Mapping of PBL with COs B.Tech (Civil) CBCS 2021 Programme

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
Class:- B. Tech (Civil) Sem:-I		**Name of Course:-** Differential Calculus					
1	Echelon form	✓					
2	Normal form	✓					
3	Linear and orthogonal transformation	✓					
4	Eigen values and eigen vectors	✓					
5	Argand diagram		✓				
6	De Movre's theorem		✓				
7	Hyperbolic and logarithmic functions		✓				
8	Leibnitz theorem			✓			
9	Taylor's theorem			✓			
10	L'Hospital rule				✓		
11	Tests for convergence				✓		
12	Euler theorem for homogeneous functions					✓	
13	Total derivative					✓	
14	Maxima and minima for two variable function						✓
15	Langrage undetermined multipliers						✓
Class:- B. Tech (Civil) Sem:-I		**Name of Course:-** Applied Chemistry					
1	Powder Coating methods used for prevention of metals from corrosion	✓					
2	Metallic Coating methods used for prevention of metals from corrosion	✓					
3	Analysis of various water contaminants		✓				
4	Treatment of water by Zeolite method.		✓				
5	To find various sources of air pollutants and its analysis.			✓			
6	Methods of estimation of CO, NOx			✓			
7	Construction and Working of - Acid and Alkaline Storage Battery				✓		
8	Construction and Working of Dry Cell, Ni-Cd Batteries				✓		
9	Manufacturing of Portland Cement.					✓	
10	To study the properties and applications of Portland cement					✓	
11	Preparation of alloys – Fusion method, Electro deposition method.						✓
12	To study Composition, Properties & Application of (i) Brass (ii) Bronze (iii)Duralumin						✓
13	To study manufacturing of mild steel.						✓
14	To analyze waste water		✓				

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
15	To determine hardness of water and its ill effects.		✓				
Class:- B. Tech (Civil) Sem:-I	**Name of Course:- Construction and Materials**						
1	Model making on various components of buildings, report writing, cost analysis and site visit	✓					
2	Market survey, sample collections and report writing on all types of construction materials	✓	✓	✓			
3	Report on Scope of Civil Engineering in various fields.	✓					
4	Collecting various National Building codes and report writing.	✓					
5	Model making on Types of Shallow foundations report writing		✓				
6	Model making on Types of Deep foundations report writing		✓				
7	Sample collections of various types of stones used in stone masonry report writing		✓				
8	Model making on Different types of stone masonry (mentioned in syllabus) report writing		✓				
9	Model making on various types of Brick bond masonry. (Mentioned in syllabus) report writing		✓				
10	Model making on different types of Doors report writing			✓			
11	Model making on different types of windows reports writing			✓			
12	Model making on different types of staircase report writing			✓			
13	Market survey, sample collections and report writing on various roofing materials				✓		
14	The rain roof water-harvesting systems	✓			✓		
15	Site visit, market survey, report writing and cost analysis of various plastering materials					✓	
16	Site visit, market survey, report writing and cost analysis of various types of Paint					✓	
17	Model making on Types of formwork and designs.						✓
18	Model making on various types of Scaffolding and designs.						✓
19	Corrosion mechanism, prevention, and repairs measures of RCC structure.					✓	✓

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
20	Construction Project Management & Building Information Modelling	✓	✓	✓	✓	✓	✓
Class:- B. Tech (Civil) Sem:-I Name of Course:- Civil Engineering Structures and Geology							
1	Prepare a chart for structures used for Water treatment and sewage treatment plant.	✓					
2	Collect the information of various types of structures.	✓					
3	Prepare a model or chart for a retaining wall or any hydraulic structures.	✓					
4	Prepare a chart for comparison of load bearing and framed structure.		✓				
5	Prepare a prototype model for load bearing structure with showing all components.		✓				
6	Prepare a chart for various types of soil and water conservation structures.			✓			
7	Prepare a model of Bridge structure.	✓					
8	Collect the information of high rise building in India and prepare the report.		✓				
9	Prepare a chart or prototype model for Eco friendly and Intelligent building.			✓			
10	Effect of solid waste on quality of ground water.			✓			
11	Geophysical investigation using seismic refraction method to determine causes of real failure.					✓	
12	Resistivity methods used in horizontal and vertical discontinuities in the electrical properties of the Ground water.					✓	
13	Structural interpretation and mineral potential using remote sensing data and GIS tools.						✓
14	Application of electrical resistivity method in ground water exploration						✓
15	Types of minerals.				✓		
16	Types of igneous rocks.				✓		
17	Types of metamorphic rocks.				✓		
18	Types of secondary rocks.				✓		
19	Texture of rocks.				✓		
20	Folds in rocks.					✓	
21	Failure in rocks.					✓	
22	Structures in rocks.					✓	
23	Determination of rock parameters, specific gravity, density and compressive strength of different types of rocks.					✓	
Class:- B. Tech (Civil) Sem:-I Name of Course:- Introduction & Opportunities in Civil Engineering							
1	Collection of Structural Information Historical structure of India: Visit, take	✓					

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	photos, brows information and prepare report /chart						
2	Give day to day examples of Link of Civil Engineering with various discipline of Engineering: Photos in their day-to-day life they see about link of civil engineering with other discipline and write note in their own words on example they have seen (Minimum one example of link with each discipline)	✓					
3	branches of Civil Engineer - Structural engineering, Construction engineering, Surveying and mapping engineering, Transportation engineering r, Environmental engineering, Hydraulic and irrigation engineering, Geotechnical engineering, Estimation and coasting, Project management: collect information on the branch of civil engineer of their choice and submit power point presentation	✓					
4	Infrastructural development: Collect information on infrastructural development of country in last 6 years and prepare booklet on it		✓				
5	Scope of Civil engineering in government sector: collect information on jobs in government sector, selection criteria process and exams for selection. Make a poster and display on notice board of department		✓				
6	Scope of civil engineering in private sector and Role of civil engineering in society: collect information on jobs in private sector, make a poster and display on notice board of department		✓				
7	Visit and take a interview of Civil Engineers, Architects, Contractor, Consultant, Govt departments and write your own observations of their work and share in for of class			✓			
8	Different approvals required for Civil Engineering construction projects: make list of approvals requires brows the				✓		

