DEPARTMENT OF CIVIL ENGINEERING, INSTITUTE OF TECHNOLOGY, GGV
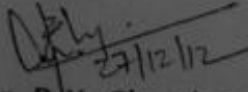## MEETING OF BOARD OF STUDIES, CIVIL ENGINEERING SREAM

MINUTES OF MEETING

A meeting of the Board of Studies, Civil Engineering stream is held today on 27-12-2012 at 10 am, vide notification no 86/Acad./BOS/2012/Bsp., dated 14-12-2012, in the office of the director, Institute of Technology. Following members were present:

1) Dr. Virendra Kumar   (Professor, Dept. of Civil Engg., IIT, BHU)
2) Dr. Shailendra Kumar   (Professor, Dept. of Civil Engg., IT, GGV)
3) Dr. M.C.Rao   (Asso. Prof., Dept. of Civil Engg., IT, GGV)
4) Er. R.K.Choubey   (Asstt. Prof., Dept. of Civil Engg., IT, GGV)

Members discussed in length about the course content of the proposed detail syllabi from IV Sem to VIII Sem., as per the approved scheme for the B.Tech, U/G program. This course structure will be applicable for the B.Tech Civil Engineering students, admitted in the session 2011-12 and onwards. The new scheme has already been implemented for the above B.Tech students, from the current session 2012-13.

Members also discussed the detail syllabus proposed for the VIII Semester for the existing B.Tech students. This will be valid for the two B.Tech batches admitted in session 2009-10 & 2010-11. Scheme for the existing batch has already been approved.
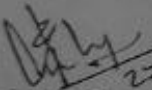
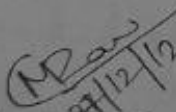Er. R.K. Choubey   Dr. M.C.Rao   Prof. Shailendra kumar   Prof. Virendra Kumar

Following is resolved in the meeting:

1) B.Tech. Scheme as approved earlier, may be adopted with minor alteration in the elective subjects in VII & VIII Semester of the new scheme. (applicable for the B.Tech students admitted in session 2011-12 and onward batches)

2) Proposed detail syllabi under the new scheme (as above) from III to VIII Semesters is approved, with minor modifications. (applicable for the B.Tech students admitted in session 2011-12 and onward batches)

3) Proposed detail syllabi under the old scheme for the VIII Semester is approved with minor modifications. (applicable for the B.Tech students admitted in session 2009-10 and 2010--11)

Er. R.K. Choubey   Dr. M.C.Rao   Prof. Shailendra kumar   Prof. Virendra Kumar

Please examine and attach the revised syllabus (if any) of civil engg.

(signature) 18/9/12

Dr. M.C. Rao / Shri R.K. Choubey

As discussed with the external expert member of BOS, Dr. (Prof.) Virendra kumar from BHU, IIT, detail syllabii for BTech. 3rd sem and 7th sem. have been prepared. in the BOS. meeting as all the faculty members of the dept as invited members. Also scheme for BTech. is revised to be made effective for the batch 2011 admission. New proposed scheme and detail syllabi sent to the external member for his comment & advice. All the suggestions were incorporated accordingly.

Finally Prof. Virendra kumar has sent his recommendation via e-mail to the HOD, Dr. Shailendra kumar. Syllabi for 3rd and VII sem for present BTech batches can be adopted.

Placed for kind perusal & approval.

HOD (Civil) through proper bodies.
Dean / Director IIT?

(signatures) 20/7/12   18/07/12   18/07/12

Name of the Dept. .... Civil Engg. / Office of the Dean (IT)   GGDU

    As proposed by the B.O.S., Basic Sciences and Humanities of IT, the revised scheme and syllabus for B.Tech. 1st year (I.T.) may be adopted from the current session 2012-13. Also, the revised syllabus for B.Tech. (3rd semester, Civil Engg & syllabus for B.Tech. 5th semester, Civil Engg) as proposed by B.O.S., Civil Engg (N-2) may be adopted from the current session 2012-13.

    The approval from the external experts members in the Board & Studies for Basic, Science & Humanities, prof. V.K.Mishra, and for Civil Engg., Prof. Virendra Kumar are enclosed herewith (page 01 & page 21).

