B.E. II YEAR (BCT), 2013-14
III SEMSTER EXAMINATION SCHEME

A. WRITTEN PAPERS

Branch Code	Subject Code	Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	2	3	4	5	6	7	8
ARCH	201A BCT	Building Material I	2	-	-	3	50
ARCH	202A BCT	History of Building Technology I	2	-	-	3	50
ARCH	203A BCT	Construction Technology I	3	3	-	3	50
ARCH	204A BCT	Building Services I	2	2-	-	3	50
CE	205A BCT	Topographical Surveying	2	-	-	3	50
SE	206A BCT	Strength of Material	3	1	-	3	50
		TOTAL (A)	14	6	-	-	300

B. PRACTICALS AND SESSIONALS

Branch Code	Subject Code	Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	2	3	4	5	6	7	8
ARCH	201B BCT	Building drawing – I	-	4	-	-	50
ARCH	202B BCT	Construction technology –I	-	3	-	-	50
ARCH	203B BCT	Building Services I	-	2	-	-	50
ARCH	204B BCT	Computer application I	-	1	3	-	50
CE	205B BCT	Topographical Surveying	-	-	3	-	50
SE	206B BCT	Strength of Material	-	1	2	-	50
		TOTAL (B)	-	11	8	-	300
		GRAND TOTAL (A+B)	14	11	8	-	600
		TOTAL PERIODS	33				

ARCH 201A BCT: BUILDING MATERIAL-I
2L   3 Hours, MM – 50

Paint, Varnishes and distemper: History and development of Paints, Varnishes and Distempers A constituent of paints, varnishes and distempers. Classification and types of paints, varnishes and distemper, method of application on different type of surface, cost aspect.

Plastering and Pointing: History of Plastering and Pointing -types of mortars for plastering, tools for plastering, method of plastering, types of plaster finishes, defects in plastering and pointing.

Cement Concrete: History and development of Cement Concrete, nominal mix, design mix, preparation of concrete, proportioning of constituents, mixing, and consolidation and curing. Effect of water cement ratio on strength, permeability, workability and disability of concrete cost aspect.

Types of cement concrete: Plane cement concrete, reinforced concrete, vibrated concrete, precast concrete, pre stressed concrete, polymer concrete, fiber reinforced composite

ARCH 202A BCT: HISTORY OF BUILDING TECHNOLOGY I
2L   3 Hours, MM – 50

Man's origins, early tools and weapons, various periods in history. Role of science, technology and engineering

Archeological ages, Paleolithic, Mesolithic and Neolithic ages, Early settlements, Technological ages. Technological and other achievements of Mesopotamian (Sumerian, Assyrian and Babylonian) civilization. Similar study of Egyptian, Greek, Roman periods. Post-Roman era, middle ages and Renaissance period. The 17th and 18th centuries. The advent of steam an mechanical engineering. Industrial revolution. Growth of sanitary and highway engineering, 19th and 20th century technological achievements. History of structural engineering, strength of materials and statics. To develop understanding of social cultural, material and structural attributes, that shaped and architecture in different periods, also to study how interaction and communication with different cultures influenced and reshaped architecture of India. Architecture of: Industry valley, Buddhist era, Hindu empires, Islamic rule, Moghal era. In terms of design parameters such as cross cultural theories relating to art and architecture construction methods etc.

Study of evolution of design concepts, philosophy construction techniques, materials and structural solutions with the help of selected examples Egyptian, Greek and Roman with reference to social, cultural, geographical political and intellectual climate of the place and period.

ARCH 203A BCT: CONSTRUCTION TECHNOLOGY I

3L, 3T   3 Hours, MM – 50

Site investigation: Basic soil mechanics, various methods of site investigations, importance & uses of site investigation and classification of soils.

Sitting of works: Lineout, foundation plan, benchmarks

Excavation: Different methods of excavation in various types of soils under different conditions.

Sub- Structure: Foundations, functions of foundations, settlement of foundations, causes of differential settlement, local transfer system, pressure bulbs, types of foundations.

Shallow foundations (In Detail): Spread foundations, combined foundations, strap foundations, continues foundations, raft foundations and eccentrically loaded foundation

Foundation concrete: Brickbats Lime Concrete, Brickbats Cement Concrete, Plain Cement Concrete and Reinforced Cement Concrete work with different proportions of ingredients.

Openings: Doors, Windows and other openings. Technical terminology, construction details, methods, hardware, glazing paneling of openings and various types of materials used in making them.

Stairs: Technical terminology, requirements of stairs, dimensioning of steps, classification (in detail) with reference to geometrical orientation and type of material used in construction

Masonry walls: Use of bricks, stones, hollow blocks, composite materials in various proportions, cavity walls, partitions walls and calculation of dry ingredient materials for brick work with different proportions of lime & cement mortar.

Waterproofing & damp proofing: Methods & Materials

AR 204A BCT : BUILDING SERVICES I

2L, 2T   3 Hours, MM – 50

Introduction, characteristic of audible sound, behaviour of sound in enclosures, reflection of sound, Reverberation, absorption, acoustical design of halls, acoustic of studios, sound insulation. Elevators - Discussions of IS Code, Different types of lifts, Dimensional details & machine rooms, To calculate number of lifts for given application as per IS Code, Quality of service & quality of service, Nomenclature used in lifts, Statutory requirements & various tolerances to be observed in lift shaft construction, Structural parameters for lift shaft, machine room & put construction, Special elevators hydraulic lift $ capsule lifts, Escalators, To discuss manufacture's drawings.

Applied psychometrics, SI units used in air-conditioning, computation of heat transmission coefficients and cooling load calculations, Ducting layout, water piping layout, Performance evaluation of air-conditioners and accessory equipment used in air conditioners, Fundamentals of vapor compression cycle, understanding drawings, Explorative cooling and desert coolers, Preparation of project schedule, bar chart and project execution, Importance of protecting the stratospheric ozone layer and phasing out of CFC's. use of environment, Friendly refrigerants.

Fire Fighting systems , Different type of fires & their range, Method of extinguishing them, Classification of fires as per IS Code, Extinguishers,

Fire hydrant systems, Sprinkler systems, Fire alarm system, Zoning system, Evacuation method, Stair pressurization system, Special systems for critical fires, Discussions of municipal codes which are mandatory,

Tunnel Surveying : Necessity of tunneling, surface surveys and setting out.