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	information about the process and prepare leaflet (Hard Copy)						
9	Authorities for giving approvals: visit any one approval authority of your place and prepare digital chart and mail to all staff and students of Department and take feed back				✓		
10	Necessity & Importance of approval, the procedure for approvals: Prepare digital leaflet of necessity & importance of approval, the procedure for approvals and mail it to students and take feed back				✓		
11	Present your ideas on low coast housing: Students have to build model of low coast house and need to explain its importance					✓	
12	Present your ideas on Intelligent building: Students have to build model and explain concept					✓	
13	Present your ideas on Eco-Friendly building: Students have to build model and explain concept					✓	
14	PPT on Required Skill set for Civil Engineering						✓
15	Own start-ups : Present idea of own start-up in front of class						✓
16	Software in civil engineering and its importance: collect information, download any one free software related to civil engineering and present its working in front of class						✓
17	Study the building structure where you live and write your observation along with photograph						✓
18	Study the traffic, traffic signals, parking on your way to college write your observation along with photograph						✓
19	Study Plumbing system of your house write your observation along with photograph						✓
20	Write a report on waste management in your house with photograph, discuss with your parents and improve waste management of your house.						✓
Class:- B. Tech (Civil) Sem:-II				**Name of Course:-** Integral Calculus				
1	Formation of differential equation	✓					

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2	Exact differential Equation	✓					
3	Linear differential equation	✓					
4	Newton's law of cooling		✓				
5	Newton's second law of motion		✓				
6	Fourier's law		✓				
7	Kirchhoff's voltage law		✓				
8	Fourier series			✓			
9	Harmonic analysis			✓			
10	Gamma and beta function				✓		
11	Curve tracing				✓		
12	Locating position in three dimensional space					✓	
13	Multiple integrals applications						✓
14	Error function				✓		
15	Differentiation under integral sign				✓		
Class:- B. Tech (Civil) Sem:-II	**Name of Course:- Acoustics and Modern Physics**						
1	Measurement and effect of environmental noise in the college		✓				
2	Design and simulation of automatic solar powered time regulated water pumping					✓	
3	Solar technology: an alternative source of energy for national development					✓	
4	Double pendulum and its application	✓					
5	Comparison of various method used in measuring the gravitational constant g	✓					
6	The physics of stars and their astronomical identification				✓		
7	Design and construction of digital distance measuring instrument			✓			
8	Electronic eye (Laser Security) as autoswitch/security system				✓		
9	Electric power generation by road power				✓		
10	Measurement /simulation of reverberation time		✓				
11	Study of vibration of bars	✓					
12	Determination of absorption coefficient of sound absorbing materials		✓				
13	Determination of velocity of O-ray and E-ray in different double refracting materials						✓
14	Need of medium for propagation of sound wave		✓				
15	Small wind turbines as a source of electricity	✓					
Class:- B. Tech (Civil) Sem:-II	**Name of Course:- Statics and Dynamics**						
1	Prepare model for various types of beams.	✓					
2	Prepare model for various types supports.	✓					

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3	Prepare chart for various types of force system with suitable real-life examples	✓					
4	Collect the various situations where varignon's theorem is used	✓					
5	Prepare model or chart for equilibrium system of forces of various engineering applications.	✓					
6	Prepare chart for different types for trusses with showing various members.	✓		✓			
7	Prepare prototype model of any one type of truss.	✓		✓			
8	Calculate the forces in members of truss by using analytical method and check it graphically (At least three problems for different types of trusses)	✓		✓			
9	Prepare chart of method of joint and method section for analysis of truss with stepwise procedure.	✓		✓			
10	Prepare prototype models of the basic geometrical figures and locate the centroid of them.				✓		
11	Prepare prototype models of the I and T section and locate the centroid of them.				✓		
12	Prepare chart for parallel axis and perpendicular axis theorem with suitable example.				✓		
13	Prepare chart regarding the types of friction in various field conditions.	✓	✓				
14	Prepare chart for application of friction.	✓	✓				
15	Prepare chart for derivation of tangential and normal acceleration					✓	
16	Prepare chart related to projectile motion with suitable example.					✓	
17	Development of excel sheet for projectile motion (at least three problems).					✓	
18	Development of excel sheet for work energy principle (at least three problems).						✓
19	Prepare chart for work energy and Impulse momentum principle with suitable example						✓
20	Development of excel sheet for calculation of coefficient of restitution (at least three problems						✓
Class:- B. Tech (Civil) Sem:-II	**Name of Course:- Basic Land Surveying**						
1	Collect Information of Linear measurement techniques/ instruments from old age till	✓					

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	21st century, write report along with photos						
2	Conduct closed traverse by prismatic compass and do the necessary calculations	✓					
3	Prepare counter sheet by using Excel		✓				
4	Collect Information of Vertical measurement techniques/ instruments from old age till 21st century, write report along with photos		✓				
5	Visit to laboratory and collect information of levelling instrument and make ppt.		✓				
6	Make a PPT on Problem Solved by Bowditch Rule and present it in class			✓			
7	Make a PPT on Problem Solved by transit Rule and present it in class			✓			
8	Leaflet on uses of Theodolite			✓			
9	Write a report on- " Is Tacheometry and Plane table are required in today's digital world?"				✓		
10	PPT on working of plane table				✓		
11	Make vedio – of your own demonstrating parts and working of Tacheometry, share it with your classmate and take feed back				✓		
12	Digital booklet on numerical of Tacheometry share it with your classmate and take feed back				✓		
13	Take Photograph of Curves of road you usually use and make a poster and display it on Notice Board					✓	
14	Digital booklet on numerical of Rankine's method of Curves share it with your classmate and take feed back					✓	
15	Digital booklet on numerical of offset from long cord method of Curves share it with your classmate and take feed back					✓	
16	Collect information of latest surveying instrument : its cost, salient features and image and prepare Chart and display it on notice board.						✓
17	Prepare Digital Chart on Importance of Basic Land Surveying in Civil Engineering share it and collect feed back						✓
18	Present your idea of modification of any survey instrument in front of class.						✓