    Since, the semester classes for Civil Engg. has been started and for B.Tech. 1st year, the classes is scheduled from 1st week of August, the proposed syllabi is being sent to " ' mic section for placing it in the Academic Council, however, looking to time stipulation, the proposed syllabi may kindly be approved so that it can be adopted from the current session.

    Placed H'VC your kind approval please.
Reptd in AC.   SChatoch

For your kind information pl.

H.O.D. (BSH)

Seen and necessary implementation
will be done.
23/7/12

Director Sir
For kind information pl.

H.O.D. (Civil)

Dean.

Dean/ Director (I.T.)

GURU GHASIDAS VISHWAV___ __LAYA, INSTITUTE OF TECHNOLOGY; __EPARTMENT OF CIVIL ENGINEERING

SCHEME — B.TECH.- III – SEMESTER - CI__L ENGINEERING

WEF : ODD SEMESTER OF SESSION – 2012-2013

SN	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME						CREDITS
						SESSIONAL - TA			ESE	SUB-TOTAL	
			L	T	P	IA	MSE	TOTAL			
		THEORY									
1	21CE01T	ENGINEERING MATHEMATICS – III	3	1	-	20	20	40	60	100	4
2	21CE02T	SURVEYING – I	3	1	-	20	20	40	60	100	4
3	21CE03T	STRENGTH OF MATERIALS	3	1	-	20	20	40	60	100	4
4	21CE04T	CIVIL ENGG. MATERIALS CONCRETE TECHNOLOGY	3	1	-	20	20	40	60	100	4
5	21CE05T	ENGINEERING GEOLO__	3	1	-	20	20	40	60	100	4
		PRACTICA									
6	21CE06P	SURVEYING –I FIELD __	-	-	3	30	-	30	20	50	2
7	21CE07P	MATERIAL TESTING L__	-	-	3	30	-	30	20	50	2
8	21CE08P	CIVIL ENGINEERING DRAWING	-	-	3	30	-	30	20	50	2
		GRAND TOTAL	15	5	9	190	100	290	360	650	26

L: LECTURE; T: TUTORIAL; P: PRACTICAL; IA : INTERNAL ASSESSMENT; MSE : MID SEMESTER EXAM; ESE : END SEMESTER EXAM

SCHEME of B.TECH. - IV - SEMESTER - CIVIL ENGINEERING

WEF : EVEN SEMESTER OF SESSION – 2012-2013

SN	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME						CREDITS
						SESSIONAL - TA			ESE	SUB-TOTAL	
			L	T	P	IA	MSE	TOTAL			
		THEORY									
1	22CE01T	STRUCTURAL ANALY___	3	1	-	20	20	40	60	100	4
2	22CE02T	TRANSPORTATION E__ __EER ING – I	3	1	-	20	20	40	60	100	4
3	22CE03T	SURVEYING - II	3	1	-	20	20	40	60	100	4
4	22CE04T	FLUID MECHANICS – I	3	1	-	20	20	40	60	100	4
5	22CE05T	BUILDING CONSTRUCTION	3	1	-	20	20	40	60	100	4
		PRACTICAL									
6	22CE06P	SURVEYING – II – FIELD WORK	-	-	3	30	-	30	20	50	2
7	22CE07P	FLUID MECHANICS –I LAB.	-	-	3	30	-	30	20	50	2
8	22CE08P	TRANSPORTATION ENGINEERING – LAB	-	-	3	30	-	30	20	50	2
		GRAND TOTAL	15	5	9	190	100	290	360	650	26

L: LECTURE; T: TUTORIAL; P: PRACTICAL; IA : INTERNAL ASSESSMENT; MSE : MID SEMESTER EXAM; ESE : END SEMESTER EXAM

21CE01T : ENGINEERING MATHEMATICS-III

	T	P	SESSIONAL - TA			ESE
			IA	MSE	TOTAL	
3	1	-	20	20	40	60

UNIT-I **Functions of a complex variable:** Complex variable, function of complex variable, limit, continuity, and differentiability, of a function of a complex variable, Analytic functions, Cauchy- Riemann equations, Orthogonal curves, harmonic functions, conformal mapping, bilinear transformation (Mobius transformation) Cauchy integral theorem, Cauchy integral formula, Cauchy's inequality Taylor theorem, Laurent's theorem.