Correlation of surface and underground surveys. Transfer of levels underground. Transfer of surface alignment to underground by Co planning and Weisbach Triangle Methods

Note: There shall be a camp for duration of about 10 days for an extensive field practice in Topographical surveying. , Emphasis: Definition and application.

Rebates available by tariff advisory committee. Case studies- Residential, Commercial, Institutional and Industrial.

CE 205A BCT: TOPOGRAPHICAL SURVEYING

2L, 3P   3 Hours, MM – 50

Plane Table Surveying: Principle, advantages and disadvantages of plane table surveying, Plane table equipments including Indian pattern tangent clinometers and telescopic alidade, Adjustments, setting up of the plane table, leveling, orientation and centering. Different methods of plane table surveying, radiation, traversing, intersection and resection. Two and three point problems and their solutions. Theodolite Surveying: Introduction: Measurement of horizontal and vertical angles, other uses of Theodolite. Errors in the measured values of horizontal and vertical angles and the procedures adopted in the field to eliminate/minimize the errors. Permanent adjustments of standard vernior theodolite. Elementary idea of the micro-optic theodolite. Theodolite Traversing: Various methods of theodolite traversing. Traverse computation, Gale Traverse Table, Systems of co-ordinates, Adjustments of traverse by Bowditch and Transit rules. Area of a closed traverse by Double Meridian Distance Method. Omitted measurements and their calculations. Tacheometric Surveying: Theory of stadia tacheometer. Fixed hair stadia tacheometer and stadia rods. Instrumental constants, methods of observation with a fixed hair stadia tacheometer, horizontal and inclined sights, vertical and normal staff holdings. Reduction tables. Elementary treatment of self reducing tacheometers. Tangential tacheometery, substance methods of tacheometery. Errors and precision in tacheometric surveying.

Contours and contouring: Methods of representation of relief on a map. Definition of contours. Choice of contour: Contour interval, Characteristic of contours, Contour interval for various purpose, Contour gradients, Use of contour maps. Direct and indirect methods of contouring. Interpolation of contours. Volume of reservoir from contour map.

Curves and curve ranging : Necessity of curves. Classification of curves-simple, compound, Reverse and vertical curves.

Element of Simple circular curves, methods of setting out a simple circular curve, obstacles in setting our of simple circular curves, Elementary treatment of Compound and Reverse curves.

Transition curves : Change of curvature, super elevation Requirements of an ideal transition curve, super elevation. Modification to the ideal transition curve. Methods of setting out a transitive curve.

Vertical curves : Consideration of change of gradient and sight distance. Setting our of a vertical curve.

Hydrographic Surveying : Tide producing forces. Equilibrium theory, tide gauges. Establishment of mean sea level.

Sounding : Equipments used in sounding. Methods of sounding for various depths of water.

Location of soundings : Various methods of locating the sounding, three point problem and its solution by mechanical, graphical and analytical methods.

Introduction to Barometric leveling.

SE 206A BCT : STRENGTH OF MATERIALS

3L, 1T, 2P   3 Hours, MM – 50

Compound Stress: Stresses on inclined plane, Principle planes, principle stresses and strains, Mohr's Circle diagram.

Strain Energy, Resilience, proof resilience, strain energy for gradual, sudden and impact loading, strain energy due to shear.

Theories of Failures – Maximum Principal Stress theory, Maximum Principal Strain theory, maximum shear stress theory, maximum strain energy theory and maximum shear strain energy theory.

Bending moment and shearing force diagrams under static loads, concentrated, uniformly distributed and uniformly varying loads on cantilever, simply supported and overhanging beams.

Theory of simple bending, distribution of normal stress due to bending, section modulus.

Shear stress distribution in rectangular, circular, I, Tee and L – section.

Torsion : Shear stress in solid and hollow circular shafts, angle of twist, power transmitted by shaft under pure torsion. Combined bending and torsion.

Shear centre and its location. Introduction to unsymmetrical bending.

B.E. II YEAR (BCT), 2013-14
IV SEMSTER EXAMINATION SCHEME

A. *WRITTEN PAPERS*

Branch Code	Subject Code	Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ARCH	251A BCT	Building Materials -II	2	-	-	3	50
ARCH	252A BCT	History of Building Technology II	2	-	-	3	50
ARCH	253A BCT	Construction Technology II	3	3	-	3	50
CE	254A BCT	Advance Surveying	2	1	-	3	50
CE	255A BCT	Fluid Mechanics	2	1	-	3	50
SE	256A BCT	Mechanics of solids	3	1	-	3	50
		TOTAL (A)	**14**	**6**	**-**	**-**	**300**

B. *PRACTICALS AND SESSIONALS*

Branch Code	Subject Code	Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ARCH	251B BCT	Building drawing II	-	4	-	-	50
ARCH	252B BCT	Construction Technology II	-	3	-	-	50
ARCH	253B BCT	Computer Application II	-	1	3	-	50
CE	254B BCT	Advance Surveying	-	1	2	-	50
CE	254B BCT	Fluid Mechanics	-	1	2	-	50
SE	255B BCT	Mechanics of solids	-	1	3	-	50
		TOTAL (B)	**14**	**11**	**10**	**-**	**300**
		GRAND TOTAL (A+B)	**14**	**11**	**10**	**-**	**600**
		TOTAL PERIODS	**35**				

FE 287 E* Co-curricular Activities
Joint award for III and IV Semester (*Marks not counted for award of Division)
For a pass, a candidate must obtain (a) 35% in each written paper
(b) 50% in each of the practicals and sessionals, and
(c) 45% grand total

ARCH 251A BCT: BUILDING MATERIAL –II
2L   3 Hours, MM – 50

Metal: History and development of metals. Properties and applications of cast iron, wrought iron and steel. Uses of non-ferrous metals and alloys.

Glass: History and development of glass. Composition of glass, properties of glass, types of glass, manufacturing of glass, treatment of glass, colored glass, special varieties of glass. Cost aspects.

Plastic: History and development of plastics. Classification of plastics, properties, and use of plastics. Cost aspects.

Ceramics: History, ingredients, manufacturing, process, properties, advantages and disadvantages of product, cost aspects and environment aspects.

