
	3rd	Duties of quantity surveyor
	4th	**2. Types of estimates** 2.1 Preliminary estimates - Plinth area estimate
	5th	- Cubic rate estimate, - Estimate per unit base
2nd	6th	2.2 Detailed estimates – Definition, - Stages of preparation, – details of measurement and calculation of quantities and abstract
	7th	- Stages of preparation – details of measurement and calculation of quantities and abstract
	8th	**3. Measurement** 3.1 Units of measurement for various items of work as per BIS:1200 3.2 Rules for measurements
	9th	**Revision**
	10th	3.3 Different methods of taking out quantities – centre line method
3rd	11th	3.3 Different methods of taking out quantities – long wall and short wall method
	12th	Practice of taking out quantities
	13th	**4. Preparation of Detailed and Abstract Estimates from Drawings for:** 4.1 A small residential building with a flat roof and pitched roof building comprising of - Two rooms with W.C., bath, kitchen and verandah
	14th	- Two rooms with W.C., bath, kitchen and verandah
	15th	- Two rooms with W.C., bath, kitchen and verandah
4th	16th	**Revision**
	17th	- Two rooms with W.C., bath, kitchen and verandah
	18th	- Two rooms with W.C., bath, kitchen and verandah
	19th	4.2 Earthwork for unlined channel
	20th	4.2 Earthwork for unlined channel
5th	21st	4.3 WBM road and pre-mix carpeting
	22nd	4.3 WBM road and pre-mix carpeting
	23rd	**Revision/Assignment-I**
	24th	**Test -I**
	25th	4.4 Single span RCC slab culvert
6th	26th	4.4 Single span RCC slab culvert
	27th	4.5 Earthwork for plain and hill roads
	28th	4.5 Earthwork for plain and hill roads
	29th	4.5 Earthwork for plain and hill roads

	30th	4.6 RCC work in beams, slab, column and lintel, foundations
7th	31st	4.6 RCC work in beams, slab, column and lintel, foundations
	32nd	4.6 RCC work in beams, slab, column and lintel, foundations
	33rd	4.7 users septic tank - 10 users - 50 users
	34th	4.7 users septic tank - 10 users - 50 users
	35th	**Revision**
8th	36th	4.7 users septic tank - 10 users
	37th	4.7 users septic tank - 50 users
	38th	4.7 users septic tank - 50 users
	39th	**5. Calculation of quantities of materials for** 5.1 Cement mortars of different proportion
	40th	5.2 Cement concrete of different proportion
9th	41st	5.3 Brick/stone masonry in cement mortar
	42nd	5.4 Plastering and pointing
	43rd	5.5 White washing, painting
	44th	5.6 R.C.C. work in slab, beams
	45th	**Revision**
10th	46th	**6. Analysis of Rates** 6.1 Steps involved in the analysis of rates. Requirement of material, labour, sundries, contractor's profit and overheads
	47th	6.2 Analysis of rates for finished items when data regarding labour, rates of material and labour is given: - Earthwork in excavation in hard/ordinary soil and filling with a concept of lead and lift
	48th	- RCC in roof slab/beam/lintels/columns
	49th	- Brick masonry in cement mortar
	50th	- Cement Plaster - White washing, painting
11th	51st	- Stone masonry in cement mortar
	52nd	6.3 Running and maintenance cost of construction equipment
	53rd	**Revision/Assignment-II**
	54th	**Test -II**
	55th	**7 Contractor-ship** - Meaning of contract - Qualities of a good contractor and their qualifications
12th	56th	- Essentials of a contract
	57th	- Types of contracts, their advantages, dis-advantages and suitability, system of payment
	58th	- 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
	59th	- Classification and types of contracting firms/construction companies
	60th	**8 Preparation of Tender Document based on Common Schedule Rates (CSR)** - Introduction to CSR and calculation of cost based on premium on CSR

13th	61st	- Exercises on writing detailed specifications of different types of building works from excavation to foundations, superstructure and finishing operation
	62nd	**Revision**
	63rd	- Exercises on preparing tender documents for the following a) Earth work
	64th	b) Construction of a small house as per given drawing
	65th	c) RCC works d) Pointing, plastering and flooring
14th	66th	e) White-washing, distempering and painting f) Wood work including polishing g) Sanitary and water supply installations
	67th	h) False ceiling, aluminum (glazed) partitioning i) Tile flooring including base course
	68th	j) Construction of W.B.M/Concrete road
	69th	**9. Exercises on preparation of comparative statements for item rate contract**
	70th	**10. Valuation** a) Purpose of valuation, principles of valuation
15th	71st	b) Definition of various terms related to valuation like depreciation, sinking fund, salvage and scrap value, market value, fair rent, year's purchase etc.
	72nd	c) Methods of valuation (i) replacement cost method
	73rd	c) Methods of valuation (ii) rental return method
	74th	**Assignment-III**
	75th	**Test -III**