UNIT-II **Fourier series and Fourier transform :** Periodic function, Fourier series, Dirichlet's conditions for a Fourier series, determination of Fourier coefficients, Fourier series of function of periods 2π, change of interval, Even Odd functions, Half range sine and cosine series, practical harmonic analysis, Fourier transformation, Fourier sine and cosine transform , properties of Fourier transform.

UNIT-III **Laplace transformation:** Laplace transformation, properties of Laplace transformation, first shifting theorem, Laplace transform of the derivative of f(t), multiplication and division by t. Unit step function: Laplace transformation of unit function, second shifting theorem, Laplace transform of periodic function. Inverse Laplace transformation Multiplication by s, division by s, first shifting property, second shifting property, inverse Laplace transform of derivatives , solution of differential equations by Laplace transform

UNIT-IV **Correlation & Regression :** Scatter diagram , Linear Correlation , Measures of Correlation . Karl Pearson's Coefficient of correlation , Limits for correlation coefficients, Coefficient of correlation for bi-variate frequency distribution , Rank correlation , Linear Regression, Equations to the line of Regression. Regression coefficient . Angle between two lines of Regression .

UNIT –V **Theoretical Distributions:** Discrete and Continuous probability distribution's Mathematical expectation, Mean and Variance, Moments, Moments generating function, probability distribution ,Binomial, Poisson and Normal distribution ,Test of significance based on chi-square , T, F, and Z distribution degree of freedom , conditions for applying X^2 (chi-square) test , student's test.

Ref. & Text Books: Higher Engg. Mathematics by Dr. B.S. Grewal– Khanna Publishers.
Prasad C " Advanced Engineering mathematics"
Das H.K. " Advanced Engineering mathematics"
Advanced Engg.Mathematics by R.K. Jain and S.R.K. Iyengar – Narosa Publishing House.

Ray M. " Mathematics statistics"
Pati T " Functions of complex variables"
Advanced Engg. Mathematics by Erwin Kreyszig –John Wiley & Sons.
Applied Mathematics by P.N.Wartikar & J.N.Wartikar. Vol-II, Pune Vidyarthi Griha Prakashan,Pune.
Applied Mathematics for Engineers & Physicists by Louis A. Pipes- TMH.
KreyszigE " Advanced Engineering mathematics"

21CE02T : SURVEYING -I

| L | T | P | SESSIONAL - TA | | | ESE |
			IA	MSE	TOTAL	
3	1		20	20	40	60

UNIT-I

INTRODUCTION AND CHAIN SURVEYING
Definition - Principles - Classification - Fields and office work-Scales-Conventional signs –Survey instruments, their care and adjustment - Ranging and chaining - Reciprocal ranging - Setting perpendiculars - well-conditioned triangles.

COMPASS SURVEYING
Prismatic compass - Surveyor's compass - Bearing - Systems and conversions - Local attraction – Magnetic declination - Dip

UNIT-II

LEVELING
Different methods of determining elevations: Spirit, Trignometric and Barometric methods Spirit leveling-Definitions of terms, Principle, Temporary and permanent adjustment of levels, Sensitivity of bubble tube, Auto & Dumpy levels, Leveling staff, Methods of spirit leveling Booking and reduction of field notes
Types of leveling:- Reciprocal, Profile, Differential, Precise leveling, Plotting of profiles Correction:- Curvature and refraction.

CONTOURING
Direct and Indirect methods of contouring, Interpolation of contours, Drawing section from contour map, Application and Modern methods of depicting relief on a Map.

UNIT - III

THEDOLITE AND TRAVERSING
Vernier theodolites, Temporary and permanent adjustments, Requirements of nonadjustable parts, Measurement of horizontal angle by repetition and reiteration method, Measurement of vertical angles.

AREA AND VOLUMES
Computation of area and volume by different mathematical methods.