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19	Collect information on various software available for surveying						✓
20	Prepare leaflet on Surveying for various projects						✓
Class:- B. Tech (Civil) Sem:-II **Name of Course:-** Construction Design and Drawing							
1	Study of National Building code of India to find Building Bye laws for planning residential buildings	✓					
2	With the help of 3 different case studies of residential buildings study the application of Principles of building planning	✓					
3	Preparing a measured drawing of a two bed room residential building (Plan, Elevation and section)	✓					
4	Take case study of green building and study provisions with reference to energy saving, solid waste management, recycling of water , use of green building materials.			✓			
5	With the help of site visit determine planning requirements for health care buildings and prepare a report.	✓	✓	✓			
6	With the help of site visit determine planning requirements for commercial buildings and prepare a report	✓	✓	✓			
7	Study the architectural and working drawings for a building construction project and prepare a report		✓	✓			
8	With the help of site visit prepare a plumbing layout of a residential building and study various fixtures for plumbing				✓		
9	Study of fire safety arrangements for high rise buildings and prepare a report			✓			
10	Study the process of preparing development plan of a city and prepare a report					✓	
11	With the help of case study prepare a report on zoning in Development plan					✓	
12	With the help of site visit determine planning requirements for recreational buildings and prepare a report						✓
13	Take a case study of intelligent building and study various provisions and prepare a report						✓

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14	Study the foundation plan of a residential building and prepare a report on line out of a building					✓	
15	Study the electrical layout plan of a building construction project and prepare a report.			✓			
16	Study of various legal documents such as 7/12 extract, TDR certificate, completion certificate.					✓	
17	With the help of site visit determine planning requirements for primary school building and prepare a report	✓	✓	✓			
18	Study development control rues of the local authority and prepare a report					✓	✓
19	With the help of site visit determine planning requirements for high rise building and prepare a report	✓	✓	✓			
20	Study of Landscape details in a residential complex and prepare a report.						✓
Class:- B. Tech (Civil) Sem:-III		**Name of Course:-** Mechanics of Solids					
1	Draw the stress strain curve of mild steel and tor steel by using excel	✓					
2	Collect the IS code related to testing of material and specifications for any five materials.	✓					
3	Prepare the chart for various types of stresses and strain with suitable example	✓					
4	Development of an excel sheet for calculation of Elastic constants, Thermal stresses with suitable example	✓					
5	Market survey for structural materials (at least ten materials)	✓					
6	Prepare the chart for Shear force and bending moment diagram for simply supported beam (At least Five problems with different types of loading)		✓				
7	Prepare the chart for Shear force and bending moment diagram for Cantilever beam (At least Five problems with different types of loading)		✓				
8	Prepare the chart for Shear force and bending moment diagram for overhanging beam (At least Five problems with different types of loading)		✓				

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9	Development of an excel sheet for calculation of bending stresses for different sections. (At least three problem)			✓			
10	Prepare the chart for derivation of flexural formula and bending stress distribution diagram for different section			✓			
11	Prepare the chart for deflection and slope of simply supported beam (at least five problems with different types of loading)			✓			
12	Prepare the chart for deflection and slope of cantilever beam (at least five problems with different types of loading)			✓			
13	Prepare the chart for derivation of shear stress formula and shear stress distribution diagram for different section.				✓		
14	Prepare the chart for derivation of torsional formula				✓		
15	Development of an excel sheet for calculation of direct and bending stress in section. (At least three problem)					✓	
16	Prepare the chart for core section (square, rectangular, circular, hollow rectangular and hollow circular)					✓	
17	Development of an excel sheet for load carrying capacity of column by using Euler's theory. (At least three problem)					✓	
18	Collect the photographs along with justification of (a) failure of short and long column (b) Failure of beam in bending and shear					✓	
19	Draw the Mohr's circle (at least five problems)						✓
20	Prepare the chart for Calculation of normal and shear stress by using graphical method.						✓
Class:- B. Tech (Civil) Sem:-III **Name of Course:-** Construction Equipment and Methods							
1	Construction Technology used in defence war fields.	✓					
2	Low-cost housing - Construction of a low cost house.				✓		
3	Tunnel design.	✓					
4	Use of dampers in high rise buildings			✓			
5	Construction of Overhead Bridge process. (Case study).			✓	✓		
6	The invention of slip form technique and cost savings (case study).					✓	

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7	PILE Construction Technique.		✓				
8	Construction techniques used in Empire State Building and Burj Khalifa.	✓	✓	✓	✓	✓	✓
9	For the construction project what capital cost has to be taken in consideration (Case study)?					✓	
10	List out some of the software used in the construction sector to estimate cost and monitoring expenses of machineries and perform one application of it on construction site/project?			✓	✓		
11	What are the health and safety duties in relation to concrete pumping work? What is to be involved in managing risks associated with concrete pumping?					✓	
12	What are the parameters for Selection of Tunnelling Method and Parameters Effecting Ground Settlements	✓		✓	✓		
13	How to choose the right conveyor system? How much do conveyor systems cost?					✓	
14	Why is electro-osmosis (dewatering) so effective in clayey and heterogeneous soils. Explain with a case study?						✓
15	Explain methods of launching girders at a metro rail site in India.	✓					
16	How do real estate development and precast concrete elements fit together? Are there are any limitations regarding the construction of houses?	✓					
17	Construction of Emergency Temporary structures and facilities (Jumbo COVID hospital etc.).		✓		✓	✓	
18	What are the hazards associated with construction of cofferdam?		✓				
19	What are the different methods of blasting?	✓					
20	Explain Mechanical Dredging Operations for Removal of Reservoir Sediment.		✓	✓			
Class:- B. Tech (Civil) Sem:-III				**Name of Course:-** Fluid Mechanics			
1	Determining physical properties of 3 different Fluids. (Specific Weight, Mass Density, specific volume , specific gravity)	✓					
2	Determining kinematic viscosity at different temperatures of 3 different fluids (Lubricating oils, Cooking oil,)	✓					