ARCH 252A BCT: HISTORY OF BUILDING TECHNOLOGY - II
2L   3 Hours, MM – 50

History of Indian technology

Technological development in India with specific reference to construction engineering in technological order. Various kinds of building, types of construction in different countries and their construction methods. How these methods. How these methods were appropriate in a given context, subsequent development of such methods. Contemporary scenario in the field of construction engineering.

To develop of understanding of architecture as society's primary response.

Understanding the works and philosophy of contemporary Architects.

1. Modern Architecture after the great masters: Alver Aalto, Eero Saarinem, Jorn Utzon and Louis I Kahn.
2. Post- Modern Architecture: Robert Venturi, Philip Johnson, Charles Moore and Michael Graves.
3. High Tech Architecture: James Sterling, Renzo Piano, Richard Rogers and Norman Foster.
4. Deconstruction Architecture: Peter Eisenman, Frank Gehry, Bernard Sthumi and Zeha Hadid.
5. Post Independence Architecture in India: Le-Corbusier, Louis I Kahn, Kanvinde, B.V. Doshi, Stien, Charles Correa, Uttam Jain, Raj Rewal and A.D. Raje.

ARCH 253A BCT: CONSTRUCTION TECHNOLOGY II
3L, 3T   3 Hours, MM – 50

Basic definitions of formwork, relevant codal provisions, Significance of quality, economy and safety. Conventional method of erection of various structural components using timber, plywood and steel. Feasibility of modular system and components. Erections by components like adjustable spans-props-stirrup heads, and various accessories. Use of quick release system. Introduction to aluminum formwork. Failures of formwork due to design and construction defects.

Principles of Scaffolding, types of various supporting systems and accessories related to quality economy and safety. Apart from conventional materials, systems

like H- frames, cup lock access scaffold, universal scaffolding etc. are also covered.

Earth excavating, cutting,, hauling and compaction equipments.

History, classification and selection of equipments, suitability of each equipments, factors affecting output of equipments, management aspects of equipments, hourly owning and operating costs, safety precautions and their maintenance and repairs.

Floors and floor finishes, Filling, sub grade, functions and various methods covering cost aspects.

Wall finishes, Various types of plastering and pointing covering cost aspects.

CE 254A BCT: ADVANCE SURVEYING

2L,1T,2P   3 Hours, MM – 50

Field Astronomy : Elementary spherical trigonometry and expressions required in solving spherical trainable (with out proof). Definitions of various astronomical terms. Systems of co-ordinates.

Time : Sidereal time, Apparent Solar Time, Mean solar time, standard time, Acceleration and retardation of time. Conversion of one time into another. Elementary idea of Eqhemeral time, Corrections to observed altitude. Determination of azimuth of a survey line and watch (chronometer) error by extra-meridian observation of sun and stars. Talcott's method, its advantages. Convergences of meridians.

Triangulation : Principle. Classification of triangulation system (order of triangulations), Types of triangulation chains. Reconnaissance survey, Selection of triangulation stations. Strength of figures. Station markers and signals. Indivisibility of station and height of towers Satellites stations and reduction. Base-line measurement correction to measured lengths. Extensions of base line.

Theory of errors and survey adjustments : Classification of errors, Law of accidental errors. Weighting of observation. Principle of leaset squares. Most probable values of directly and indirectly observed independent quantities. Probable errors. Computations for the adjustment of a braced quadrilateral by least square method and approximate method and a polygon with a central station by least square method and Equal shift method.

Trigonometrical leveling : Curvature and atmospheric refraction, single and reciprocal observations, Eys and object (axis-signal) correction.

Photographic Surveying. Scope of photographic surveying in cartography. Terrestrial photography: Principles of ground Photogrammatery dealt in an elementary manner.

Aerial Photogrammatery: Perspective, treated in an elementary manner. Geometry of aerial photographs. Tilt and height displacement and radial line assumptions.

Flight Planning, controls for photographic surveys. Radial line methods of plotting details.

Elementary Stereoscopy: Monocular and Binocular vision, Stereoscopy Parallax. Absolute parallax, Floating marks, Stereo meter, determination of elevations by parallax measurement.

Introduction to photo interpretation and remote sensing.

Electronic Surveying: Principles, working of Geodimeter. Tellurometer and distomat radar system. Accuracy of different electronic distance measuring methods.

Trilateration Surveys: A brief introduction to Trilateration surveys.

CE 255A BCT: FLUID MECHANICS

2L,1T,2P   3 Hours, MM – 50

Introduction: Fluid, its physical properties, Ideal and Real fluids, Newtonian and Non-Newtonian fluids.

Principles of fluid statics: Pressure at a point, Absolute, gauge and vacuum pressures, Pressure measurement by manometers, Pressure gauges and transducers. Total pressure and center of pressure on plane and curved immersed surfaces.

Buoyancy, Flotation, Equilibrium of floating bodies, Metacentre and determination of metacentric height.

Kinematics of flow: Concepts of fluid flow, steady and unsteady flows, uniform and non-uniform flows, laminar and turbulent flows. Rotational and irrotational flows, Vorticity. Condition for two dimensional irrotational flows. Streaklines, streamlines and pathlines. Stream tubes, stream function. Continuity equation in Cartesian coordinates. Stream function and Velocity potential for two dimensional flow, laplace and its characteristic.

Equation of motion, energy and momentum application: General hydrodynamic equation for total acceleration, Euler's equation of motion in Cartesian co-ordinates, integration of Euler's equation of motion to obtain Bernoulli's equation. Energy equation and its application, Pitot tube, Fluid masses subjected to uniform accelerations. Free and forced vortex flows. Momentum equation and its application Navier Stoke's equation.

Flow through pipes: Reynold's experiment, Minor losses, loss of head due to sudden enlargement, sudden contraction, bend, entry and exit, loss of head due to friction – Darcy's Weisbach equation. Hydraulic gradient and total energy lines. Pipes in series and parallel. Equivalent pipeline, Buy pass, Flow through branched and uniformly tapped pipes.

Flow measurement through pipes.