Name of the Faculty : M.P SINGH

Discipline : **Civil Engineering**

Semester : **6th**

Subject : **CONSTRUCTION MANAGEMENT AND ACCOUNTS**

Lesson Plan Duration : **15 Weeks (from Jan-2019 to Apr-2019)**

Week	Theory	
	Lecture Day	**Topic (including assignment / test)**
1st	1	**Introduction to the Subject and its necessity**
	2	**1. Introduction:** 1.1 Significance of construction management 1.2 Main objectives of construction management and overview of the subject
	3	1.3 Functions of construction management, planning, organising, staffing, directing, controlling and coordinating, meaning of each of these with respect to construction job.
	4	1.4 Classification of construction into light, heavy and industrial construction 1.5 Stages in construction from conception to completion 1.6 The construction team: owner, engineer, architect and contractors, their functions and inter-relationship
2nd	5	**2. Construction Planning:** 2.1 Importance of construction planning
	6	2.2 Stages of construction planning - Pre-tender stage - Contract stage
	7	2.3 Scheduling construction works by bar charts - Definition of activity, identification of activities - Preparation of bar charts for simple construction work
	8	- Preparation of bar charts for simple construction work
3rd	9	- Preparation of schedules for labour, materials, machinery and finances for small works - Limitations of bar charts
	10	- Practice of bar chart preparation
	11	2.4 Scheduling by network techniques - Introduction to network techniques; PERT and CPM,
	12	2.4 Scheduling by network techniques - Differences between PERT and CPM terminology Practice of CPM
4th	13	Practice of PERT
	14	**Revision**
	15	**3. Organization:** 3.1 Types of organizations: Line,
	16	line and staff, Functional and their characteristics
5th	17	Practice of preparation of organizational chart of an organization.

	18	**4. Site Organization:** 4.1 Principle of storing and stacking materials at site
	19	4.2 Location of equipment
	20	4.3 Preparation of actual job layout for a building Practice of job lay-out
6th	21	4.4 Organizing labour at site
	22	**Revision/Assignment-I**
	23	**Sessional Test -I**
	24	**5. Construction Labour:** 5.1 Conditions of construction workers in India, Wages paid to workers
7th	25	5.2 Important provisions of the following Acts: - Labour Welfare Fund Act 1936 (as amended)
	26	- Payment of Wages Act 1936 (as amended)
	27	- Minimum Wages Act 1948 (as amended)
	28	**Revision/Quarries** **6. Control of Progress:** 6.1 Methods of recording progress
8th	29	6.2 Analysis of progress 6.3 Taking corrective actions keeping head office informed
	30	6.4 Cost time optimization for simple jobs - Direct and indirect cost,
	31	variation with time, cost optimization
	32	Practice of Cost Optimization **7. Inspection and Quality Control:** 7.1 Need for inspection and quality control
9th	33	7.2 Principles of inspection
	34	7.3 Stages of inspection and quality control for - Earth work
	35	- Masonry
	36	- RCC - Sanitary and water supply services
10th	37	**Revision**
	38	**8. Accidents and Safety in Construction:** 8.1 Accidents – causes and remedies
	39	8.2 Safety measures for - Excavation work
	40	- Drilling and blasting - Hot bituminous works
11th	41	- Scaffolding, ladders, form work - Demolitions
	42	8.3 Safety campaign and safety devices
	43	**Revision/Assignment-II, Sessional Test -II**
	44	**9. Public Work Accounts:** Introduction, technical sanction, administrative approval, allotment of funds, re-appropriation of funds bill,
12th	45	Contractor ledger, measurement book,
	46	Preparation of bill of quantities (BOQ),

	47	Practice: Preparation of bill of quantities (BOQ),
	48	Running and final account bills complete, Practice: MB/running bill/final bill
13th	49	Completion certificate & report,
	50	**Revision**
	51	Hand receipt, aquittance roll. Muster Roll labour,
	52	Casual labour roll-duties and responsibility of different cadres, Budget-stores, returns, account of stock, misc. P.W. advances,
14th	53	T & P – verification, survey report
	54	Road metal material charged direct to works,
	55	Account - expenditure & revenue head, remittance and deposit head,
	56	Definition of cash, precaution in custody of cash book, Imprest account, temporary advance, treasury challan,
15th	57	Preparation of final bills.
	58	Preparation of accounts register, stock register.
	59	Practice of preparation of: Bills/Accounts Register/Stock Register
	60	**Assignment-III**