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3	Collection of Newtonian fluid, non Newtonian Fluid, Ideal Plastics and Thixotropic Fluids one each and studying properties of fluids.	✓					
4	Collection of Newtonian fluid, non Newtonian Fluid, Ideal Plastics and Thixotropic Fluids one each and studying properties of fluids.	✓					
5	Prepare a model of a ship showing different Metacentric heights	✓	✓				
6	Prepare a model ship showing stable, unstable equilibrium (C.G. and C.P.)		✓				
7	Demonstrate and verify Bernoullies theorem using other equipments (Wind Tunnel, etc.)		✓	✓			
8	Collection of information and presentation of working of any hyudraulic equipment (JCB, Earth moving machinery etc.)	✓	✓	✓			
9	Calculation of Energy losses in pipe flow for different flow conditions.				✓		
10	Calculation of Coefficient of discharge of Venturimeter by taking 10 different flow readings		✓				
11	Calculation of Coefficient of velocity of Venturimeter by taking 10 different flow readings		✓				
12	Calculation of Coefficient of discharge of Notch by taking 10 different flow readings.		✓				
13	Preparing different shaped acrylic notches to measure discharge and calibrating it		✓	✓			
14	Calculate Energy losses in domestic pipe line with given data.					✓	
15	Preparing a acrylic model for a dam and testing it				✓		✓
16	Find Metacentric Height of body containing liquid. Discuss the difference with reference to normal case	✓			✓		
17	Prepare a model Orifice Meter device in a UPVC pipe length		✓				✓
Class:- B. Tech (Civil) Sem:-III	**Name of Course:-** Economics and Finance						
1	The impact of fiscal deficit on economic performance in developing countries. A case study of India	✓					
2	The effect of taxation on the Indian economic growth.	✓					

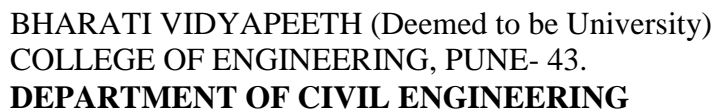| S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
3	Privatization of public enterpriser and its implication on economic policy and development.	✓					
4	The impact of capital market on the economic growth in India.		✓				
5	The role of Indian stock exchange in industrial development		✓				
6	The impact of foreign direct investment on the Indian economy.		✓				
7	Foreign direct investment and employment generation in India						
8	The role of small business in poverty alleviation.	✓					
9	The role of small business in poverty alleviation.	✓		✓			
10	The role of small business in poverty alleviation.			✓			
11	Infrastructure and economic development.			✓			
12	Project on supply and its determinants.			✓			
13	Depreciation				✓		
14	Project selection methods.				✓		
15	Time value of money				✓		
16	Financial management					✓	
17	New economic policy of India.					✓	
18	Forms of foreign capitals					✓	
19	Instrument in capital market (shares).						✓
20	Money Market						✓
Class:- B. Tech (Civil) Sem:-III		**Name of Course:- Concrete Technology**					
1	Market survey, report writing and cost analysis to select types of cements for various. construction works.	✓					
2	Site visit to RMC plant (nearby), observations, records and field test of cement.					✓	
3	Conduct various tests as per IS in laboratory on aggregates with reference to syllabus	✓					
4	Site visit to under construction to collect detail information about the ingredients of concrete mix.	✓	✓	✓	✓	✓	✓
5	Market survey, report writing and cost analysis of Aggregates for various construction works.	✓					

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6	Write report on Principal concrete properties affected by the properties of aggregates				✓	✓	
7	Writing complete report and procedure of fresh concrete.		✓				
8	Site visit to nearby RMC plant and draw flow chart.					✓	
9	Conduct various tests on workability of Concrete with reference to syllabus.		✓				
10	Site visit to under construction to observe the quality of fresh concrete.		✓				
11	Market survey of various admixtures used in fresh concrete and writing proper report on each admixture.		✓				
12	Report writing and tests on different grades of concrete.		✓	✓			
13	Report writing and non-destructive tests on hardened concrete of different types.			✓			
14	Preparing Report on all types of Destructive Test conducted in Laboratory.			✓			
15	Report on conducting various tests on Durability and Permeability of Concrete.				✓		
16	Report writing and tests on effect on concrete of Aggressive Environment.				✓		
17	Report on use of different types of admixtures on different grades of concrete.		✓				
18	Site visit and market survey report writing on Special type of Concreting.					✓	
19	Report writing on effects of Mix Design on Special Concreting.						✓
20	Preparation of Mix Design for Special Type of Concrete and visiting site and getting all						✓
Class:- B. Tech (Civil) Sem:-IV **Name of Course:-** Vector Calculus and Differential equations							
1	Method of variation of parameters	✓					
2	Cauchy's linear differential equation	✓					
3	Legendre's linear differential equation	✓					
4	Bending of beam		✓				
5	Mass spring system		✓				
6	Wave equation			✓			
7	One dimensional heat equation			✓			
8	Laplace equation			✓			
9	Directional derivative				✓		
10	Curl and divergence				✓		

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11	Work done					✓	
12	Gauss divergence theorem					✓	
13	Stokes theorem					✓	
14	Central tendency						✓
15	Measures of dispersion						✓
16	Skewness and kurtosis						✓
17	Theoretical probability distributions						✓
Class:- B. Tech (Civil) Sem:-IV **Name of Course:-** Open Channel flow and Hydraulic Machinery							
1	Prepare a model of Undershot wheel				✓	✓	
2	Prepare a model of turbine with curved blades				✓	✓	
3	Prepare a model of orifice meter in UPVC pipe		✓				
4	Prepare a model of orifice meter in UPVC pipe	✓					
5	Prepare a model of asymmetric aerofoil and test it.	✓					
6	Prepare a model of Prepare a model of reaction turbine					✓	
7	Prepare a model with hemispherical cups				✓	✓	
8	Prepare a smoke to visualize flow pattern around the aerofoil.	✓	✓				
9	Prepare a aerofoil model wrapped with cotton fibers around it to visualize turbulent flow in wind tunnel.	✓	✓				
10	Prepare a model of Venturimeter conforming to standards.	✓					
11	Prepare a flat plate and curved vane (outside) model to be tested in Impact of Jet Apparatus				✓		
12	Prepare a U tube manometer	✓					
13	Prepare a U tube inclined manometer	✓					
14	Prepare a U tube micro manometer	✓					
15	Prepare a Inverted U tube manometer	✓					
16	Prepare a detailed drawing for making hydraulic bench consisting of Venturimeter, orifice meter, and head loss through pipe fittings experiments.			✓			
17	Locate separation point of an aerofoil experimentally.		✓	✓			
18	Locate separation point of a cylinder experimentally.		✓				

