MIET

Model Institute of Engineering & Technology

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[SYLLABUS FOR CIVIL ENGINEEING]

[SEMESTERWISE COURSE DISTRIBUTION AND PAPERWISE OUTLINE OF BACHOLOR OF ENGINEERING IN ELECTRICAL ENGINEERING]

FOR EXAMINATIONS TO BE HELD IN DECEMBER, 2010 ONWARDS UNIVERSITY OF JAMMU, JAMMU

COURSE OF STUDY FOR BE IST SEMESTER ENGINEERING BRANCH: COMMON TO ALL BRANCHES

Course	Course Name	Lectu	Tutori	Pract.				
No.		re	al		Marks			
					Theory	Sessi	Pract	Total
						onal	ical	
MTH -101	Engg. Math-1	3	2	-	100	25	-	125
PHY -102	Engg. Phy-I	3	1		100	25	-	125
CHM -103	Engg. Chem-I	3	1		100	25	-	125
M -104	Engg. Mech	3	1		100	25	-	125
HUM -105	Comm. Skills	3	1	-	100	25	-	125
M-106	Engg. Graphics	1	-	3	100	-	50	150
PHY -107	Engg. Physics Lab.	-	-	2	-	-	50	50
CHM -108	Engg. Chemistry Lab	-	-	2	-	-	50	50
M -109	Engg. Mech. Lab.	-	-	2	-	-	50	50
M -110	WS Technology	1	-	3	-	-	75	75
Total		17	6	12	600	125	275	1000

UNIVERSITY OF JAMMU

FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

CLASS : B.E. IST SEMESTER BRANCH: COMMON FOR ALL BRANCHES COURSE TITLE: ENGINEERING MATHEMATICS-I COURSE NO.MTH-101 DURATION OF EXAM: 3 HOURS

L	Т	Р			
			MARKS	5	
3	2	0	Theory	Sessional	Practical
			<u>100</u>	25	<u>0</u>

SECTION-A

- 1. <u>Differential Calculus</u>: Successive differentiation, Leibnitz theorem (without proof), Partial differentiation with errors and approximations, Eular's theorem on homogeneous functions, Taylor's and Maclaurin's series of two variables, Maxima and Minima of functions of two variables, Asymptotes, Double points, curvature, Curve tracing in Cartesian, polar and parametric forms.
- 2. <u>Integral Calculus</u>:- Definite integrals with important properties, differentiation under the integral sign, Gamma, Beta and error functions with simple problems, applications of definite integrals to find length, area, volume and surface area of revolutions, transformation of coordinates, double and triple integrals with simple problems.

SECTION-B

- **1.** Complex Trignometry: **Hyperbolic functions of a complex variable**, **Inverse Hyperbolic functions**, **Logarthmic function of a complex variable**, **Summation of series by C+ iS method**.
- 2. Ordinary Differential Equations: Differential equations of first order and first degree: Exact and non-exact differential equations, Linear and Bernoulli's differential equations. Higher order linear differential equations: Complementary solution, particular integral and general solution of these equations, variation of parameters technique to find particular integral of second order differential equations, Cauchy's and Lagrange's differential equations. Applications of Ordinary Differential Equations to simple Electrical and Mechanical Engg. problems.
- 3. Solid Geometry: Sphere, Intersection of sphere and plane, tangent plane property, cone and cylinder, related problems to right circular cone and cylinder.

Books Recommended

- 1. Engineering Mathematics by B.S. Grewal, Khanna Publications, New Delhi
- 2. Calculus and Analytic Geometry by Thomas and Finney, Addision Weslay, Narosa.
- 3. Differential Calculus by S. Narayan, New Delhi
- 4. Integral Calculus by S. Narayan, New Delhi.

NOTE: There shall be total eight questions, four from each section. Each question carry 20 marks. Five questions will have to be attempted, selecting atleast two from each section. Use of calculator is allowed.

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B.E Ist Semester (Common Course)

				Maximum Marks:12		
Subject: Engineering Physics-I	L	Т	Р			
				Theory	Sessional	
Course No.PHY-102	3	1	2	100	25	

Duration of Exam: 03 hours

SECTION-A

UNIT-1	MATHEMATICAL PHYSICS	NO. OF	WEIGHTAGE
	Review of Vector Algebra, Scalar and Vector fields, Gradient of a Scalar field, Divergence and curl of a vector field and their physical significance, solenoidal fields, Guass Divergence theorm, Stokes theorem and their applications, Vector Identities	10	25%
UNIT-II	ELECTROMAGNETIC FIELDS AND WAVES		
	Guass's law in vector notation (differential and integral forms), Applications of Guass's law to find electric fields due to a long straight charged wire, Cylindrical and Spherical charge distributions. Derivation of Ampere's Circuital law, Application of Ampere's circuital law to find magnetic intensity due to long cylindrical wire, due to a long solenoid. Differential & Integral form of Faraday's law of electromagnetic induction, Equation of continuity, Displacement current and its significance, Maxwell's field equations (differential and integral forms), Betaron, Electromagnetic wave propagation in free space (e.m wave equations for $\xrightarrow{E} \& \textcircled{K} \longrightarrow \& \clubsuit$ fields for free space and their solutions (plane wave solution), velocity of e.m. waves, Relation between $E_0 \& B_0$. Definition of Poynting Vetor, Poynting theorem.	16	25%
	SECTION-B		
UNIT- III	APPLIED OPTICS		
	Interference in thin films (by reflection and transmission of light), Theory of Newton's rings by reflected light, Determination of wave length and refractive index of monochromatic light by Newton's theory. Fraunhoffer & Fresnel's diffractions Fresnel's half period zones and rectilinear propagation of light, Fraunhoffer diffraction due to a single slit, plane diffraction grating & its theory for secondary maxima and minima. Unpolarized and polarized light, Nicol Prism, Mathematical representation of polarization of different types, Quarter & half wave plates.	12	20%
UNIT-IV	OSCILLATIONS		
	Free damped and forced oscillations and their differential equations, Logarithmic decrement, power dissipation & Quality factor, ultrasonic	05	15%

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	waves and their production by Piezoelectric method and applications (General)		
UNIT-V	FIBRE OPTICS		
	Propagation of light in fibres, numerical aperture, Single mode and multimode fibres, General applications	05	15%