UNIT - IV

PLANE TABLE SURVEYING
Principles, Advantages and disadvantages, Plane table equipment, Use of Telescopic Alidade, Different methods of Plane Table Surveying, Resection-Two and Three point problems, Fields work in Plane Table Surveying.

UNIT-V

CURVES
Classification of curves; Elements of Simple, Compound, Reverse and Transition curves, Method of setting out Simple and Compound curves. Special field problems.

Text Books:
Surveying (Vol. I & II) – Punmia, B.C. (Laxmi Publications, New Delhi, 1996)
Surveying (Vol. I & II) – Kanetkar (Pune Vidyarthi Griha Prakashan, Pune)

Reference Books:
Surveying (Vol. II & III) – Agor, R (Khanna publications, Delhi, 1995)
Surveying (Vol. II & III) – Arora, K.R. (Standard Book House, Delhi, 1993)
Fundamentals of Surveying – S.K. Roy (Prentice Hall of India)
Surveying (Vol. I & II) – S.K. Duggal (Tata McGraw Hill)

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city Bilasour (C.G)

21CE03T : STRENGTH OF MATERIALS

	T	P	SESSIONAL - TA			FSE
			IA	MSE	TOTAL	
3	1	-	30	20	40	60

Unit -I: **Simple Stresses -Strain and compound stresses**
Types of stresses and strains, Mechanicals properties, Hocke's law, stress-strain curve for mild steel & Cast iron, Poisson's ratio, Co-relation between the elastic moduli, Bars subjected to varying loads, Temperature stresses in composite bars, Elongation of bars of constant and varying cross-sections.
Stress at a point , Components of stress in rectangular coordinates, stresses on an inclined plane, Principal stresses & principle plane, Mohr's circle of stresses. .

Unit –II: **Shear Force - Bending Moment and Bending Stress**
Shear Force & Bending Moment diagrams in statically determinate beams loaded with different load combination, beam with internal hinge, Co-relation between Load intensity Shear Force - Bending Moment, Thrust diagram, drawing loading diagram & Bending moment diagram from shear force diagram.

Unit –III: **Beams : Shear Stresses and Slope-Deflections**
Shear Stress Equation, assumptions, Shear stresses in symmetrical elastic beam with different sections.
Derivation of differential equation for deflection, Slope & Deflection of Beams by Double integration method Macaulay's method & Moment area method, Prop reaction in cantilever beam

Unit-IV: **Torsion and Columns**
Equation of Pure Torsion, Assumptions, Power transmitted by shaft, Stiffness, Comparison of Solid & Hollow shaft, Strain energy in Torsion,
Stable and unstable equilibrium, Short columns, Euler's formula for long columns with different end conditions, Equivalent length, Limitation of Euler's formula, Rankine's formula.

Unit –V: **Thin -Thick Cylinders-Spheres and Rivet-welded Connection**
Stresses in Thin Cylinders, Changes in Dimensions of Cylinder, Rivetted Cylinders, Thin Spherical Shells, Thick Cylinders, Lame's equation.
Riveted Joints, Method of riveting Types of joints, pitch, Failure of a Riveted joint, Strength of a riveted joint, Efficiency of a Joint, Design of Riveted joints for axial load.
Welded connection, Types of joints, strength of joints, size of weld.
Comparison of welded & Riveted joints.

Text Books: Strength of Materials – R.K. Rajput (S. Chand & Co.)
Strength of Materials–S. Ramamurtham (Dhanpat Rai Publications)
Strength of Materials–Sadhu Singh (Dhanpat Rai Publications)

Reference Books: Mechanics of Structures (Vol. – I) – Junarkar (Charotar Publications)
Strength of Materials – Timoshenko, S. & Gere (CBS Publishers)
Introductions to Solid Mechanics –Shames & Pitarresi (Prentice Hall of India)
Engineering Mechanics of Solid – Popov (Pearson Publication)

21CE04T : CIVIL ENGG. MATERIALS & CONCRETE TECHNOLOGY

| | T | P | SESSIONAL - TA | | | ESE |
			IA	MSE	TOTAL	
3	1	-	20	20	40	60

Unit -1: Manufacturing, properties, classification of building stones, bricks, tiles, timber, seasoning and preservation of timber

Unit -2 : Miscellaneous Engineering Materials:
Varieties of ceramics & glass: their properties & uses
Properties & uses of Plastics, Rubber and PVC.
Composition, characteristics and use of paints, varnishes and distempers.
Composite materials, types and uses.
Adhesives & Asbestos, types, properties & uses
Thermal, Electrical & Sound Insulators: qualities & types.