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
19	Calculate head loss for a centrifugal pump in water supply use.						✓
20	Compare the drag forces on various shapes experimentally (Sphere, plate, etc)	✓					
Class:- B. Tech (Civil) Sem:-IV		**Name of Course:-** Geomechanics					
1	Prepare the chart of different classification of soils.	✓					
2	Collection the information about soil deposits in various regions of India and show in the map of India	✓					
3	Prepare the chart of different types of soil structure.	✓					
4	Calculate the water content and specific gravity of soil (take at least three different soil sample)		✓				
5	Calculate the consistency limit and flow index of soil (take at least three different soil sample)		✓				
6	Calculate the consistency limit and flow index of soil (take at least three different soil sample)		✓				
7	Draw the particle size distribution curve for soil by using excel (take at least two different soil sample)		✓				
8	Prepare the chart for relationship between index properties of soil.	✓	✓				
9	Compare the constant head and falling head method			✓			
10	Prepare the chart for soil water and permeability of soil.			✓			
11	Draw the flow net for sheet pile or earthern dam.			✓			
12	Compute the permeability of stratified soil deposits by using excel.			✓			
13	Prepare the chart of derivation of Laplace equation for two-dimensional flow.			✓			
14	Compare the standard proctor and modified proctor test				✓		
15	Collection of information and photographs of machines used for compaction of soil.				✓		
16	Draw the optimum moisture curve for compaction of soil by using excel				✓		
17	Draw the Mohr's stress circle for triaxial shear test and unconfined compression test.					✓	

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
18	solution of problems on shear strength parameter by using graphical method. (At least three problem)					✓	
19	Prepare the chart showing lateral earth pressure distribution diagram on retaining wall in various conditions.						✓
20	Contribution of various scientists in estimation of active and passive earth pressure on retaining wall.	✓	✓	✓	✓	✓	✓
Class:- B. Tech (Civil) Sem:-IV Name of Course:- Analysis of Determinate Structures							
1	Make model of different types of supports	✓					
2	Make model of different types of structure	✓					
3	Prepare PPT on different types of structures - space, plane, trusses, beams and frames	✓					
4	Prepare chart for different types of structures - space, plane, trusses, beams and frames	✓					
5	Make model of beam and frame with different types of supports	✓					
6	Prepare animated PPT to show deflected shapes of different types of structures	✓					
7	Prepare PPT on degree of static indeterminacy	✓					
8	Prepare PPT on degree of kinematic indeterminacy	✓					
9	Make skeletal model of truss		✓			✓	
10	Analyse truss using software		✓			✓	
11	Prepare PPT on deflection of truss		✓				
12	Prepare PPT on ILD of truss					✓	
13	Prepare chart on ILD of truss					✓	
14	Draw an ILD of truss using software					✓	
15	Prepare PPT on ILD of beams			✓	✓		
16	Prepare chart on ILD of beams			✓	✓		
17	Draw an ILD of beams using software			✓	✓		
18	Make model on Muller-Breslau's principle			✓	✓	✓	
19	Make model of three hinged arch						✓
20	Prepare PPT on analysis of three hinged arch						✓
21	Prepare chart on analysis of three hinged arch						✓
Class:- B. Tech (Civil) Sem:-IV **Name of Course:-** Planning and Management of Construction Projects							

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
1	Prepare a detailed site layout for any one type of Constriction project.	✓					
2	Prepare a detailed Organizational Structure for at least two types of Projects.	✓					
3	Prepare two detailed Projects in Microsoft Office Project.		✓				
4	Prepare a work breakdown structure for two different type of construction projects.		✓				
5	Prepare two detailed bar charts for any type of construction Project.		✓				
6	Prepare a detailed Milestone chart for Infrastructure project.		✓				
7	Prepare a detailed project analysis using Critical Path Method for two different Projects.			✓			
8	Prepare a detailed project analysis using Program Evaluation and Review Technique for two different types of research projects.			✓			
9	Prepare a detailed report on use and application of time computation in network analysis for construction projects.		✓	✓			
10	Prepare a detailed report on the benefit of use of different types of Floats on Critical Path Method for analysis of construction projects.			✓			
11	Prepare a detailed report on resource allocation in two different types of Construction Projects.				✓		
12	Prepare a detailed report on use of resource smoothing and levelling on construction projects.				✓		
13	Prepare a report on Crashing of Network for Construction Projects with use of Direct cost, Indirect Cost and Cost slope.				✓		
14	Prepare a report on controlling of raw material and work in progress inventory for a construction project.					✓	
15	Prepare a report on use of Inventory Models in Construction Projects.					✓	
16	Prepare a project report on use of inventory control and classification for different types of construction projects.					✓	

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
17	Prepare a detailed report on Importance on application of Total Quality Management for different types of Construction Projects.						✓
18	Prepare a report on use of Six Sigma Concept in Construction Projects.						✓
19	Prepare a report on necessity and use of MIS in Construction Management.		✓				✓
20	Prepare a report on necessity and use of Quality Control and Quality Assurance for different construction projects.						✓
Class:- B. Tech (Civil) Sem:-V	**Name of Course:- Analysis of Indeterminate Structures**						
1	Prepare PowerPoint presentation on plastic hinge formation and numerical example on it	✓					
2	Prepare chart of location of plastic hinges for different beams and frames.	✓					
3	Analyse indeterminate truss using software and compare result with manual solution		✓				
4	Prepare PowerPoint presentation on analysis of indeterminate trusses.		✓				
5	Prepare PPT/chart on deflected shape of different structures	✓					
6	Analyse fixed beam using software and compare result with manual solution.			✓			
7	Prepare PowerPoint presentation on fixed end moments for different loading cases			✓			
8	Prepare chart on fixed end moments for different loading cases			✓			
9	Analyse indeterminate beam using software and compare result with manual solution			✓			
10	Prepare PowerPoint presentation on slope deflection method.				✓		
11	Analyse indeterminate plane frame using software and compare result with manual solution.				✓	✓	
12	Prepare PowerPoint presentation on moment distribution method					✓	
13	Analyse plane frame for lateral loads using software and compare result with approximate method						✓
14	Prepare PowerPoint presentation on portal method of analysis.						✓
15	Prepare PowerPoint presentation on cantilever method of analysis						✓