TUTORIALS

S.NO.	TOPICS	UNIT
		NO.
T-1	Numerical problems based on vector analysis	Ι
T-2	Numerical problems on Gradient of Scalar fields	Ι
T-3	Numerical problems on Divergence of Vector fields	Ι
T-4	Numerical problems on Curl of vector fields	Ι
T-5	Numerical problems based on Guass divergence theorem and Stokes	Ι
	Theorem	
T-6	Numerical problems based on the applications of Guass's Law	II
T-7	Numerical problems based on the applications of Ampere's law	II
T-8	Numerical problems pertaining to the applications of Faraday's law	II
T-9	Numerical problems pertaining to the applications of Interference	III
	phenomenon, Formation of Newton's rings	
T-10	Numerical problems pertaining to the applications of diffraction and	III
	polarization phenomenon	
T-11	Numerical problems based on the applications of SHM, damped and	IV
	forced motion of bodies and applications of ultrasonic	
T-12	Numerical problems based on the applications of Fibre optics	V

NOTE: SETTING OF QUESTION PAPER (Instructions for examiners)

- i) The question paper will consist of two sections $\$
 - a) Section-1
 - &
 - b) Section-II
- ii) Section-I Comprises of Unit-I and Unit-II Section-II Comprises of Unit-III, Unit-IV and Unit-V
- iii) Number of questions to be set in the paper =8 (eight) (Four from each section) as per weightage
- iv) Number of questions to be attempted =5 (five) (Selecting at least two from each section)

BOOKS RECOMMENDED

S.NO.	TITLE	AUTHOR
1.	Vector Analysis	Spiegal
2.	Mathematical Physics	Rajput & Gupta
3.	Physics	Reisnick & Hatliday
4.	Optics	Brijlal & Subramaniam
5.	Sound	Subramaniam
6.	Sound	Khanna & Bedi
7.	Fibre Optics	Ghatak, Tyagrajan

<u>UNIVERSITY OF JAMMU</u> FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

CLASS : B.E. IST SEMESTER BRANCH: COMMON TO ALL COURSE TITLE: ENGG. CHEMISTRY COURSE NO.:CHM-103 DURATION OF EXAM: 3 HOURS

L	Т	Р	MARK	5	
3	1	2	<u>Theory</u>	Sessional	Practical
			<u>100</u>	25	<u>50</u>

SECTION - A

1. <u>SPECTROSCOPY</u>

<u>UV Spectroscopy</u> – Electronic transitions, spectrum, shift of bonds with solvents for double bonds, carbonyl compounds and aromatic compounds. <u>IR-Spectroscopy</u> – Introduction, brief idea about instrumentation, applications and interpretation of IR Spectra, characterization of functional groups and frequency shift associated with structural changes.

<u>'H-NMR Spectroscopy</u> – Theory of 'H-NMR Spectroscopy, equivalent and non-equivalent protons, chemical shift, spin-spin coupling, spin-spin splitting, H'-NMR spectrum of a few organic compounds.

2. <u>EXPLOSIVES</u>

Introduction, classification and types of explosives, requirement for good explosives, preparation and uses of following explosives – Nitrocellulose, TNT, Dinitrobenzene, Picric Acid, Nitroglycerine and Dynamite, Gun Power, RDX, Tetracene.

SECTION - B 1. <u>STEREOCHEMISTRY:-</u> Optical isomerism, recemerization, asymmetric synthesis, methods for resolution of racemic mixture, enantiomerism and diasteroisomerism.

- 2. <u>ALLOYS</u> Introduction, purpose of making alloys, preparation of alloys, classification
 - of alloys. (Ferrous and non-ferrous alloys), alloy steels & copper alloys.

3. LUBRICANTS

Definitions, functions of lubricants, mechanism of lubrication, classification of lubricants (Lubricating oils, semi solid lubricants, solid lubricants) synthetic lubricants, flash and fire points, oiliness, cloud and pour points.

4. DYES AND DRUGS

Classification of dyes and its applications. Define drug and give the applications of following drugs.

a) Narcotics b) Tranquilizers c) Antipyretics d) Antibiotics

FORMAT OF QUESTION PAPER

Total No. of Questions	=	08	
Questions to be attempted		=	05

(Minimum Two from Each Section A & B)

Books Recommended :

- 1. **Engineering Chemistry**
- **Engineering Chemistry** 2.
- 3. **Engineering Chemistry**
- 4. **Organic Chemistry**
- **Organic Chemistry** 5.
- **Organic Chemistry** 6.
- Bahl, B.S. Soni, P.L. Jain, M.K.

Jain & Jain

Dara, S.S.

Sharma, B.K.

- **Spectroscopy of Organic Compounds**
- 7. Silverstain **Spectroscopy of Organic Compounds** Kalsi, P.S. 8.

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FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

CLASS : B.E. IST SEMESTER **BRANCH: COMMON TO ALL** COURSE TITLE: ENGINEERING MECHANICS COURSE NO.M-104 DURATION OF EXAM: 3 HOURS

L	Т	Р			
			MARKS	5	
3	1	2	Theory	Sessional	Practical
			<u>100</u>	25	<u>50</u>

SECTION-A (STATICS)

Scope and basic concepts (Rigid body, force, units, etc), concept of free body diagram, Resultant of Co-planar concurrent forces in a plane and space, moment of force, Principle of Moments, Coplanar and spatial applications. Virtual work method and its applications.

Equilibrium and its equations for a planar and spatial systems, Analysis of trusses, Method of joints and sections.

Theory of friction, its laws and applications (inclined plane). Square threaded screws, Bolt friction, Centroids and center of gravity, centroids of lines and composite areas, centroids determined by integration.

Moment of inertia, Area M.O.I, Transfer theorems, Polar M.O.I, Product of inertia, Principal M.O.I, Mohr's circle for area M.O.I, Transfer theorems and axes M.O.I of composite bodies.

SECTION-B (DYNAMICS)

Kinematics of a particle rectilinear motion, motion curves, Rectangular components of curvilinear motion, Flight of Projectile, Normal and tangential components of acceleration, Radial and transverse components, Newton's Laws. D'Alembert's Principle.

Kinematics of rigid bodies: Types of rigid body motion, Angular motion, fixed axis rotation, Analysis of plane motion and its applications, Instantaneous center and Instantaneous axis of rotation.

Kinetics of Particle: Translation, Analysis of a particle as a rigid body.

Kinetics of rigid bodies: Equations of plane motion, fixed axis rotation, Rolling bodies, General plane motion, Impulse and momentum in plane motion, Angular momentum.

1.	Engineering Mechanics (Statics & Dynamics)	Beer and Johnson
2.	Engineering Mechanics (Statics & Dynamics)	Mariam and Kraige
3.	Engineering Mechanics (Statics and Dynamics)	Timoshenko and Young
4.	Engineering Mechanics (Statics and Dynamics)	Ferdinand L Singer.