Transmission of power through pipes, water hammer in pipes due to gradual and sudden closure of valve. Allevi's equation, Hydram. Dimensional analysis and similitude: Dimensions and units of measurement. Principle of dimensional homogeneity. Buckinghum's pi theorem. Dimensional analysis of typical flow problems. Hydraulic experimentation for determination of omitted and superfluous variables. Geometric, Kinematic and dynamic similarity. Important dimensional-less numbers and significance. Planning and operation of undistorted models of typical flow problems. Merits, demerits, demerits and planning of distorted models. Flow through openings: Orifices, mouthpieces, nozzles, sluice gates, flow under varying head. Orifice discharging free, jet, vena contracta, co-efficient of contraction, velocity and discharge.

SE 256A BCT: MECHANICS OF SOLIDS

3L, 1T, 3P   3 Hours, MM – 50

Slope and Deflection of Statically Determinate Beams – Moment-curvature relation, Governing differential equation, double integration method, singularity function for beams, Macaulay's method, moment area method, conjugate beam method, relation between maximum stress and maximum deflection. Deflection due to shear. Deflection of composite beams. Method of consistent deformation.

Fixed and Continuous Beams. Use of three moment theorem for solving statically indeterminate beams, drawing SFD, BMD and deflected shape for simple static loading.

Columns and Struts-Elastic Instability, criteria for stability of equilibrium, Euler's Theory for long columns for different end conditions, limitations of Euler's theory. Rankine's formula, Indian standard formula, Built-up columns.

Theory of springs – Closed coil and open coil helical spring for axial pull, axial couple/Torque, carriage or leaf spring. Springs in series and parallel.

Thin Cylindrical and Spherical Shells, Longitudinal and hoop stresses for internal pressure, change in volume. Thin cylinder/Tube externally reinforced by external windings.

B.E. III YEAR (BCT), 2013-14
V SEMSTER EXAMINATION SCHEME

A   WRITTEN PAPERS

Branch Code	Subject Code	Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ARCH	301A BCT	Construction Technology III	3	3	-	3	50
ARCH	302A BCT	Building Services II	2	-	-	3	50
ARCH	303A BCT	Elective I (Building Environment)	3	-	-	3	50
CE	304A BCT	Geotechnical Engg. I	2	2	-	3	50
SE	305A BCT	Theory of Structure	2	2	-	3	50
SE	306A BCT	Structural Design (RCC)	2	2	-	3	50
		TOTAL (A)	**14**	**9**	**-**	**-**	**300**

B.   PRACTICALS AND SESSIONALS

Branch Code	Subject Code	Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ARCH	301B BCT	Building Drawing III	-	4	-	-	50
ARCH	302B BCT	Construction Technology III	-	3	-	-	50
ARCH	303B BCT	Computer Application III	-	1	3	-	50
CE	304B BCT	Geotechnical Engineering I	-	2	2	-	50
SE	305B BCT	Theory of Structure	-	2	-	-	50
SE	306B BCT	Structure Design (RCC)	-	2	2	-	50
		TOTAL (B)	**-**	**14**	**7**	**-**	**300**
		GRAND TOTAL (A+B)	**14**	**14**	**7**	**-**	**600**
		TOTAL PERIODS	**35**				

ARCH 301A BCT: CONSTRUCTION TECHNOLOGY - III

3L, 3T   3 Hours, MM – 50

Steel structures, Elements of steel work, portal frames & truss structures, fabrication, erection of industrial structures, working details, drawings, safety codes.

Roofs over steel structures, Types of roofs with reference to shape, span & function Steel roofs and RCC roofs. Large span constructional Shell roofs & folded plates.

False Ceiling, Types, materials, systems and method of construction. Industrial Floorings, Loading, various types, like vacuum dewater flooring.

ARCH 302A BCT: BUILDING SERVICES II

2L   3 Hours, MM – 50

Generation, Transmission, Distribution and Various terms related with power plants & tariff of electricity boards

Power supply to industry & commercial building (sub – station), electrical equipment. Power distribution details & various methods, Cabling underground/overhead, Ear thing terminology, type of ear thing, method of ear thing. Construction power requirement, Metering & protections. Mini project report for load planning, distribution, load calculations, schedule of quantities for various electrical installations on respective project, line diagram of distribution etc. and building constructions. Statutory authorities, formalities, compliance to requirements, and building maintenance.

Artificial Lighting Design, Light, Light sources, Luminaries, In door & out door lighting design & calculation. Energy efficient lighting system. Computer data, EPABX, music, security systems and installations, Electrical Equipment, Light point control charts, Wiring diagrams vb   , Lighting distribution, Bill of Quantity, Cost estimates.

CE 304A BCT: GEOTECHNICAL ENGINEERING I

2L, 2T,2P   3 Hours, MM – 50

Soil and rock, Soilmass constituents. Definition of water content, Specific gravity, Void ratio, Porosity, degree of saturation, air voids, density index etc., Phase relationship.

Determination of water content. Specific gravity, particle size distribution, consistency limits, void ratio and density index, Classification of soil for engineering use. Group index, Unified and I.S. Soil classification, field identification tests. Soil structure, basic clay minerals, Flocculated and dispersed clays. Soil water, Permeability of soil dna its determination, Field pumping out test, Factors affecting permeability. Permeability of stratified soil deposits. Seepage and seepage pressure. Quick and phenomena. Effective and total pressure. Change in effective stresses due to water flow conditions. State water table and steady flow condition. Laplace equation for seepage. Flow net and its uses, its construction by graphical and electrical analogy methods. Piping: uplift pressure, Principle of drainage by Electro-

osmosis. Principle of soil compaction. Laboratory compaction, Standard and modified proctor compaction tests, Jodhpur Minicompactor test, Proctor needle. Determination of field density. Field compaction and its control. Soil stabilisation, Mechanical stabilization with lime, cement, bitumen, hydroscopic and water proofing chemicals, Electrochemicals and thermal stabilisation.

Vertical pressure distribution in soil. Boussinesq's, equation. Vertical stress due to circular, rectangular and strip loaded areas, Newmarks chart and approximate methods, pressure bulb and its significance in foundation exploration. Contact pressure distribution. One-dimensional consolidation of soil, Consolidation test. Terzaghi's one-dimensional consolidation theory and its use in predicting rate of settlement. Total and differential settlements. Over consolidated and normally consolidated soils.

SE 305A BCT: THEORY OF STRUCTURES I

2L, 2T   3 Hours, MM – 50

Fundamental approaches/methods. Statically Determinate structures v/s statically indeterminate structures, conditions of geometry, force/flexibility method, displacement/stiffness method.