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
Class:- B. Tech (Civil) Sem:-V **Name of Course:-** Infrastructure and Transportation Systems							
1	Prepare a poster on highway development plans.	✓					
2	Write short note on various surveys in Transport Planning.		✓				
3	What are the Travel demand forecasting techniques?		✓				
4	Solve a numerical on calculation of sight distance on highway.			✓			
5	Prepare a power point presentation on the materials used in road construction.				✓		
6	Pavement design of highways (rigid and flexible) according to IRC guidelines.				✓		
7	Write the importance of mass rapid transit system in Urban areas.						✓
8	Write case study of land use and transport planning.					✓	
9	Write a case study on BOT, BOOT type of Project.						✓
10	Case study on metro/ mono rail project.						✓
Class:- B. Tech (Civil) Sem:-V **Name of Course:-** Arbitration and Laws Related to Construction Industry							
1	Prepare a report on case study of Arbitrations in Construction Industry.	✓					
2	Prepare a report on case study for settlement for claims.	✓	✓				
3	Prepare a report on Alternate Dispute Resolution.	✓	✓				
4	Case Study on Dispute Resolutions in Constructions.	✓	✓				
5	Brief report on Arbitration and Conciliation Act 1996.	✓	✓	✓			
6	Brief report on Conciliation and its provisions in the Act.	✓		✓			
7	Brief report on Arbitral award and its enforcements.	✓		✓			
8	Case study report on Indian Contract Act.	✓			✓		
9	Brief report with case study on Importance and provisions of Indian Contracts Act.	✓			✓		
10	Case Study report on Industrial Disputes Act 1947.	✓				✓	
11	Brief report on the Mines Act 1952.	✓				✓	
12	Brief report on Code on Social Security.	✓				✓	

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
13	Brief report on new Labour Codes for India.					✓	
14	Case study report on the environment protection act.	✓					✓
15	Case Study report on Water (Prevention and Control of Pollution) Act, 1974.	✓					✓
Class:- B. Tech (Civil) Sem:-V Name of Course:- Advanced Surveying with Geomatics							
1	Carry out triangulation survey using three stations and perform triangulation adjustments.	✓					
2	Carry out survey of the area using electronic total station and prepare a plane table map and contour map.		✓				
3	Using a handheld GPS perform a traverse survey and locate coordinates of traverse stations.					✓	
4	Carry out urban planning with the use of photogrammetry						✓
5	Carry out urban growth monitoring using photogrammetry						✓
6	Carry out transport planning using photogrammetry						✓
7	Carry out water resources assessment using remote sensing and GIS			✓	✓		
8	Carry out land use and land cover analysis using remote sensing and GIS			✓	✓		
9	Carry out assessment of crop yield using remote sensing and GIS.			✓	✓		
10	Carry out reservoir sedimentation studies using remote sensing and GIS.			✓	✓		
11	Report on various remote sensing data products available from various sources like BHUVAN NRSA Hyderabad etc.			✓			
12	Carry out setting of layout for foundation using electronic total station.		✓				
13	Carry out electronic total station survey for contour mapping.		✓				
14	Carry out electronic total station survey for profile levelling.		✓				
15	Carry out electronic total station survey for laying out pipeline		✓				
Class:- B. Tech (Civil) Sem:-V Name of Course:- Limit State Design of Steel Structures							
1	Make model of different types of structural steel sections.	✓					

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S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
2	Make model of different types bolted connections in structural steel.		✓				
3	Make model of different types of welded connections in structural steel.		✓				
4	Prepare PPT on Limit state design philosophy.	✓					
5	Prepare PPT on estimation of design load due to DL, IL, WL and their combination.	✓					
6	Prepare PPT on properties of a section.	✓					
7	Prepare PPT on calculation of design strength of bolted connection.		✓				
8	Write programme on calculation of design strength of bolted connection.		✓				
9	Prepare PPT on design of welded connection.		✓				
10	Write programme on design of welded connection.		✓				
11	Prepare PPT on calculation of design axial tensile strength of a member.			✓			
12	Write programme on calculation of design axial tensile strength of a member.			✓			
13	Prepare PPT on calculation of design axial compressive strength of a member.				✓	✓	
14	Write programme on calculation of design axial compressive strength of a member				✓	✓	
15	Prepare PPT on calculation of design moment and shear capacity of a member.						
16	Write programme on calculation of design moment and shear capacity of a member.						✓
17	Model making and testing of structural elements.						✓
Class:- B. Tech (Civil) Sem:-VI		**Name of Course:- Water Supply Engineering**					
1	Prepare approximate estimate of load bearing and framed structure.	✓	✓				
2	Prepare approximate estimate for construction of septic tank.		✓				
3	Prepare detailed estimate for 3 storey framed structure.		✓				
4	Prepare a detailed estimate for construction of a road of 500m length.		✓				
5	Estimation of quantity of Trusses required for an industrial shed.		✓				
6	Prepare detailed specifications for different materials required for construction of residential			✓			