RECOMMENDED BOOKS

NOTE : There shall be total eight questions, four from each section. Five questions will have to be attempted selecting atleast two from each section. Use of calculator is allowed.

<u>UNIVERSITY OF JAMMU</u> FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

B.E IST SEMESTER BRANCH: COMMON TO ALL TITLE: COMMUNICATION SKILLS COURSE NO: HUM-105 DURATION: 3 HOURS

		LTP	MARK	S		
		31-	THEOR	XY: 100		
			SESSIC	ONALS: 25		
Exercises	in comprehension, grammar	vocabulary,	usage,	pronunciation,	spelling	and
compositio	on based on the following texts:					
i.	Contemporary English Prose					
	Edited by Menon					
	Oxford University Press					
ii.	Developing English Skills					
	Edited by Thanker, Desai and H	Purani				
	Oxford University Press					
	Or					
	English through Reading-II					
	Edited by Bhasker and Prabhu					
Note: Test	-I carries 50% weightage in the q	uestion paper	and Text	t-II carries 50%	weightage	
Question F	Paper:					
1. Six	short answer questions on comp	rehension to b	e set	(3)	0 marks)	

1.	Six short answer questions on comprehension to be set	(30 marks)
	from Text-I. Students expected to answer any three in about	
	150 words each	
2.	Phrases and idioms from text I to be used in sentences.	(20 marks)
	Hundred percent choices to be given	
3.	Completing a paragraph of which the first two or three short	(10 marks)
	Sentences are given	
4.	Exercise on tenses from Text II	(5 marks)
5.	Exercises on active/passive transformation from Text-II	(5 marks)
6.	Forming verbs or adjectives or nouns from the given words-text-II	(5 marks)
7.	Propositions from text-II	(5 marks)
8.	Matching words and their meanings Text-II	(5 marks)
9.	Forming words ending in-ify,-ize,-tion, ec. From Text-II	(5 marks)
10.	Filling in the blanks with a given set of words in brackets-Text-II	(5 marks)
<u>11.</u>	Questions on miscellaneous exercises from Text-II such as	(5 marks)
	Question tags - articles etc.	
	or	

Marking Stress or Syllable in given words.

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CLASS: B.E. IST SEMESTER BRANCH: COMMON TO ALL COURSE TITLE: ENGINEERING GRAPHICS COURSE NO.Eng-106 DURATION OF EXAM: 3 HOURS

L	Т	Р			
			MARKS	5	
1	0	3	Theory	Sessional	Practical
			<u>100</u>	0	<u>50</u>

UNIT-1

Introduction: Conventional lines and signs used in Engineering Drawing, Printing and Lettering, Curves used in Engineering Practice: Cycloidals, Involutes, Spirals and Hellices, Locus of a point on simple mechanisms.

Theory and practice of Orthographic projections.

Projection of points and Lines: Projections of points and lines in different quadrants w.r.t principle reference planes, Finding of true length, True inclinations and traces of lines. Projection of Planes: Projections of a plane w.r.t. the principle planes in simple and inclined positions. Rotation method and the Auxiliary plane method. Space relation of a plane and a line. To locate a point on a plane given its projections. Parallel relation of lines and planes. Shortest distance between a line and a plane.

UNIT-2

Projection of Solids: Classification and main features-Prisms and Pyramids. Projection of solids inclined to both the reference planes by (1) Rotation Method, and (II) Auxiliary plane method. Projection of solids in combination (Co-axial) in simple and inclined positions.

Sectioning of Solids: Object of sectioning, Types of cutting planes, True shape of section, Auxiliary views of sections of multiple co-axial solids in simple and titled conditions.

UNIT-3

Interpenetration of Solids and Intersection of Surface: Intersection of geometrical solids/hollow sections, Tracing of lines of intersection by line method and by section method.

Development of Surfaces: Classification of surfaces, Methods of development-Straight line method and Radial line method, Development of solids and hollow sections in full or part development of transition pieces. To draw projections from given development.

UNIT-4

Isometric Projection: Isometric scale, Isometric axes and Isometric planes, Isometric projection of solids and simple machine blocks.

Orthographic Projections: Orthographic projection of simple blocks (First & Third angles), to draw the third view from given two views. Missing lines in projection.

RECOMMENDED BOOKS

1.	Engineering Drawing	N.D Bhatt		
2.	Practical Geometry	V. Laxminarayan & GEV		
3.	Engineering Graphics	K.L. Narayanan & P.		
		Kamaish		
4.	Principles of Engineering Graphics	P.E Giesecks		
5.	Engineering Graphics	Frederic & Michelle.		

NOTE At least two questions to be attempted from Unit-I and at least one question from each of the Units-II, III and IV in the theory examination paper.

B.E Ist Semester	Maximum Marks
Subject: Engineering Physics Lab-I	Sessional
Course No.: PHY-107	50

S.No.	Experiment No.	Title of Experiment
1.	Exp-I	To plot a graph between the distance of the knife edges from the
		center of gravity and the time period of a compound pendulum. From
		the graph, find
		a) Acceleration due to gravity
		b) Radius of gyration and the moment of inertia of the bar about
		an axis through the center of gravity.
2.	Exp-II	To find the dispersive power of a given prism using a spectrometer.
3.	Exp-III	To find the refractive index of a given liquid using a hollow prism
4.	Exp-IV	To find the focal lengths of a convex mirror and a concave lens using
		a convex lens and a concave mirror respectively.
5.	Exp-V	To find the frequency of A.C mains using an electrical vibrator.
6.	Exp-VI	To draw the V-I characteristics of a forward and reverse bias P-N
		junction diode.
7.	Exp-VII	To study the common base characteristics of PNP junction transistor.
8.	Exp-VIII	To study the common emitter characteristics of PNP junction
		transistor.
9.	Exp-IX	To study the common base characteristics of NPN junction transistor.
10.	Exp-X	To study the common Emitter characteristics of NPN junction
	_	transistor.
11.	Exp-XI	To evaluate the value of Planck's constant.
12	Exp-XII	To study the characteristics of a Solar Cell.
	<u> </u>	

NOTE: A minimum of six experiments is to be performed in a semester.