Unit -3: Manufacturing, properties, classification of cement, aggregate and structural steel

Unit-4: Concrete: Properties of fresh and hardened concrete, long term & durability properties of concrete, Concrete mix design and its applications, admixtures in concrete, Non-destructive testing and evaluation,

Unit -5: Special concretes: Fibre reinforce concrete, no fines concrete, polymer concrete, light weight concrete, high strength and high performance concrete, ready mixed concrete, green concrete, shotcrete concrete, smart concrete, recycled aggregate concrete

Text Books: Building Materials – S.K. Duggal (New Age Publication)
Building Materials – S. C. Rangwala (Charotar Publication)

Ref. Books: Concrete Technology – A.M. Neville & J.J. Brooks (Pearson Education)
Concrete Technology – M.S. Shetty (S. Chand & Co.)
Engineering Materials – Surendra Singh (Laxmi Publication)
Construction Engineering and Management – S. Seetharaman (UmeshPublication)
Building Materials – Gurucharan Singh (Standard Publishers, Delhi)

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21CE05T : ENGINEERING GEOLOGY

| | T | P | SESSIONAL - TA | | | ESE |
			IA	MSE	TOTAL	
3	1	-	20	20	40	60

UNIT 1   **Minerals :** Minerals, their physical properties, optical properties and chemical properties. The detailed study of certain rock forming minerals with respect to the physical properties.

Unit 2   **Rocks and Rock deformation :** Their origin, structure, texture, classification of rocks in brief and their suitability as Engineering materials, dip and strike of bed, Folds, Faults, joints, unconformity and their classification, causes and relation to engineering behaviour
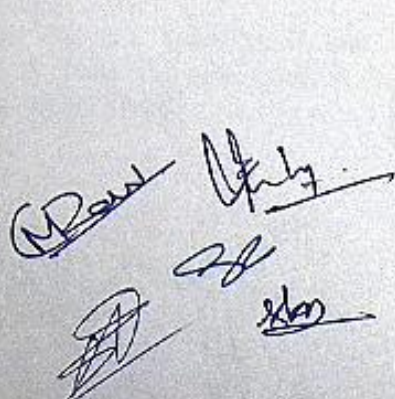   of rock masses.

Unit 3   **Earthquake :** Earthquake, its causes, classification, seismic zones of India and Geological consideration for construction of building, reservoir related, earthquake problem and its preventive measures, distribution of seismic zones in India.

Unit 4   **Landslides and Land subsidence :** Landslides, its causes, classification and preventive measures, land subsidence, its causes and preventive measures.

Unit 5   **Engineering Geological Sites Selection :** Engineering Geological considerations for site selection of Dams and Reservoirs, Tunnels, Bridges and Highways, Geological Maps, concept of geological maps, important terminology used for map and making a section from the map.

Text Books: A Textbook of Geology – Mukherjee P.K. (World Press Publishers)
   Engineering Geology – D.S. Arora (Mohindra Capital Publisher, Chandigarh)
   Engineering Geology : Parbin Singh
   Structural Geology : H.P. Billings

Ref. Books: Geology and Engineering – Leggot, R.F. (Mc-Graw Hill, New York)
   A Geology for Engineers – Blyth, F.G.M. (Arnold, London)
   Civil Engineering Geology – Cyril Sankey Fox (C. Lockwood and son, U.K.)
   Engineering and General Geology – Prabin Singh (Katson Publication House)

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SEMESTER IV

22CE01T: STRUCTURAL ANALYSIS-I

3	T	P	SESSIONAL - TA			ESE
			IA	MSE	TOTAL	
3	1	-	20	20	40	60

Unit-I: Principle of superposition, virtual work principle, Maxwell reciprocal theorem, deflection of beams using conjugate beam method. Deflection of beams and truss using energy method (Castigliano theorem), Analysis of plane truss using tension coefficient method (determinate),

Unit-II: Three-hinged Arches: Bending Moment, Shear force, axial force for three-hinged arches Analysis of Suspension bridge without stiffening girders.