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
7	Prepare rate analysis for different types of construction works.				✓		
8	Prepare abstract and bill for different types of construction activities.					✓	
9	Prepare valuation report of different types of structures.						✓
10	Calculate Valuation of residential and commercial building based on rental method.						✓
11	Prepare detailed estimate for pipe culvert.		✓				
12	Prepare detailed estimate for box culvert.		✓				
13	Prepare detailed estimate for industrial shed.		✓				
14	Prepare detailed estimate for bridge.		✓				
15	Carry out valuation for land and building.						✓
Class:- B. Tech (Civil) Sem:-VI Name of Course:- Hydrology and Irrigation Engineering							
1	Delineation of watershed boundary by using Arc GIS	✓	✓	✓			
2	Obtain a rainfall data for given catchment and determine average rainfall by various methods	✓					
3	Describe the working of Automatic Weather station.	✓					
4	Describe the working of Float type of rain gauge	✓					
5	Recognize infiltration characteristics of different soils by tube infiltrometer.		✓				
6	Create Hydrographs of different durations from given flood hydrograph			✓			
7	Identify the design discharge for a given area by various methods.				✓		
8	Elaborate the case study on Water logging and Reclamation						✓
9	Estimate design discharge of canal based on given cropping pattern and command area.				✓		
10	Elaborate the case study on drip and sprinkler irrigation.					✓	
11	Elaborate the case study of lift irrigation scheme.						✓
12	Compare drip irrigation system Vs conventional irrigation system for a given field.					✓	
13	Delineation of watershed boundary by using QGIS.	✓	✓	✓			

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
14	Collection and analysis of rainfall data for a particular region for given time period	✓					
15	Describe of different discharge measurement methods and compare the results.				✓	✓	
Class:- B. Tech (Civil) Sem:-VI Name of Course:- Design and Detailing of Reinforced Concrete Structures							
1	Prepare the chart for properties of concrete and steel materials.	✓					
2	Prepare the chart for design parameters for balanced section with stress and strain distribution diagrams.	✓	✓				
3	Prepare the chart for design parameters for under-reinforced section with stress and strain distribution diagrams		✓				
4	Draw design parameters for by using excel programming for various grades of concrete and steel	✓	✓				
5	Draw design parameters for under-reinforced section by using excel programming.		✓				
6	Develop of an excel sheet for calculation of design of one way slab.			✓			
7	Develop of an excel sheet for calculation of design of two way slab.			✓			
8	Develop of an excel sheet for calculation of design of cantilever slab.			✓			
9	Develop of an excel sheet for calculation of design of simply supported beam		✓		✓		
10	Develop of an excel sheet for calculation of design of continuous beam		✓		✓		
11	Develop of an excel sheet for calculation of design of cantilever beam		✓		✓		
12	Develop of an excel sheet for calculation of design of axially loaded column.					✓	
13	Develop of an excel sheet for calculation of design of uniaxially loaded column.					✓	
14	Develop of an excel sheet for calculation of design of biaxially loaded column					✓	
15	Develop of an excel sheet for calculation of design of foundation						✓
Class:- B. Tech (Civil) Sem:-VI Name of Course:- Quantitative Techniques, Communication and Values							
1	Prepare mock Tests on Unit –I and solve it in given time (use of PSD lab manual).	✓					

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
2	Prepare mock Tests on Unit –I and solve it in given time (use of PSD lab manual).	✓					
3	Prepare online model test based on Unit-II and solve it in specific time (use of PSD lab manual).		✓				
4	Prepare online model test based on Unit-II and solve it in specific time (use of PSD lab manual).		✓				
5	Form a model for spoken and written communication skills which avoid grammar mistakes and common errors			✓			
6	Develop various activity models for enriching and developing vocabulary			✓			
7	Preparing strategies by using SWOT and TWOS analysis				✓		
8	Analysing differences between Soft Skills, Hard skills, and Personal skills.				✓		
9	Develop Bruce Tuchman's Team Building Models with classmates/Teammates				✓		
10	To study different personalities of Leaders from various sectors and find out their attributes and success stories.					✓	
11	Preparing a model for Time Management Skills and Stress Management and conduct activities for effective implementation of it.					✓	
12	Form a model to develop LSRW and communication Skills					✓	
13	Conduct mock interview and practice GD activities to build competencies for actual selection process.					✓	
14	Preparing a model for evaluating Values and Ethics of Good Managers.						✓
15	Preparing a model of dress codes and attire for different professional situations Corporate etiquettes and its implications						✓
16	Develop some good activities to understand the importance and need of Corporate social responsibility (CSR).						✓
Class:- B. Tech (Civil) Sem:-VI Name of Course:- Project Estimation and Valuation							
1	Prepare approximate estimate of load bearing and framed structure.	✓	✓				
2	Prepare approximate estimate for construction of septic tank.		✓				
3	Prepare detailed estimate for 3 storey framed structure.		✓				

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
4	Prepare a detailed estimate for construction of a road of 500m length.		✓				
5	Estimation of quantity of Trusses required for an industrial shed.		✓				
6	Prepare detailed specifications for different materials required for construction of residential			✓			
7	Prepare rate analysis for different types of construction works.				✓		
8	Prepare abstract and bill for different types of construction activities.					✓	
9	Prepare valuation report of different types of structures.						✓
10	Calculate Valuation of residential and commercial building based on rental method.						✓
11	Prepare detailed estimate for pipe culvert.		✓				
12	Prepare detailed estimate for box culvert.		✓				
13	Prepare detailed estimate for industrial shed.		✓				
14	Prepare detailed estimate for bridge.		✓				
15	Carry out valuation for land and building.						✓
Class:- B. Tech (Civil) Sem:-VII		**Name of Course:-** Foundation Engineering					
1	To prepare of a brief report on standard Penetration test of soil as per IS code IS2131- 1981	✓					
2	To prepare of a brief report on soil investigation report.	✓					
3	To prepare chart on geophysical method of soil investigation.	✓					
4	To prepare demonstrate model of mode of shear failure.		✓				
5	To Prepare chart on derivation of Terzaghi's Bearing Capacity equation.		✓				
6	To prepare of a brief report on plate load test for determination of bearing capacity of soil		✓				
7	To prepare demonstrate model of spring analogy of consolidation.			✓			
8	To Prepare chart on derivation of Terzaghi's 1-D Consolidation equation.			✓			
9	To prepare chart on square root of time fitting method and Logarithm of time fitting method			✓			
10	To prepare PPT on classification of Pile foundation.				✓		