BOOKS RECOMMENDED

	TITLE	AUTHOR
1.	Practical Physics	Warsnop & Flint
2.	Practical Physics	Chauhan & Singh (Vol. I & Vol. II)
3.	B.Sc. Practical Physics	C.L Arora

UNIVERSITY OF JAMMU FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS COURSE NO. CHM – 108

CHEMISTRY PRACTICAL :

- 1. Determine the percentage of CaCO₃ in precipitated chalk. You are provided with IN HCI and 0.IN NaOH.
- 2. To analyse the given antacid tablets.
- 3. Determine Volumetrically the %age purity of given sample of Ferrous

sulphate, x gms of which have been dissolved per litre provided N/10 KMnO4

- 4. Determine Volumetrically the number of molecules of water of crystallization present in the given sample of Mohr's salt, x gms. of which have been dissolved per litre provided N/10 K₂Cr₂O₇ (using an external indicator).
- 5. Determine Volumetrically the percentage of Cu in a sample of CuSO₄ crystals, Z gms of which have been dissolved per litre, provided 0.IN $Na_2S_2O_3$.
- 6. To determine the coefficient of viscosity of an unknown liquid using Ostwald Viscometer.
- 7. Determine the surface tension of a unknown liquid using Stalagmometer.
- 8. To prepare a pure and dry sample of Aspirin
- 9. To prepare a pure and dry sample of Glucosazone
- 10. Determine the method of purification of organic compounds by coloumn chromatography.
- 11. Determine the aniline point of a given lubricating oil.

Books Recommended :

- 1. Experimental Engineering Chemistry Shashi Chawla
- 2. Lab. Manual on Engg. Chemistry Basin, S K & Sudha Rani

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COURSE NO. M-109

Engg. Mechanics Lab

Lab work shall be based on theory course of Engineering Mechanics Paper

CLASS : B.E. IST SEMESTER BRANCH: COMPUTER ENGG., CIVIL ENGG., MECH. ENGG., ELECTRICAL ENGG., ELECTRONICS & COMM. ENGG. COURSE TITLE: WORKSHOP TECHNOLOGY COURSE NO.WS-110

L	Т	Р			
			MARKS	5	
1	0	3	Theory	Sessional	Practical
			<u>0</u>	0	<u>75</u>

Course Content:

Introduction to workshop as a fabrication unit. Information regarding various material of construction i.e Ferrous and Non-Ferrous, wood, plastics, etc. Basic fabrication process i.e castings, Mechanical working, welding and machining.

Wood working and pattern making practice, Information about working hand and wood working machines, various methods of joining of wooden parts for the fabrication of patterns, Pattern materials and allowances, pattern construction procedures, preservation of patterns.

Moulding and casting practice. Sand Moulding, Natural foundry sands and synthetic sands, preparation of moulding sands, mould making procedure, cast iron and aluminum and pouring, melting crucible process, Extraction of Castings.

Cold and hot working processes, basic tolls and equipment used in mechanical working. Forging furnace operation, Smith forgoing operations.

Books:

- 1. Manufacturing process and materials by Campbell.
- 2. Manufacturing Process by P.N. Rao
- 3. Workshop Technology by Hajra and Chowdhary Vol.I

Shop Practice:

- Unit-1 Pattern Making:
 - i) Baring block pattern
 - ii) Split pattern of "bench Vice" (Sliding Jaw).
- Unit-II Moulding and Casting Moulding and Castings of Patterns at Unit I.

Unit-III Hand forging of:

- i) Haxagonal headed bolt from a cylindrical rod.
- ii) Cubical Block from a Cylindrical section.

UNIVERSITY OF JAMMU, JAMMU FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS COURSE OF STUDY FOR BE 2ND SEMESTER ENGINEERING BRANCH: COMMON TO ALL BRANCHES

Course No.	Course Name	Lecture	Tutorial	Pract	Marks			
					Theory	Sess.	Pract	Total
MTH -201	Engineering Math-11	4	2	-	100	25	-	125
PHY -202	Engineering Phy-II	3	1	-	100	25	-	125
CHM -203	Engineering Chem-II	3	1	-	100	25	-	125
COM -204	Computer Programming	3	1	-	100	25	-	125
HUM-205	Engineering Economics	3	1	-	100	25	-	125
M -206	Machine Drawing-I	1	-	3	100	25	-	125
M -207	Workshop Technology-II	1	-	3	-	-	75	75
PHY -208	Engineering Physics II Lab	-	-	2	-	-	50	50
CHM -209	Engineering Chemistry II Lab	-	-	2	-	-	50	50
COM -210	Computer Programming Lab	-	-	2	-	-	75	75
Total		18	6	12	600	150	250	1000

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester Maximum Marks:125 Course No: MTH-201 L T Course Title: Engg. Math-II 4 2 100 25 Branch : Common to all branches Duration of Exam: 3 hours

SECTION-A

- 1. Introduction to infinite series & sequences:- Convergence and divergence of a series, Leibnitz test, p-test, comparison test, Cauchy's root test, D' Alembert Ratio Test, Raabe's Test, Logarithmic test, alternating series..
- 2. Fourier Series: Introduction, Euler's formulae, sufficient conditions for a Fourier expansion, functions having points of discontinuity, change of intervals. Odd and even functions, Fourier expansion of Odd and even periodic functions, half range series, typical wave forms, Parseval's formula, complex form of Fourier -series.
- 3. Power Series Solutions of Second order O.d.e: Analytic function, ordinary point, singular point, regular and irregular singular points of o.d.e. Y " +P(x)Y' + Q(x)Y=0, Series solution of such differential equations about an ordinary point, Frobenius series solution about a regular singular point.

SECTION-B

- 2. First Order partial differential equations:-Formation of p.d.e, First order linear p.d.e, Non-Linear p.d.e. of Ist order, solution by Charpit's method, Four Standard forms of non-linear p.d.e with reference to Charpit's technique.
- 3. Higher Order Linear p.d.e: Homogenous and Non-homogenous higher order linear partial differential with constant coefficient inverse operator I/f (D,D'), Rules for finding P.I and C.F, Non-Linear equations of 2^{nd} order. Application of p.d.e, method of separation of variables to solve equations of vibrations of strings (or one dim wave equation), one dim and two dim heat flow equations, Laplace equations, transmission line).
- 4. Matrices & determinants: Introduction, Rank of matrix, Elementary transformations, Elementary matrices, Inverse using elementary transformation, Normal form of a matrix, Vector spaces, Linear dependence and independence of vectors, consistency of linear system of equations, linear and orthogonal transformations, Eigen values and Eigen vector, Properties of Eigen value, Cayley Hamilton Theorem, Reduction to diagonal form, Reduction of quadratic form to canonical form, complex matrices.