Displacement Method. The slope-deflection method, Derivation of slope-deflection method fundamental assumptions, application of slope deflection method for solving statically indeterminate beams and portal frames (with and without inclined members) and drawing SFD, BMD and deflected shape. The moment distribution method: basic concept, stiffeners and carry over factors, Distribution factors. Application of moment distribution method for solving statically indeterminate beams and portal frame (with and without inclined members) and draw SFD, BMD and deflected shape.

Force method. Method of strain energy: basic concept, strain energy in linear elastic system, castigliano's energy theorems, Maxwell's reciprocal theorem.

Analysis of statically indeterminate beams and frames: Law of reciprocal deflection, theorem of least mode analysis of statically indeterminate beams and frames by minimum strain energy.

Analysis of statically indeterminate trusses: Degree of indeterminacy, applications of castigliano's theorem, Maxwell's method, stresses due to lack of fit, combined stresses. Externally indeterminate trusses. Trussed Beam.

SE 306A BCT: STRUCTURAL DESIGN (RCC)

2L, 2T,2P   3 Hours, MM – 50

Ingredient of cement concrete – cement, fine and coarse aggregates, water, chemical and mineral admixtures. Processes of concreting. Specification and tests for fresh and hardened concrete. Stress strain curve, modulus of elasticity, creep and shrinkage of concrete. Types of cement and concrete. Properties and types of reinforcement codal provisions

Basic design concepts. Limit state design method, use of IS: 456 provisions. Behavior, analysis and design of flexural members – Singly and doubly reinforced rectangular and 'T' section.

Design of one way, two way slab panels, flat slabs (direct design method)

Analysis and design of compression members : Axially loaded columns. Axial load and uni-axial bending.

Design of isolated and combined footing.

Note – use of IS: 456 is permitted in exams.

A. *WRITTEN PAPERS*

Branch Code	Subject Code	Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ARCH	351A BCT	Advance Construction Technology	3	3	-	3	50
ARCH	352A BCT	Sustainable Building	2	-	-	3	50
CE	353A BCT	Elective - II (Photopromatric surveying & Remote Sensing)	3	-	-	3	50
CE	354A BCT	Geotechnical Engineering II	2	2	-	3	50
SE	355A BCT	Theory of Structure - II	2	2	-	3	50
SE	356A BCT	Structural Design (STEEL)	3	-	-	3	50
		TOTAL (A)	**15**	**7**	**-**	**-**	**300**

B. *PRACTICALS AND SESSIONALS*

Branch Code	Subject Code	Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ARCH	351B BCT	Building Drawing - IV	-	4	-	-	50
ARCH	352B BCT	Advance Construction Technology	-	3	-	-	50
ARCH	353B BCT	Advance Computer Application	-	1	3	-	50
CE	354B BCT	Geotechnical Engineering II	-	2	2	-	50
SE	355B BCT	Theory of Structure – II	-	2	-	-	50
SE	356B BCT	Structural Design (STEEL)	-	3	-	-	50
		TOTAL (B)	**-**	**15**	**5**	**-**	**300**
		GRAND TOTAL (A+B)	**15**	**15**	**5**	**-**	**600**
		TOTAL PERIODS	**35**				

FE 387 E* Co-curricular Activities
Joint award for III and IV Semester (*Marks not counted for award of Division)
For a pass, a candidate must obtain   (a) 35% in each written paper
        (b) 50% in each of the practicals and sessionals, and
        (c) 45% grand total

ARCH 351A BCT: ADVANCE CONSTRUCTION TECHNOLOGY
3L, 3T   3 Hours, MM – 50

Study of advance construction systems in architecture. Advanced foundations – Pile and raft foundations. Advanced method of multistory building construction lift slab construction, slipform construction etc. Space frames, unconventional buildings like TV Towers etc. Geodesic domes – principles and construction. Disaster resistance construction system.

To introduce the students to the recent advance in the concrete technology. Admixture- Water-reducing agents Mineral admixtures, fly ash, silica fume, slags, met kaolin etc. Set Retards, Fiber-reinforced concrete – Materials, mix proportioning, properties and application. High-strength concrete- Definition, materials, mix proportions, properties and application. High performance concrete, ready mixed concrete.

ARCH 352A BCT: SUSTAINABLE BUILDING
2L   3 Hours, MM – 50

The concern for Sustainability, Rating Systems, Selecting Environmentally and Economically Balanced, Building Material, Measuring Environmental Performance, Measuring Economic Performance, Balancing Economic and Environmental Performance, Pre-Design Issues, Environmental Design Guideline, Sustainable Site Design, Site Analysis and Assessment, Site Development and Layout, Building envelope- Climatic Considerations, Building shape and orientation, thermal efficiency, Renewable Energy, Thermal Storage, Solar Passive Design, HVAC, Electrical and Plumbing Systems, Indoor Air Quality- Balancing energy and indoor air quality, Environmental Construction Guidelines – Site Issues, Construction related indoor air quality and health, Resource Efficiency

CE 354A: GEOTECHNICAL ENGINEERING – II
2L, 2T,2P   3 Hours, MM – 50

Mohr circle of stess, shear strength of soil, its strength of sand and clays. Sensitivity and thixotrophy, skemtion's pore pressure coefficeient. Stess path (introduction).

Active, passive and at rest earth pressures, rank and coulomb's earth pressure therories, rebhann's and culmann's construction for Cohesionless soil back fill. Uniformally distributed surcharge. Bell's equation for cohesive back fill. Stability of retaining wall, earth pressure on sheet piling and bulkheads.

Stability of slopes. Causes of slope failures. Stability analysis by Swedish and friction circle method for total and effective stresses, Taylor's method. stability under sudden drawndown condition, Remedial measures.

Bearing capacity of soil. Terzaghi's analysis of bearing capacity of shallow foundations, skempton's and hansen's formula, local and general shear failure. Bearing capacity determination by plate load test, standard penetration test and dutch cone test. Presumptive bearing capacity.

Settlement of foundation : immediate, consolidation and differential,

minimum depth of foundation. Proportioning of footings.

Deep foundation: Types functional classification of piles. Pile load capacity by dynamic and static formula. Pile load test, group effect.