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
11	Compare the different methods of load carrying capacity of pile foundation.				✓		
12	To prepare demonstrate model of well foundation.				✓	✓	
13	To prepare demonstrate model of under reamed pile foundation.					✓	
14	To prepare chart on different types of geosynthetics.						✓
15	To prepare PPT on different method of soil stabilization.						✓
16	Application of python for calculation of bearing capacity of soil.		✓				
17	Application of python for calculation of load carrying capacity of pile foundation.				✓		
Class:- B. Tech (Civil) Sem:-VII Name of Course:- Waste Water Treatment and Management							
1	Hydraulic Design of Sewers	✓					
2	Characterization of sewage sample collected by the students.	✓	✓			✓	
3	Power Point Presentation on Working of Sewage treatment Plants	✓	✓				
4	Collection of information - Advances in sludge treatment and disposal.		✓		✓		
5	Layout of ETP of Sugar, Pulp and Paper, Dairy Industries (Case studies)			✓			
6	Design and drawing of septic tank for hostel						✓
7	Prepare chart on useful micro-organisms in waste water treatment	✓					
8	Case studies – Recycle and reuse of treated waste water and write report				✓		
9	Power Point Presentation Water reclamation and reuse				✓		
10	Prepare model of single Pipe system			✓			
11	Prepare model of double Pipe system			✓			
12	Prepare model of Sewage Treatment Plant	✓		✓			
13	Prepare model of Effluent Treatment Plant	✓					
14	Collect information of River Pollution of your city/town/village	✓				✓	
15	Write a report on the manner waste water handled in your city/town/village						✓
Class:- B. Tech (Civil) Sem:-VII Name of Course:- Advanced Design of Structures							
1	Prepare the chart for difference in pre tensioning and post tensioning.	✓					
2	Prepare the chart for various methods of prestressing.	✓					

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
3	Prepare the chart for various types of losses.		✓				
4	Develop of an excel sheet for calculation of design of types of stresses induced in member due to initial loading of prestressing.		✓				
5	Develop of an excel sheet for calculation of design of types of stresses induced in member due to final loading of prestressing.	✓					
6	Prepare the chart for concept, types, advantages and disadvantages of flat slabs.			✓			
7	Develop of an excel sheet for calculation of design of a flat slab.			✓			
8	Prepare the chart for concept, types, and advantages of different types of retaining walls.				✓		
9	Develop of an excel sheet for calculation of design of T shaped cantilever retaining wall.				✓		
10	Develop of an excel sheet for calculation of design of L shaped cantilever retaining wall.				✓		
11	Prepare the chart for concept, types, and advantages of different types of combined footings.					✓	
12	Develop of an excel sheet for calculation of design of slab type rectangular combined footing.					✓	
13	Prepare the chart for different types of water tanks depending on design and location.						✓
14	Develop of an excel sheet for calculation of design of circular water tank resting on ground.						✓
Class:- B. Tech (Civil) Sem:-VIII					**Name of Course:-** Seismic Design of Structures		
1	Prepare chart / presentation on causes and effect of earthquakes	✓					
2	Prepare chart / presentation on various irregularities in buildings.	✓					✓
3	Prepare chart / presentation on different types of vibrations.		✓				
4	Prepare model of SDOF and MDOF System		✓				
5	Prepare model of Modes shapes		✓				

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
6	Develop an excel sheet on equivalent static method for calculation of EQ forces			✓			
7	Develop an excel sheet on dynamic method for calculation of EQ forces				✓		
8	Prepare model of Shear wall reinforcement					✓	
9	Prepare model showing ductile detailing in beams						✓
10	Prepare model showing ductile detailing in columns						✓
11	Prepare model showing ductile detailing in foundation						✓
12	Prepare model of earthquake resistant building construction						✓
Class:- B. Tech (Civil) Sem:-VIII		**Name of Course:-** Hydraulic Structures					
1	Presentation on Case study of the gravity dam in the country with detail report.	✓					
2	Presentation on case study of colgroute masonry construction for gravity dam.	✓					
3	Presentation on Case study of Roller Compacted concrete dam construction.	✓					
4	A report on case studies of failure of earthen dams and their causes.		✓				
5	Presentation on construction of a major earthen dam in the country.		✓				
6	Prepare a report on location of Spillway for the earthen dams with case studies.			✓			
7	Presentation on Case study of the Ogee spillway with detail report.			✓			
8	Presentation on Case study of the side channel spillway with detail report.			✓			
9	Presentation on Case study of the stable channel in the country with detail report.					✓	
10	Prepare a report on channel losses and types of canal linings with case studies.					✓	
11	Prepare a report on different types of Cross drainage works with case studies.					✓	
12	Prepare a report on Case study of High head Hydropower plant.						✓
13	Prepare a report on case studies of river training works like levees, guide banks.						✓
14	Prepare a report on Case study of Pumped Storage Hydropower plant.						✓
15	Prepare a report on Case study of Run off the river Hydropower plant.						✓
Class:- B. Tech (Civil) Sem:-VIII Name of Course:- Construction Quality Control and Safety							

S.N	Title of PBL	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
1	Prepare a report on necessity and use of Quality Control and Quality Assurance for different construction projects.	✓					
2	Prepare a detailed report on Quality standards for different construction projects.	✓					
3	Prepare a detailed report on Quality manual for different construction projects.	✓					
4	Prepare chart for different types of Total Quality Management		✓				
5	Prepare a detailed report on need for TQM in construction industry		✓				
6	Collection of TQM in construction Projects Quality Certification for companies and laboratories (ISO Certification, NABL certification)		✓				
7	Collection of various documents required for the certification of ISO and NABL.			✓			
8	Collection of various Quality standards in design and construction.	✓		✓			
9	Collection of various IS Codes in design and construction.	✓		✓			
10	Prepare a detailed report on construction Safety Management – Role of various parties, duties and responsibilities of top management				✓		
11	Writing safety manuals on construction safety management.				✓		
12	Preparing safety checklists and inspection reports					✓	
13	Prepare a detailed report and PPT on safety of accidents on various construction sites					✓	
14	Prepare a detailed report and PPT on various safety equipment and gear used on site						✓
15	Mini project on any topic of choice from above modules.						✓
16	Site Visit to existing site.				✓	✓	✓