BOOKS RECOMMENDED

- 1. Advanced Engineering Mathematics by R.K. Jain, S.R.K Iyenger, 2nd edition, Narosa, New Delhi.
- 2. Higher Engineering Mathematics by Dr. B.S. Grewal
- 3. Engineering Mathematics by Dr. Bhopinder Singh
- 4. Engineering Mathematics by B.S. Grewal Khanna Publication, New Delhi.
- 5. Partial differential equations by Singhania

<u>Note</u>: There shall be total eight questions, four from each section. Each question carry 20 marks. Five questions will have to be attempted, selecting atleast two from each section. Use of calculator is allowed.

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E IInd Semester (Common Course)

			Maximun	n Marks:125
Course No. PHY-202	L	Т		
			Theory	Sessional
Course Title : Engineering Physics-II	3	1	100	25
Branch: Common to all branches				

Duration of Exam: 3 hours

UNIT-1	RELATIVISTIC DYNAMICS	NO. OF	WEIGH
		LECTU	TAGE
		RES	
	Concept of Relativity, Frames of reference, Galilean	10	25%
	Transformations, Michelson and Morley's experiment,		
	Postulates of Special Theory of relativity, lorentz		
	transformations, Length Contraction, Time dilation,		
	variation of mass with velocity (Velocity addition), mass		
	energy equivalence $(E^2 = P^2 c^2 + m_o^2 c^4)$		
UNIT-II	WAVE-PARTICLE DUALITY		
	Black Body radiation spectrum (Characteristics & Energy	12	25%
	distribution), Wien's laws, Rayleigh Jeans Law excluding		
	mathematical derivations, ultraviolet Catastrophe, Planck's		
	hypothesis and Planck's radiation law, Explanation of black		
	body radiation characteristics on the basis of Planck's law,		
	photon concept.		
	Compton effect, derivation of the direction of emission and		
	the change in wavelength of scattered photons, direction of		
	recoil electron and discussion of observed results.		
	Debroglie's hypothesis, concept of matter waves, Davisson		
	& Germer's experiment, wavepacket, Phase and Group		
	velocity, Heisenberg's uncertainty principle. Experimental		
	illustration of uncertainty principle using single slit.		
UNIT –III	QUANTUM MECHANICS		
	Wave function definition, interpretation and significance of	14	25%
	wave function, Schrodinger's wave equations (Steady-State		
	and time dependent) for 1-dim case, concept of operators		
	and expectation values, Applications of Schrodinger's		
	equation (Time independent) to a) Particle in a 1-		
	dimensional box of infinite height, b) single step potential		
	barrier, c) Tunnel effect, d) Quantum Mechanical harmonic		
	oscillator with concept of Zero point energy.		
UNIT-IV	SOLID STATE PHYSICS		
	Intrinsic & extrinsic semi-conductors, Fermi & impurity	7	15%
	levels, Impurity compensation, charge neutrality equation		
	and semi-conductor conductivity. Einstein's relation, drift		
	and diffusion current. Introductory concepts of advanced		
	materials viz; conducting polymers dielectric materials,		
	Nanomaterials, Smart materials and High T _c materials.		
UNIT-V	LASERS		
	Principle of Laser action, population Inversion, Einstein's	5	10%
	Coefficients, He-Ne & Ruby Lasers, Holography		

TUTORIALS

B.E IInd Semester Subject: Engg: Physics-II Course No.Phy-202

S.NO.	TOPICS	UNIT NO.
T-1	Numerical problems based on Length contraction & time dilation	Ι
T-2	Numerical problems based on variation of mass, energy mass	Ι
	equivalence etc.	
T-3	Numerical problems pertaining to energy spectrum of Black body	II
	radiations, Wien's displacement/R-J laws, Planck's law	
T-4	Numerical problems based on photo-electric effect, work functions	II
T-5	Numerical problems based on Compton effect, recoil energy of electron	II
	etc.	
T-6	Numerical problems based on the characteristics of De-broglie waves,	II
	Davisson-Germer's Expt.	
T-7	Numerical problems related to Heisenberg's uncertainty principle	II
T-8	Numerical problems based on Schrodinger's wave equation, expectation	III
	values of certain physical quantities and operators	
T-9	Numerical problems to find the Eigen function and eigen values for	III
	particle in a box	
T-10	Numerical problems to find the reflection and transmission co-efficients	III
	for a particle penetrating a potential barrier	
T-11	Simple numerical problems based on finding the bandgaps in semi-	IV
	conductor materials etc.	
T-12	Simple numerical problems based on finding the energy level difference	V
	in Lasers etc.	

NOTE: SETTING OF QUESTION PAPER (Instructions for Examiners)

- i) The question paper will consist of two sections
 - a) Section-I

&

- b) Section-IIii) Section-I Comprises of Unit-I and Unit-IISection-II Comprises of Unit-III, Unit-IV and Unit-V
- iii) Number of questions to be set in the paper =8 (eight) (Four from each section as per weightage)
- iv) Number of questions to be attempted =5 (five) (Selecting at least two from each section)

BOOKS RECOMMENDED

TITLE

- 1) Modern Physics
- 2) Modern Physics
- 3) Modern Physics
- 4) Basic Electronics
- 5) Material Science

AUTHOR

Beiser Blatt Gupta & Gupta Millman & Halkias S.L. Kakani, Amit Kakani

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester

			Maximum Marks:125	ī
Course No: CHM-203	L	Т		Sessional
			Theory	
Course Title: Engg. Chem-II	3	1	100	25
Branch : Common to all branches				
Duration of Exam: 3 hours				
SECTION-A				

1. ENVIRONMENTAL CHEMISTRY :

Concept of Environmental chemistry, segments of environment (a brief idea about atmoshphere, hydrosphere and lithosphere)

AIR POLLUTION - Introduction, Types of air pollution and control of air

pollution.

WATER POLLUTION : Introduction, Sources of water pollution and methods

of controlling water pollution.

CHEMICALS AND METAL TOXICOLOGY (Biochemical effects of Pb, Hg,

As, Zn, Cd, Ni, Se, CN, O3 and pesticides in brief on man).

2. INORGANIC CEMENTING MATERIALS :

Cement and Lime – Introduction, classification of lime, manufacture and properties of lime, setting and hardening of lime.

Cement, types of cement, manufacture of Portland cement, setting and hardening of cement.

3. WATER TREATMENT

Introduction, types of water, softening of water by different processes, chemical methods and sterilization, priming and foaming, sludge and scale formation, determination of hardness of water by soap titration method and EDTA method. Radioactivity of water, numericals on hardness and softening of water.