Name of the Faculty :

Discipline : Civil Engineering

Semester : 6th

Subject : EMPLOYABILITY SKILLS – II

Lesson Plan Duration : 15 Weeks (from Jan 9-2018 to Apr-2018)

Week	Practical	
	Practical Day	**Topic**
1st	1st	**Introduction to the Subject and its necessity**
2nd	2nd	Mock Interview concept and benefits, How to face interview
3rd	3rd	Holding Mock interview
4th	4th	**Practical Report Writing**
5th	5th	**Viva Voce-I**
6th	6th	Preparing for meeting, agenda preparation
7th	7th	Holding meeting, preparing minute of meeting
8th	8th	Group discussion – concept, types of group discussion,
9th	9th	Preparation for group discussion,
10th	10th	Holding group discussion as **Viva Voce-II**
11th	11th	Presentation : Elements of good presentation Structure and tools of presentation,
12th	12th	Paper reading, Seminar preparation
13th	13th	Holding seminars
14th	14th	**Practical Report Writing**
15th	15th	Power point presentation as **Viva Voce-III**

Name of the Faculty : M.P.SINGH

Discipline : **Civil Engineering**

Semester : **6th**

Subject : **MAJOR PROJECT WORK**

Lesson Plan Duration : 15 Weeks (from Jan-2019 to Apr-2019)

Week	Practical	
	Practical Day	**Topic**
1st	1st	**Introduction of the project work**
	2nd	List of some of the suggested projects -Construction of a Residential House -Rain Water Harvesting - Water Supply system for a one or two villages - Construction of toilets and baths for a shopping complex in a township - Design and construction of septic tank with soak pit for 100 users - Concrete Mix Design - Construction of concrete cubes by mixing appropriate quantity of fly ash with fibres
	3rd	**Necessity/Scope of the project work for the civil engineers**
	4th	Project Work: Estimation and Costing of Residential House (chosen from the list provided)
2nd	1st	Building elements/Quantity surveying
	2nd	Heads of Civil projects works
	3rd	**Revision**
	4th	Specification of various elements of building/civil works - Introduction
3rd	1st	- Earth Work
	2nd	- Foundation work
	3rd	- Brick masonry in Foundation
	4th	- CC Work/Damp proofing Course
4th	1st	- RCC work
	2nd	- Brick masonry in Superstructure
	3rd	- Calculation of steel to be used as reinforcement in columns, beams and slabs etc.
	4th	- Bar bending schedule
5th	1st	- Centering/shuttering and scaffholding
	2nd	- Curing and its necessity
	3rd	**Report Writing of Project work**
	4th	- Plastering/Flooring
6th	1st	- Finishing Work Wood work
	2nd	- Painting/Distempering
	3rd	- Doors/windows/ventilation
	4th	- Different accessories used for doors/windows/ventilators fixation
7th	1st	- Testing of construction materials used
	2nd	**Report Writing of Project work**
	3rd	**Viva Voce - I**
	4th	**Designing of the structure:** Designing of the structural components
8th	1st	Designing of the structural components

	2nd	Designing of the structural components
	3rd	Designing of the structural components
	4th	Designing of the structural components
9th	1st	Designing of the structural components
	2nd	Designing of the structural components
	3rd	Designing of the structural components
	4th	Designing of the structural components
10th	1st	Designing of the structural components
	2nd	Designing of the structural components
	3rd	**Report Writing of Project work**
	4th	Estimation of the materials to be used for the construction of the structure
11th	1st	Estimation of the materials to be used for the construction of the structure
	2nd	Estimation of the materials to be used for the construction of the structure
	3rd	Estimation of the materials to be used for the construction of the structure
	4th	**Viva Voce-II**
12th	1st	**Report Writing of Project work**
	2nd	Analysis of rates
	3rd	Analysis of rates
	4th	Introduction of Schedule of Rates (CSR-Common Schedule of Rates/ HSR-Haryana Schedule of Rates/DSR-Delhi Schedule of Rates)
13th	1st	Preparation of inventory on site
	2nd	Site/Job-layout
	3rd	Introduction to low cost materials/low cost housing
	4th	Introduction to steel structure: welding/riveting
14th	1st	Preparation of BOQ
	2nd	Preparation of BOQ
	3rd	**Report Writing of Project work**
	4th	Preparation of abstracts of costs
15th	1st	Preparation of abstracts of costs
	2nd	**Report Writing of Project work**
	3rd	**Report Writing of Project work**
	4th	**Viva Voce-III**