Unit-III: Influence Lines: Basic concept of moving load and influence line; influence lines for reactions, Shearing for.es and bending moments for determinate beams; absolute maximum shearing force and bending moment.

Unit-IV: Influence lines for three-hinged arches and stresses in simply supported plane determinate trusses

Unit-V: Static and kinematic indeterminacy of structure, Method of structural analysis, Analysis of fixed beam, continuous beam using Theorem of three moments Effect of yielding of supports.

Reference book: Elementary structural Analysis by A.K. Jain
Advanced Structural Analysis by A. K. Jain

22CE02T : TRANSPORTATION ENGINEERING - I

L	T	P	SESSIONAL - TA			ESE
			IA	MSE	TOTAL	
3	1	-	20	20	40	60

UNIT 1

Introduction: Importance of highway transportation, Modes of transportation, characteristics of highway transport.

Historical development & planning: Historical development of roads, Road development and planning in India, Necessity of planning, Roads classification, patterns, Planning surveys.

Highway alignment and surveys: Engineering Surveys for highway location Maps and Drawing.

Highway drainage: Importance, Surface and subsurface drainage.

UNIT 2

Geometric Design: Cross Section elements, Sight Distance, Design of horizontal and vertical Alignment.

UNIT 3

Traffic Engineering: Traffic characteristics, studies such as volume, Speed, 'O' and 'D' and their uses, Traffic operations, Traffic control devices and prevention of road accidents Design of Intersections and parking facility, highway lighting, Traffic planning and administration.

Unit 4

Highway Materials: Behavior of highway materials, properties of Subgrade and pavement component materials. Tests on subgrade soil, Aggregate and bituminous materials.

Pavement Design: Factors in design of flexible and rigid pavements, Design of flexible pavements: Group index, C. B. R. methods, I.R.C. recommended method, Design of Rigid pavement: Westergaard's analysis of wheel loads. Stresses in rigid pavements. I.R.C. recommendations Pavement Construction Techniques and Quality Control: Types of Pavements water bound macadam, bituminous and cement concrete pavements. Joints in cement concrete pavements, Pavement failures

UNIT 5

Airport Planning: Definition of terms related to airport engineering, factors affecting site selection, obstructions, various surveys for site selection, zoning laws. Classification of Obstructions.

Runways: Orientation, Basic runway length and its corrections. Geometric design, runway configuration taxiways layout geometric, Standards, exit taxiways fillets separation.

Name of Text Books:

Principle and Practices of Highway Engineering – Kadiyali & Lab (Khanna Publishers, Delhi)
Highway Engineering – S. K. Khanna & C.E.G. Justo (Khanna Publishers, Delhi)
Air-port planning and Design – Khanna and Arora (Khanna Publishers, Delhi)
Highway Engineering – Rangawala S.C. (Charotar Publishers)
A textbook of Transportation Engineering – S.P. Chandola (S. Chand)
Transportation Engineering – A.K. Upadhyay (S.K. Kataria & Sons)

Name of Reference Books:

Specifications for Road and Bridge Works – MOST (IRC Publishers)

Manual for Survey, Investigation and Preparation of Road Projects – IRC Publication 2001.

22CE03T :   SURVEYING - II

| L | T | P | SESSIONAL - TA | | | ESE |
			IA	MSE	TOTAL	
3	1	-	20	20	40	60

Unit 1

Triangulation:

Principle and classification of Triangulation System, Triangulation chains, Strength of Figures, Station marks and Signals, Satellite station, intersected and Resected points, field work-Reconnaissance, Intervisibility of station, Angular measurement, Base line measurement and its extension.

Unit 2

Tacheometery :

Definitions, Principles of stadia systems. Instrument constants, Substance and Tangential Systems. Construction and use of Reduction Tacheometers.