SECTION-B

1. PLASTICS:

Introduction, importance of plastics and uses, classification of plastics, moulding constituents of a plastic, moulding of plastics into articles (compression moulding, injection moulding, transfer moulding and extrusion moulding) Preparation , properties and uses of following plastic materials:

a) Polymethyl methacrylate b) Epoxy resins c) Alkyd resins.

2. RUBBER

Introduction, types of rubber, treatment of latex, vulcanization of rubber, preparation, properties and uses of following synthetic rubber: Buna-S, Buna-N & Butyl rubber.

3. PAINTS

Introduction, requisites of a good paint, constituents of a paint, manufacture of a paint, properties and uses of important white pigments such as white lead, Zinc oxide and Lithophone.

BOOKS RECOMMENDED :

- 1. **Engineering Chemistry**
- 2. **Engineering Chemistry**
- 3. **Engineering Chemistry Engineering Chemistry**
- 4.
- 5. **Organic Chemistry** 6. **Environmental Chemistry**
- 7. **Textbook of Environmental Chemistry**
- 8. **Polymer Science**

Jain & Jain Sharma, B.K. Dara, S.S. Shashi, Chawla Bahl, B.S. De, A.K. Tyagi & Mehra Gowrikar, V.R. etal.

Note : There shall be total eight questions, four from each section. Each question carry 20 marks. Five questions will have to be attempted, selecting atleast two from each section. Use of calculator is allowed.

UNIVERSITY OF JAMMU

FOR EXAMINATION TO BE HELD IN JUNE 2011 ONWARDS

CLASS: B.E 2nd SEMESTER BRANCH: COMMON FOR ALL BRANCHES COURSE TITLE: COMPUTER PROGRAMMING USING C COURSE NO: COM –204 DURATION OF EXAM: 3 HOURS



MARKS Theory Sessionals 100 25

- 1. Basic structure of Computer, Stored Program Concept, Binary Arithmetic Addition, Subtraction, Multiplication, Data Representation Fixed and Floating Point, Semiconductor Memories.
- 2. Introduction to C, Data Types, Constants, Variables, Expressions, Statements, Operators, Data Input and Output.
- 3. Control Statements, Arrays, Recursion, Storage Classes, Library Functions.

SECTION-B

- 4. Functions, User Defined Data Types, Structures, Unions, Passing Structure to Functions.
- 5. Pointers, Operation on Pointers, Passing Pointers to Functions, Data Files Opening, Closing, Creating Data Files

Books Recommended:-

- 1. Programming With C Byron Gottfried.
- 2. Programming With C E. Balaguruswamy.
- 3. C The Complete Referance Herbert Schildt.
- 4. Let us C Yashwant Kanitkar.
- 5. Digital Computer Fundamentals Thomas C. Bartee.
- 6. Digital Computer Design V . Rajaraman.
- NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E. 2 nd Semester				
			Maximum	n Marks: 125
Course No. HUM-205				
			Theory	Sessional
Course Title: Engineering Economics	L	Т	100	25
Branch: Common to all branches	3	1		
Duration of Exam : 3 Hours				

SECTION-A

<u>UNIT-1</u>

	Definitions of Economics
	a) Science of Wealth
	b) Science of Material Welfare
	c) Science of Scarcity
	Economic System
	a) Features of Capitalism
	b) Features of Socialism
	c) Features of Mixed Economy
<u>UNIT-II</u>	
	Consumer Behaviour
	a) Cardinal Utility Analysis: The Concept and Utility Maximisation: Laws of Diminishing Marginal Utility and Equi-Marginal Utility.
	b) Ordinal Utility Analysis: Meaning and Properties of Indifference Curves
	and Utility Maximization.
	· · · · · · · · · · · · · · · · · · ·
	Demand Theory:
	a) Meaning of Demand and law of Demand
	b) Factors Affecting Demand
	c) Elasticity of Demand (Price Elasticity, Income Elasticity and Cross Elasticity)
	d) Demand Forescasting
	SECTION-B
UNIT-III	
	Theory of Production:
	a) Factorsof Production and Production Function.
	b) Isoquants : Meaning & Properties
	c) Law of Variable Proportions & Returns to scale
	Costs and Cost Analysis
	a) The Concept of Marginal, Average, Fixed and Variable Costs.
	b) The Shape of Fixed, Average and Marginal Cost Curves (short run)
	Market and Market Structures
	a) Meaning and Feature of Perfect Competition, Monopolistic Competition, Oligopoly and Monopoly.
	b) Price Determination Under Perfect competition and monopoly.

MIET [SYLLABUS FOR CIVIL ENGINEEING]

UNIT-IV							
	Some commonly used Economic Concepts						
	a) Meaning, Types an	d Methods to Control Inflation.					
	b) Concept of Stock M	/larket					
	c) Meaning & Concep	ot of National Income					
	d) Functions of Commercial Bank & Central Bank						
	e) Features of Development and Under Development						
	f) Meaning & Phases of Trade/Business Cycle						
	g) Index Number : C	onstruction and difficulties in measurement of Index					
	Number.						
BOOKS R	ECOMMENDED						
1.	K.K.Dewett	: Modern Economic Theory					
2.	H.L Ahuja	: Advanced Economic Theory					
3.	M.L. Jhingan	: Macro Economics					
4.	P.N Chopra	: Business Economics/Advanced Eco. Theory					

Note: There shall be total eight questions, four from each section. Each question carry 20 marks. Five questions will have to be attempted, selecting atleast two from each section. Use of calculator is allowed.

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E. 2 nd Semester				
			Maximun	n Marks: 125
Course No. M-206				
			Theory	Sessional
Course Title: Machine Drawing-I	L	Р	100	25
Branch: Common to all branches	1	3		
Duration of Exam: 3 Hours				

SECTION-A

- 1. I.S. Code for Machine Drawing.
- 2. Types of Sections and Recommended Scale, Dimensioning and Sectioning of Machine elements.
- 3. Drawing and sketching of machine elements in Orthographic Projections.
- 4. Different types of Joints: Riveted joints, Threaded fasteners, Knuckle joint, Cotter Joints: Gib and Cotter, Sleeve and Spigot.
- 5. Stud assembly, Pipe joints including expansion joint.
- 6. Shaft pulley, cone pulley, Fast and loose pulley, etc.

SECTION-B

- 1. Simple assemblies: Shaft couplings and Clutches, Muff Coupling, Split muff, Flange Couplings: Solid and Flexible, Protected and Unprotected, Universal Coupling.
- 2. Bearings: Pedestal bearing including Hanger bearings, Pivot bearing and Swivel bearing.