Foundation in Blake ration (CBR) test and its application. Sub grade modules and its determination.

Site investigation. Depth of exploration. Distributed and undisturbed samples. Brief description of procedures of boring and sampling. Depth, number and extent of bore holes for various structures.

SE 355A BCT: THEORY OF STRUCTURES - II

2L, 2T   3 Hours, MM – 50

Rolling loads on beam and statically determinate trusses, shear force and bending moments due to concentrated loads, uniformly distributed loads-longer and shorter than the span, equivalent distributed load. Influence lines for shear force, bending moments, stress and deflection for simply supported beams and statically determinate trusses, muller-breslleu principle. Arches: Liner arch, Eddy's theorem. B.M., S.F. and axial thrust in three and two hinged arches. Moving loads for three and two hinged arches, rib shortening and temperature stresses. Suspension bridges and stiffening girders: suspension cables, anchor cables, tension in cables, temperature stress, shape of cable under its own weight and a given system of loading. Three hinged and two hinged stiffening girders; influence lines for B.M. and S.F. temperature effect in stiffening girder. Approximate methods of multi-storey. Frame analysis vertical and lateral load analysis of multi-storied frames. Degree of indeterminacy, assumption for vertical and lateral load analysis, portal method and cantilever method.
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SE 356A BCT: STRUCTURAL DESIGN (STEEL)

3L, 3T   3 Hours, MM – 50

Introduction to design structural mild steel and high tensile steel. Factor of safety and permissible stresses. Live loads on various types of floors and roofs.

Bolted and welded joints, Axially and eccentrically loaded, Joints. Design of brackets.

Design of axially and eccentrically loaded tension members, Lug angles.

Design of axially and eccentrically loaded columns. Design of lacings and battens for built –up columns. Design of slab base and gusseted base plate.

Design of beams- simple and plated beams, laterally supported and unsupported curtailment of plates.

Roof trusses: type of trusses, economical spacing of trusses, design loads, design of purlins, struts, ties and joints including shoe joint.

Note :

(1). All design to confirm to IS: 800-2007

(2). The use of I.S: 875, IS: 800 and structural hand book no. 01 shall be allowed in the examination

CE 353 A BCT ELECTIVE II
(PHOTOGRAPHIC SURVEYING & REMOTE SENSING)

Photographic Surveying. Scope of photographic surveying in cartography. Terrestrial photography: Principles of ground Photogrammatery dealt in an elementary manner.

Aerial Photogrammatery: Perspective, treated in an elementary manner. Geometry of aerial photographs. Tilt and height displacement and radial line assumptions.

Flight Planning, controls for photographic surveys. Radial line methods of plotting details.

Elementary Stereoscopy: Monocular and Binocular vision, Stereoscopy Parallax. Absolute parallax, Floating marks, Stereo meter, determination of elevations by parallax measurement.

Introduction to photo interpretation and remote sensing.

Electronic Surveying: Principles, working of Geodimeter. Tellurometer and distomat radar system. Accuracy of different electronic distance measuring methods.

Trilateration Surveys: A brief introduction to Trilateration surveys.

A. WRITTEN PAPERS

Branch Code	Subject Code	Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	2	3	4	5	6	7	8
ARCH	401A BCT	Engineering Eco. & Mgmt.	2	-	-	3	50
ARCH	402A BCT	Environmental Engineering	3	-	-	3	50
ARCH	403A BCT	High-rise Building	2	2	-	3	50
ARCH	404A BCT	Earthquake Resistant Structure	2	-	-	3	50
CE	405A BCT	Hydraulics	2	2	-	3	50
SE	406A BCT	Advance Structure Design (RCC)	3	3	-	3	50
		TOTAL (A)	**14**	**7**	**-**	**-**	**300**

B. PRACTICALS AND SESSIONALS

Subject Code		Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	2	3	4	5	6	7	8
ARCH	401B BCT	Building Drawing V	-	4	-	-	50
ARCH	402B BCT	Environmental Engineering	-	-	2	-	50
ARCH	403B BCT	High-rise Building	-	2	-	-	50
CE	404B BCT	Computer Application	-	1	3	-	50
SE	405B BCT	Hydraulics	-	2	2	-	50
SE	406B BCT	Advance Structure Design (RCC)	-	3	3		50
		TOTAL (B)	**-**	**12**	**10**	**-**	**300**
		GRAND TOTAL (A+B)	**14**	**12**	**10**	**-**	**600**
		TOTAL PERIODS	**36**				

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ARCH 401A BCT: ENGINEERING ECONOMICS & MANAGEMENT

2L   3 Hours, MM – 50

Principles and explanation of economic terms: Land, labour, capital, rent, wages, interest, production. Law of return, scale of industry, Location of industry, Internal and external economics, Price determination under perfect completion and monopoly conditions, Derivation of revenue and cost curves, Index number.

Monetary Economics: Money standard, token, limited and unlimited legal tender, credit instrument, promissory notes, drafts, cheques, hundies, bills of exchange, Bank central, Commercial, Industrial, Co-operative and mortgage. Taxation Principle of incidence. Contracts types and conditions. Business organization sole proprietorship, partnership and joint stock companies, Different kinds of shares and debentures, co-partnership and profit sharing, Nationalisation of industries, State enterprises, Monopoly. Industrial Relation Trade unions and their functions. Strikes and lockouts, Prevention and settlement of disputes, Unemployment and its solution. Management, Scientific management and relations. Rationalisation, qualities of good manager, office organization, works organization, organization and management of stores. Accounts – Double entry system, cash book, journal and ledger, profit and loss account, valuation of business assets for balance sheet, trial balance, bad debts and depreciation.

CE 402A BCT: ENVIRONMENTAL ENGINEERING

3L, 2P   3 Hours, MM – 50

Sources of water supply, quantity of water per capita variation in seasonal and hourly consumption. Forecast of pollution. Standards of purity for public water supplies. Flow Diagram. Lakes and rivers intakes. Raw water pumping. Aeration, simple sedimentation and chemical precipitation. Quiescent and continuous flow types of tanks. Design of coagulation. Filtration, slow sand filters, Rapid sand filters. Disinfection, uses of excess lime, ozone, ultraviolet rays, chlorine and chloramines for disinfection, water softening.