Name of the Faculty : DHEERAJ SAHNI/PREETI DHAMI

Discipline : **Civil Engineering**

Semester : **6th**

Subject : **REPAIR & MAINTENANCE OF BUILDINGS**

Lesson Plan Duration : **15 Weeks (from Jan 9 -2019 to Apr-2019)**

Week	Theory	
	Lecture Day	**Topic (including assignment / test)**
1st	1	1.1 Importance and significance of repair and maintenance of buildings
	2	1.2 Meaning of maintenance1.3 Objectives of maintenance
	3	1.4 Factors influencing the repair and maintenance
2nd	1	2.1 Definition of deterioration/decay
	2	2.2 Factors causing deterioration, their classification 2.2.1 Human factors causing deterioration
	3	2.2.2 Chemical factors causing deterioration 2.2.3 Environmental conditions causing deterioration
3rd	1	2.2.4 Miscellaneous factors 2.3 Effects of various agencies of deterioration on various building materials i.e. bricks, timber, concrete, paints, metals, plastics, stones
	2	3. Investigation and Diagnosis of Defects 3.1 Systematic approach/procedure of investigation
	3	3.2 Sequence of detailed steps for diagnosis of building defects/problems 3.3 List non-destructive and others tests on structural elements
4th	1	Materials to evaluate the condition of the building and study of three most commonly used tests
	2	4. Defects and their root causes (06 hrs) 4.1 Define defects in buildings
	3	4.2 Classification of defects
5th	1	**Test/Assignment-I**
	2	4.3 Main causes of building defects in various building elements 4.3.1 Foundations, basements and DPC
	3	4.3.2 Walls
6th	1	4.3.3 Column and Beams
	2	4.3.4 Roof and Terraces
	3	4.3.5 Joinery
7th	1	4.3.6 Decorative and protective finishes
	2	4.3.7 Services
	3	4.3.8 Defects caused by dampness
8th	1	5. Materials for Repair, maintenance and protection. 5.1 Compatibility aspects of repair materials
	2	5.2 State application of following materials in repairs
	3	5.2.1 Anti corrosion coatings
9th	1	5.2.2 Adhesives/bonding aids
	2	. 5.2.3 Repair mortars

	3	5.2.4 Curing compounds
10th	1	5.2.5 Joints sealants:
	2	**Test/Assignment-II**
	3	5.2.6 Waterproofing systems for roofs
11th	1	5.2.7 Protective coatings
	2	6. Remedial Measures for Building Defects 6.1 Preventive maintenance considerations
	3	6.2 Surface preparation techniques for repair 6.3 Crack repair methods 6.3.1 Epoxy injection6.3.2 Grooving and sealing
12th	1	6.3.3 Stitching 6.3.4 Adding reinforcement and grouting 6.3.5 Flexible sealing by sealant
	2	6.4 Repair of surface defects of concrete 6.4.1 Bug holes 6.4.2 Form tie holes 6.4.3 Honey comb and larger voids
	3	6.5 Repair of corrosion in RCC elements 6.5.1 Steps in repairing 6.5.2 Prevention of corrosion in reinforcement
13th	1	6.6 Material placement techniques with sketches 6.6.1 Pneumatically applied (The gunite techniques) 6.6.2 Open top placement 6.6.3 Pouring from the top to repair bottom face
	2	6.6.4 Birds mouth 6.6.5 Dry packing 6.6.6 Form and pump 6.6.7 Preplaced – aggregate concrete 6.6.8 Trowel applied method
	3	6.7 Repair of DPC against Rising 6.7.1 Physical methods 6.7.2 Electrical methods 6.7.3 Chemical methods
14th	1	6.8 Repair of walls 6.8.1 Repair of mortar joints against leakage 6.8.2 Efflorescence removal
	2	6.9 Waterproofing of wet areas and roofs 6.9.1 Water proofing of wet areas
	3	6.9.2 Water proofing of flat RCC roofs 6.9.3 Various water proofing systems and their characteristics
15th	1	6.10 Repair of joints in buildings 6.10.1 Types of sealing joints with different types of sealants
	2	6.10.2 Techniques for repair of joints 6.10.3 Repair of overhead and underground water tanks
	3	**Test/Assignment_III**