RECOMMENDED BOOKS:-

1.	Machine Drawing	P.S. Gill
2.	Machine Drawing	Sidheshwar and Kannaih
3.	Machine Drawing	N.D. Bhatt

NOTE:-

- 1. There will be Six questions in all, five from Section- A (each of 15 marks) and one Compulsory question of 55 marks from Section B.
- 2. Students are required to attempt Four questions in all, three form Section-A and one compulsory question involving assembly from **Sections–B**.

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester

B.E 2 ND Semester			Maximum Marks : 75
Course No: M-207	L	Р	Prac/Lab
Course Title: Workshop Technology-II Branch : Common to all branches Duration of Exam : 3 Hours	1	3	75

WELDING SHOP

- 1. Introduction to Welding as a fabrication process, Welding application and general safety precautions.
- 2. Introduction to Gas and Arc welding processes.
- Preparation of single V-butt joint by Gas and Arc welding processes. 3.
- Preparation of double V-butt joint, Lap joint, Tee joint and Corner joint by Gas and Arc welding 4. processes.

FITTING SHOP

- Assembly of Snap fitting of flat pieces (Male, Female). 1.
- 2. Assembly and fitting of two L-shaped rectangular flat pieces.

SHEET METAL SHOP

- 1. Introduction to sheet metal tools.
- 2. Practice of making regular geometrical and traditional shapes in sheet metal, which includes:
 - Square elbow a)
 - b) Tee joint
 - c) Funnel making
 - Tray and riveted handle. d)

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

Р

2

B.E 2ND Semester

Course No: PHY-208

Course Title: Engineering Physics Lab-II Branch : Common to all branches Duration of Exam : 3 Hours

S.NO. **EXPERIMENT** TITLE OF EXPERIMENT NO. To determine the wavelength of sodium light using a plane 1. Exp-1 diffraction grating. 2. Exp-II To find the wavelength of a monochromatic source of light using Fresnel's Biprism. 3. Exp-III To determine the specific rotation of sugar using laurent's half shade polarimeter. Exp-IV Verification of Faraday's laws. 4. 5. Exp-V To find the wavelength of monochromatic light using Newton's rings Apparatus. To find the co-efficient of self-induction of a coil by 6. Exp-VI Anderson's bridge using head phone. 7. Exp-VII To determine the value of e/m for electron by a long solenoid (Helical method). 8. Exp-VIII To find the impedance of LCR series and parallel circuits. 9. Exp-IX To study the Zener diode characteristics. 10. Exp-X To find the specific resistance of given wire by using carry Foster's Bridge. To find the wavelength of He-Ne gas laser. 11. Exp-XI 12. To find the diameter of a thin wire using He-Ne gas laser. Exp-XII

NOTE: AT LEAST A MINIMUM OF SIX EXPERIMENTS IS TO BE PERFORMED IN A SEMESTER.

BOOKS RECOMMENDED

Maximum Marks : 50 Prac/Lab 50

MIET [SYLLABUS FOR CIVIL ENGINEEING]

	TITLE	AUTHOR
1.	B.Sc Practical physics	C.L. Arora
2.	Practical Physics	Worsnop & Flint
3.	Practical Physics	Chauhan & Singh (Vol.I & Vol. II)

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester

Course No: CHM-209

Course Title: Engineering Chemistry Lab-II Branch : Common to all branches Duration of Exam : 3 Hours Maximum Marks : 50 Prac/Lab



Р

EXPERIMENTS

- 1. Determine the total hardness of a sample of water by complexometric method (using EDTA).
- 2. Determine the chloride content in supplied water sample using Mohr's method (Argentometric method).
- 3. Determine dissolved oxygen in the given sample of water (winkler's method).
- 4. Determine the free chlorine in the given sample of water.
- 5. Determine the acidity of a given water sample.
- 6. Determine the alkalinity of a given water sample.
- 7. Determine the percentage of calcium oxide in cement.
- 8. Organic Analysis: Identify the following organic compounds (preparation of at least one derivative).
 - a) Carboxylic acids
 - b) Compounds containing alcoholic and phenolic OH groups
 - c) Aldehydes & Ketones
 - d) Carbohydrates
 - e) Amides, amines, anilides and nitro compounds

- f) Hydrocarbons
- g) Compounds containing sulphur or halogen

LIST OF BOOKS RECOMMENDED

1.	Experimental Engineering Chemistry	Shashi Chawla
2.	Lab. Manual on Engineering Chemistry	Basin, S K & Sudha Rani
3.	A Manual of Practical Engineering Chemistry	Dr. Rajinder Kumar

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FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2 ND Semester		
		Maximum Marks :
		75
Course No: COM-210	Р	
		Prac/Lab
Course Title: Computer Programming	2	75
Using C Lab.		
Branch : Common to all branches		
Duration of Exam : 3 Hours		

The practicals will be based on the topics covered under Theory Syllabus. The Students are required to perform at least 15 Programs.

COURSE SCHEME FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

S. No.	SUBJECT	Course	C	CLASSES MAR		RKS			
			L	т	Ρ	Theor y	Sessiona I	Practic al	Total
1	Building Materials and Construction	C-301	3	2	0	100	25	-	125
2	Surveying – I	C-302	3	2	0	100	25	-	125
3	Building Drawing	C-303	2	0	0	100	25	-	125
4	Engineering Geology	C-304	4	0	0	100	25	-	125
5	Electrical Engineering	EE-311	3	2	0	100	25	-	125
6	Mechanical Engg.	M-312	3	2	0	100	25	-	125
7	Surveying - I Lab.	C-305	0	0	2	-	-	50	50
8	Building Drawing Lab.	C-306	0	0	4	-	-	50	50
9	Engineering Geology Lab.	C-307	0	0	2/2	-	-	50	50
10	Electric Engg. Lab.	EE-312	0	0	2	-	-	50	50
11	Mechanical Engg. Lab.	M-313	0	0	2/2	-	-	50	50
			18	8	10	600	150	250	1000

FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS Branch: CIVIL ENGINEERING L T MARKS

Course Title : BUILDING MATERIALS & CONSTRUCTION32Th.Sess.Course No: C-30110025

Duration of Exam: 3 Hours

SECTION - A (MATERIALS)

- 1. **BUILDING STONES :-** Origin, Classification and Engineering Properties. Essential requirements and selection of good building stones for various works in Civil Engineering. Dressed stones and their role in Export market.
- 2. **BRICKS :-** Selection of suitable soil for brick manufacture. Various methods of manufacturing of building bricks, brick classification, essential requirements of good building bricks. Tiles-their manufacture and requirements. Bricks used in Modern construction-hollow, glazed and soda-lime bricks.
- **3. TIMBER:-** Felling of trees, growth of trees, Various Classifications of trees, Common structural Timbers. Seasoning of Timber, Defects and Decay in Timber and prevention. Processed Timber.
- 4. **PORTLAND CEMENT :-** Methods of manufacture of Portland Cement, Various types of Cement and their use. Engineering Properties of Cement, Storage and Testing.