Unit 3

Adjustment Computations:

Weighting of observations. Treatment of random errors, probability equation, Normal law of error, Most Probable Value 7 measures of precision, Propagation of errors and variances. Most probable value, Principle of Least square, Observations and correlative Normal Equations. Adjustment triangulation figures and level nets.

Unit 4

Photographic surveying:

Photo theodolite, principle of the method of terrestrial photogrammetry, stereo Photogrammetry.

Aerial surveying:

Aerial surveying, scale and distortion of the vertical and tilted photograph, comparison between air photograph and map.

Unit 5

Hydrographic surveying:

Introduction, shore line survey, soundings methods, gauges, equipment required for hydrographic surveying.

EDM : Principle, Type, Use

Text Books:

Surveying (Vol. I & II) – Punmia, B.C. (Laxmi Publications, New Delhi, 1996)
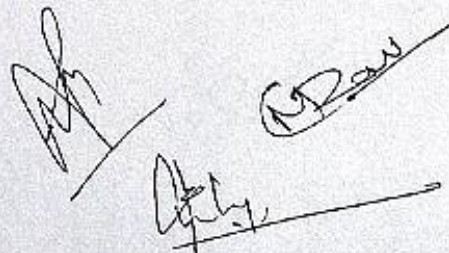Surveying (Vol. I & II) – Kanetkar T.P. (Pune Vidyarthi Griha Prakashan, Pune)

Reference Books:

Engg Surveying Technology – Kennie, T.J.M. and Petrie G. (Blackie & Sons Pvt. Ltd.,London, 1990)
Surveying (Vol. II & III) – Agor, R (Khanna publications, Delhi, 1995)
Surveying (Vol. II & III) – Arora, K.R. (Standard Book House, Delhi, 1993)
Solving Problems in Surveying – Bannister A. and Baker, R. (Longman Scientific Technical)

22CE04T : FLUID MECHANICS - I

L	T	P	SESSIONAL - TA			ESE
			IA	MSE	TOTAL	
3	I	-	20	20	40	60

UNIT 1   **Introduction:** Fluid, physical properties of fluids ideal and real fluid, Newtonian and Non-Newtonian Fluid

Fluid Statics: Pressure density height relationship, pressure measurement by Manometers, Pressure on plane and curved surfaces, centre of pressure, buoyancy, stability of immersed and floating bodies, metacentric height.

UNIT 2   **Kinematics of fluid flow :** Steady and unsteady flow, uniform and non uniform flow, laminar and turbulent flow, one, two and three dimensional flow, streamlines and path lines, rotational and irrotational flow, continuity equation, three dimensional continuity equation. velocity potential and stream function.

UNIT 3   **Dynamics of fluid flow:** Euler's equation of motion along a streamline and its integration, Bernoulli's equation and its applications – Pitot tube, Venturimeter, orificemeter, problems related to application of momentum equations.

UNIT 4   **Flow in Pipes :** Major and minor losses in pipe lines, loss due to sudden contraction & expansion, Pipes in series and parallel

Flow in open Channel: Comparison between open channel and pipe flow, definition of uniform and non-uniform flow, Chezy's and Manning's Formula, Hydraulically efficient channel section of rectangular, trapezoidal .

UNIT 5   **Flow through mouthpieces and orifices:** Hydraulic coefficients of orifice, flow through large rectangular orifice, mouthpieces, Borda's mouthpieces.

Notches and Weirs: Rectangular, triangular and trapezoidal notches and weir, cippoletti and broad crested weir.

Name of Text Books:

Fluid Mechanics and Machines – Dr. A.K. Jain (Khanna Publications)
Fluid Mechanics and Machines – Dr. R.K. Bansal (Laxmi Publications)
Fluid Mechanics & Hydraulic Machines – Dr. P.N. Modi & S.M.Seth, (Narosa Publishing House)

Name of Reference Books:

Mechanics of Fluid – Irving H. Shames (McGraw Hill)
Introduction to Fluid Mechanics – James A. Fay (Prentice Hall India)
Fluid Mechanics – R.J. Garde (New Age International Publication)
Fluid Mechanics – Streeter V.L. & Wylie E.B. (Tata McGraw Hills)
Fluid Mechanics – John F Dougles (Pearson Publication)

Introduction to Fluid Mechanics Fox, R.W. and McDonald, A.T., John Wiley & Sons.