Different types of pipes used in water supply practice, joints in pipes, values, distribution of water, design of distribution system. Alignment, laying and jointing of pipes, service reservoir and fittings, service connection, detection and prevention of wastage of water, Metering, Rural water supply

System of drainage, surface drainage, Under drainage, separate, combined and partially combined system. House drainage, conservancy and water carriage systems, stoneware pipes, junctions, Intercepting traps, grease traps, Gulleys, Water closets, urinals, baths and lavatory basins; soil, waste and antisyphonage pipes. Alignment and gradient of drains. Inspection chambers. Testing of drains. Ventilation of drains. Layout of sewerage systems, Design of sewers. Quantity of sewage per capita, Estimating storm water by time of concentration method. Forms, cross-section and inclination of sewers, appurtenances, Manholes, Flushing of sewer. Ventilation of sewer. Principles of sewage treatment. Arobic and anaerobic bacterial action. Sewage screening, grit separation, sewage pumping, disposal of sewage by dilution and land sedimentation with chemical precipitation. Septic tank, Imhoff tank, contact beds, percolating filters. Activated sludge process. Nature of sewage sludge. Sludge treatment, sludge gas, rural sanitation. Collection and disposal of refuse.

ARCH 403A BCT: HIGH RISE BUILDINGS

2L, 2T   3 Hours, MM – 50

Conceptual understanding of high rise buildings in normal and adverse conditions considering topography of the site, water-logging, marine structures, et. Construction details understanding, service systems, structural systems, sequence of erection and facilitating maintenance of such structures, identify specialized equipment required for erection of such structures. Case study/ies of such structures and reporting.

Conceptual Understanding of Pre-fabrication in building construction. Concept of Modular co-ordination. Construction details understanding, Service systems, Structural Systems, Sequence of erection and facilitating maintenance of such structures. Essential process of manufacturing, handling of pre-fabricated components. Identify specialized equipment required for erection of such structures. Case study/ies of such structures and reporting

ARCH 404A BCT: EARTHQUAKE RESISTANT STRUCTURES

2L   3 Hours, MM – 50

Seismic Hazard Assessment

Engineering Seismology (Definitions, Introduction to Seismic hazard, Earthquake Phenomenon), Seismotectonics and Seismic Zoning of India, Earthquake Monitoring and Seismic Instrumentation
 Characteristics of Strong Earthquake Motion. Estimation of Earthquake Parameters, Microzonation
Earthquake Effects On Structures- Dynamics of Structures, SDOFS/ MDOFS, Response Spectra/ Average Response Spectra/ Design Response Spectra, Evaluation of Earthquake Forces, IS Code 1893: 2002, Effect of Earthquake on Different Types of Structures, Lessons Learnt From Past Earthquakes
Concepts Of Earthquake Resistant Design- Structural Systems/ Types of Buildings , Causes of damage, Planning Considerations/ Architectural Concept (IS 4326-1993), (Do's and Don'ts for protection of life and property), Philosophy and Principle of Earthquake Resistant Design, Guidelines for Earthquake Resistant Design, Earthquake Resistant Earthen Buildings (IS 13827: 1993), Earthquake Resistant Low Strength Masonry Buildings (IS 13828: 1993), Earthquake Resistant Design of Masonry Buildings, Strength and structural properties of masonry, Lateral load analysis, Design consideration, Guidelines, Earthquake Resistant Design of R.C.C. Buildings, Material properties, Lateral load analysis Design and detailing (IS:13920: 1993)
Seismic Base Isolation - Basic Concept of Seismic Base Isolation, Seismic Isolation Systems
Case Studies,
Earthquake Safe Construction Of New Buildings - General Precautions, Detailing of Earthquake Resistance Practices

CE 405ABCT: HYDRAULICS

2L, 2T, 2P   3 Hours, MM – 50

Laminar Flow : Simple solution of Navier Stokes equations, Hagen-Poiseulli's equation, Plane Poiseuille flow and coutte flow, Effect of Viscosity on fluid flow, Shear stress distribution, Equation of motion for laminar flows, Stoke's law, Measurement of viscosity, Flow through parallel plates, Laminar flow through pipes, cavitation.

Turbulent Flow : Nature of turbulence, Reynold's momentum exchange concept and Prandtl's mixing length theory, Turbulent flow in pipes, equation for velocity, distribution and friction coefficient velocity distribution in smooth pipes, rough pipes. Nikuradse's curves, Moody's diagram.

Introduction to boundary layer theory, Development of boundary layer over a thin flat plate, Laminar and turbulent boundary layers, boundary layer thickness and boundary shear (by momentum integral equation) boundary layer separations and control. The Prandtl boundary layer equation. Solution for laminar boundary layer. Smooth and rough flat surfaces.

Flow round a body Drag. Skin friction drag, Pressure drag and friction drag on two dimensional bodies, submerged bodies. Wave drag, lift induced drag, Flow past sphere and cylinder.

Flow through open channels: Uniform steady flow in open prismatic channels, Discharge formula of Chezy's, Manning's, Bazin's and Kutter's. Most economical section, Conveyance of a channel section, Specific energy and discharge curves. Alternate depth and critical depth. Critical state of flow. Hump and channel contraction, Broad crested weir, Parshall flume.

Dynamic equation of gradually varied flow in prismatic channels, Classification and analysis of surface curves, Computation of surface curve by step method.

Rapidly varied flow Hydraulic jump in prismatic channels, Specific force curve, Conjugate depths. Hydraulic jump elements and energy loss, Location of the jump, surge and waves.

Hydraulic turbines: Impact of free jet on curved vanes, Velocity vector diagrams. Types of hydraulic turbines, determination of vane angles, main dimensions and efficiencies. Study of Pelton, Francis and Kaplan turbines, Bulb turbines.

Centrifugal Pumps: Energy recuperation devices volute casing, vortex chamber and diffuser ring. Pump efficiencies. Effects of variation of discharge and speed of the pump, specific speed. Characteristic curves. Pumps in series and parallel. Multistage pumps and compressor.

SE 4065ABCT: ADVANCE STRUCTURE DESIGN (RCC)

2L, 2T, 2P   3 Hours, MM – 50

Design of Continuous beams on non-yielding supports.

Design of rectangular portal frame (one storey, one bay) with different support conditions.

Analysis of beams curved in plan : Ring beams, uniformally loaded and supported on equispaced columns : Arcate beams fixed at the ends and uniformaly loaded.