Fluid Mechanics", Streeter, V.L. and Benjamin, W.E., "McGraw-Hill.

Fluid Mechanics and Fluid Mechanics Som, S.K. and Biswas, G.,Tata McGraw Hill.

Introduction to Fluid Mechanics, Fox, R. W. and A. T. McDonald, 6th ed., John Wiley, New York, (2004)

22CE05T : BUILDING CONSTRUCTION

L	T	P	SESSIONAL - TA			ESE
			IA	MSE	TOTAL	
3	1	-	20	20	40	60

UNIT 1:

Foundation: Functions of Foundation, essential requirements of a Good Foundation, Preliminary Investigation of Soil, Bearing Capacity of Soil, Classification of Foundations, Introduction to Different type of foundation: Masonry footings, isolated footings, Combined and strap RCC footings, Raft footing, Pile foundations. Friction and Load bearing piles).
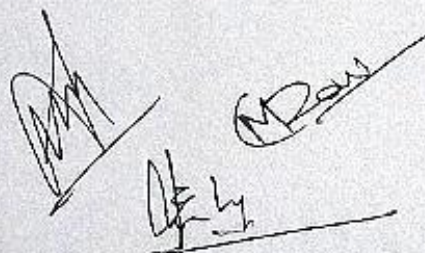
UNIT 2:

Masonry: Definition of terms used in masonry, Bonds in Brickwork, English Bond, Flemish Bond, Reinforced brickwork, Joints in Stone Masonry, Rubble Masonry, Coursed Rubble Masonry, Uncoursed rubble masonry, Random rubble masonry, Ashlar Masonry, Masonry arches: Classification, Stability of an arch, Lintels, Types and classifications, Functions, Method of constructions, Chejja, Functions, Method of constructions, Canopy, Functions, Method of construction, Balcony, Functions, Method of construction, Shoring,Underpinning,Scaffolding

UNIT 3: Floors and Roofs, Types of flooring (Materials and method of laying),, Granolithic, Mosaic, Ceramic, Marble, Polished Granite, Industrial flooring, Flat Roof (R.C.C.), Sloped roof (R.C.C. And Tile roof), Lean to roof, Wooden truss (King post and queen post trusses), Steel trusses, Weather proof course for RCC Roof,

UNIT4:

Stairs, Doors and Windows: Types (Classifications) and Technical terms in stairs, Requirements of a good stair. Geometric Design of RCC Dog Legged and open well stairs. (Plan

and sectional elevation of stairs), Doors, Types, Paneled doors, Glazed doors, Flush doors, Collapsible and rolling shutters, Louvered doors, Revolving, sliding and swing doors, Windows, Types, Paneled, Glazed, Bat window, Dormer window, Louvered and corner window, Ventilators .

Plastering and Painting: Purpose of Plastering, Materials of plastering, Lime mortar, Cement Mortar Methods of plastering, Stucco plastering, Lath plastering, Purpose of Painting, Types of Paints, Application of paints to new and old surfaces, Distemper, Plastic emulsion,, Enamel, Powder coated painting to walls and iron and steel surfaces, Polishing of wood surface

UNIT5:

Introduction to cost effective construction: Necessity, Advantages, Pre fabrication techniques, Pre cast doors and windows (Pre cast frames, and shutters), Alternative Building Materials, Hollow concrete blocks, Stabilized mud blocks, Micro concrete tiles, Precast roofing elements

Miscellaneous topics: Form Work, Form work Details, RCC columns, Beams, Floors, Slip forming, Damp proof construction

TEXT BOOKS

1. **Building Construction** by S.G. Rangwala, Charter Publishing House, Anand, India.

2. **Building Construction** by Sushil Kumar, Standard Publication and Distributors, New Delhi

3. **Building Construction** by Punmia B.C., Lakshmi Publications, New Delhi.

4. **Advanced Building Materials and Construction** by Mohan Rai and Jai Sing, CBRI Publications, Roorkee.