Analysis and design of a R.C. spherical dome for uniformaly distributed load with or without a central load.

Prestressed concrete, advantages, methods or prestressing

Note : Following references can be used in exam :

1. The use of IS : 456

2. The use of SP 16 design aids to IS : 456 and

3. Reinforced concrete, designer's handbook by Reynolds and steedmen shall be allowed in the examination.

B.E. IV YEAR (BCT), 2015-16
VIII SEMSTER EXAMINATION SCHEME

A. WRITTEN PAPERS

Branch Code	Subject Code	Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	2	3	4	5	6	7	8
ARCH	451A BCT	Project Management	2	-	-	3	50
ARCH	452A BCT	Urban Planning	2	-	-	3	50
ARCH	453A BCT	Elective IV	3	2	-	3	50
ARCH	454A BCT	Disaster Management	3	-	-	3	50
CE	455A BCT	Hydrology & Dams	3	-	-	3	50
SE	456A BCT	Advance Structure Design (Steel)	3	3	-	3	50
		TOTAL (A)	**16**	**5**	**-**	**-**	**300**

B. PRACTICALS AND SESSIONALS

Branch Code	Subject Code	Subject	Hours Per Week			Exam Hours	Marks
			L	T	P		
1	2	3	4	5	6	7	8
ARCH	451B BCT	Urban Planning	-	4	-	-	50
ARCH	452B BCT	Elective III	-	2	-	-	50
CE	453B BCT	Hydrology & Dams	-	-	3		50
SE	454B BCT	Advance Structural Design (Steel)	-	3	3	-	50
		Total (B)					**200**
ARCH	BCT C	Practical Training	-	-	-	-	75
	BCT C	Educational Tour	-	-	-	-	25
		Total (C)					**100**
ARCH/SE/CE	BCT D	Project & Seminar	-	4	-	-	100
		Total (D)					**400**
		TOTAL (A+B+C+D)	**16**	**13**	**6**	**-**	**700**
		TOTAL PERIODS		**35**			

FE 387 E* Co-curricular Activities

Joint award for III and IV Semester (*Marks not counted for award of Division)

For a pass, a candidate must obtain   (a) 35% in each written paper
                                           (b) 50% in each of the practicals and sessionals, and
                                           (c) 45% grand total

ARCH 451A BCT: PROJECT MANAGEMENT

2L   3 Hours, MM – 50

Significance and Architect's role in Project Management. Effects on Quality control, Timely completion and Project costs.

Compilation of relevant data about: The objective of project, Drawings & Details, Materials & Specifications, Building Services involved, and actual & estimated costs. Any specific constraints about Site conditions & Topography, Completion Time, availability of materials & skilled/unskilled workers, use of specialised technology & construction equipment, quality control measures & checkpoints, etc

Process of Project Management & organization, Project Team, Quality control and Architect's supervisory / monitoring role, PERT / CPM and Network Techniques, Time cost analysis and Value engineering. Site, Material, Human resources and Equipment Management, Cost control and cash flow. Material procurement, inventory & flow. Requirement & hierarchy of Human resources. Logistics & co-ordination of activities. Evolving of system for Quality controls & check points. Economics & financial accounting systems, legal aspects & accountability and establishing system for appraisal during construction.

ARCH 452A BCT: URBAN PLANNING

2L, 4T   3 Hours, MM – 50

Introduction to urban design, relationship between urban design, architecture and urban planning; objectives and scope of urban design. Elements of urban design, urban morphology, urban form, urban mass, urban space. Some basic urban design principles and techniques.

Brief overview of Legislation and Development control with respect to the Regional plan, Development plans, Land-use, Density control, environmental impact, affecting Urban Design. Case study / appraisal of an Urban center / central business district /Town center in view of the above issues related to Urban Design.

ARCH 454A BCT: DISASTER MANAGEMENT

3L   3 Hours, MM – 50

environmental hazards and disaster, types of environmental hazards and disaster – natural and disaster, man induced hazards and disaster, Emerging approaches in disaster management – with three stages a. pre-disaster stage b. emergency stage, c. post disaster stage – rehabilitation. Natural disaster reduction and management. Disaster management – An integrated approach for disaster preparedness, mitigation and awareness. A regional survey of land subsidence, costal disaster, cyclonic disaster, ecological planning for sustainability and sustainable development in India. Environmental policies and disaster management programs in India

CE 455 ABCT: HYDROLOGY AND DAMS
3L, 3P   3 Hours, MM – 50

Hydrology : Descriptive hydrology, hydrological cycle, hydrologic budget,
Precipitation, measurement and analysis, Hydrologic abstractions.
Water losses, evaporation, evaportranspiration, infiltration.
Quantitative hydrology : Rainfall Runoff relationships, estimation quantity of runoff flood estimation.
Hydrograph analysis : Unit hydrograph and its application, storage routing.
Ground water and well irrigation : source of ground water, types of wells, construction, yield , maintenance and development of wells . Stream flow.
Regression and Correlation analysis.
Need for harnessing water resources , water resources projects – their planning impact on environment.
Dams : Basic principles for design and construction features of dams and spillways, force acting and stability analysis.
Earth dams : types, methods of construction, design and stability analysis Introduction and brief description of Arch. buttress dams, rockfill dams, coffer dams.

SE 456 ABCT: ADVANCE STRUCTURE DESIGN (STEEL)
3L, 3T, 3P   3 Hours, MM – 50

Design of grillage foundation for individual column and teo columns. Beam columns connection-framed, unstiffened and stiffened seated connections.
Design of gantry grinder, impact effect.
Design of revited and welded plate grindrs under dead and superimposed loads-flange area and moment of inertia method. Splicing of web and falnges. Intermediate stifffeners-vertical horizontal and bearing stiffeners. Curtailment flange of plates.
Design of plate girder bridges: Lateral bracings, cross frames and bearing.
Use of high tensile bolts in joints of bridge trusses (description only). Influance lines for pratt, Warren, Baltimore, Pettit and 'k' type trusses, influance lines for cantilever and three pins arch bridges.
Note :
(1). All design to confirm to I.S.: 800, I.S. :875
(2). The use of I.S: 875, IS: 800 and structural hand book no. 01 shall be allowed in the examination