SECTION - B (CONSTRUCTION)

- **1.** Basic Principles underlying the Planning and Construction of Buildings.
- 2. **BRICK MASONARY-** Types of Bricks, Types of Bonds, Defects in Brick Masonary, Reinforced Brick work.
- **3. FOUNDATIONS :-** Purpose, site exploration, Methods of Testing Bearing Capacity of Soils, Types of Foundations, Combined Footing and Raft Foundation. Piers, Machine Foundations, Causes of failure. Excavation of Foundations in water logged sites. Pile Foundation, Concrete Piles, Pile Driving, Cofferdams.
- 4. **DAMP PROOFING :-**Problems of dampness, Causes, Sources of Dampness. Methods of Damp Proofing Materials. Damp Proofing treatment in Building. Treatment to Flat Roofs and Floors.
- 5. **SHORING :-** Shoring, Types, Undermining, Scaffolding, Types.
- 6. **FLOORING :-** Brick flooring, Mud Flooring, Cement Concrete Flooring, Mosaic Flooring, Marble Flooring .

7. LINTELS & ARCHES :- Lintels, Brick Lintels, R.B.Lintels, R.C.C. Lintels, Types of Arches.

- **8. DOORS AND WINDOWS :-** Location of Doors and Windows, Size, Types of Doors and Windows, Fixtures and Fittings.
- **9. PLASTERING, PAINTING :-** Plastering, Lime Plaster, Cement Plaster, Finishes, Defects in Plaster Work, Painting, White Washing.
- **10. PAINTS :-** Oil Paints, Characteristics of Good Paint. Bases, Vehicle, Thinners Pigments. Types of Paints Process of Painting.

11. ACOUSTICS :- Classification of Sounds Measurements, Sound Absorbants.

12. FIRE PROTECTION :- Fire Resistant Construction Requirements.

BOOKS RECOMMENDED :-

2.BUILDING MATERIAL BY PARBIN SINGH	
3.BUILDING CONSTRUCTION BY KOUL, B.N., SHARMA, S.K.	
4.A BETTER BUILDING BY BERI, K.S.	
5.BUILDING CONSTRUCTION BY SINGLA JUNEJA AND KUMA	R.

<u>NOTE:</u> There shall be total Eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.

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FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

Branch: CIVIL ENGINEERING	\mathbf{L}		MARKS	
Course Title : SURVEYING – I	3	2	Th.	Sess.
Course No: C-302			100	25

Duration of Exam: 3 Hours

<u>UNIT - I</u>

Introduction and principles of surveying and measurement of distance.

Chain Surveying, Field Equipment, Methods of Chain Surveying, Plotting from the Field Books and Degree of Accuracy, Tape corrections

<u>UNIT - II</u>

Prismatic Compass, Compass and Chain Surveying, Compass Traversing - Instruments used and procedure followed,. Closed Traverse, Correction and Plotting Errors.

Plane Table Surveying, Field Equipment, Methods of Plane Tabling, Two Point and Three Point Problems, Precautions and Accuracy in Plane Tabling.

UNIT - III

Levelling definition of terms, Instruments used and field book recording, Methods of Levelling height of Instrument method and Rise and Fall method, Testing of temporary and permanent adjustments in levels, Sensitivity of Bubble Tube.

UNIT - IV

Computation of areas and volumes by different methods. Method of contouring by rectanguler grid using a level, plotting of contours.

BOOKS RECOMMENDED:

1.SURVEYING AND LEVELLING VOL.-I 2.SURVEYING VOL.- I 3.SURVEYING VOL.- I 4.SURVEYING 5.TEXT BOOK OF SURVEYING 6.SURVEYING VOL.- I BY KANETKAR & KULKARNI. BY SHAHNE. BY ARORA. BY CLARK. BY HUSSAIN, S.K. &NAGARAJ. BY MODI & MODI.

<u>NOTE:</u> There shall be total Eight questions, Two from each Unit. Five questions have to be attempted selecting at least One from each Unit. Use of calculator is allowed.

FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

Branch: CIVIL ENGINEERING	L	Т	MA	RKS
Course Title : BUILDING DRAWING	2	0	Th.	Sess.
Course No: C-303			100	25
Duration of Exam: 3 Hours				

<u>UNIT - I</u>

Standard conventions and drawings. Principles of Planning and Design.

Drawing of Plan, Elevations, Sections of small buildings including drawings of a Hostel/School building.

<u>UNIT - II</u>

Drawing of Plans and Sections of Wooden Doors & Windows. Drawing of Timber Truss with joint details.

<u>UNIT - III</u>

Drawing of R.C.C. Slabs, Beams, Columns with Reinforcement Details.

UNIT - IV

Drawing of Elementary Structural Steel work like :

- i) Riveted lap and butt joint
- ii) Typical joint of a roof truss
- iii) Connection beam to column
- iv) Cross section and elevation of plate girder.

BOOKS RECOMMENDED :

1.BUILDING CONSTRUCTION 2.A BETTER BUILDING 3.BUILDING CONSTRUCTION 4.BUILDING DRAWING BY KAUL, B.N. & SHARMA, S.K. BY BERI, R.S. BY SINGLA, JUNEJA AND KUMAR. BY GURCHARAN SINGH.

NOTE:- Unit I is compulsory having weight age of 55 Marks. From Unit II to IV, students have to attempt Three questions out of Five Questions selecting at least One from each Unit carrying 15 Marks each. Use of Calculator is allowed.

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FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

Branch: CIVIL ENGINEERING	\mathbf{L}	Т	MA	RKS
Course Title : ENGINEERING GEOLOGY	4	0	Th.	Sess.
Course No: C-304			100	25
Duration of Exam: 3 Hours				

<u>UNIT - I</u>

Introduction, Geological work of atmosphere, wind, water (running lakes, oceans and subsurface water), ice, geomorphological features resulting from their action. Minerals and Rocks. Introduction to Crystalline State of Minerals, important crystal systems, rock

forming minerals, their main properties and identification. Rock classification, textures and structures and important types of igneous, Sedimentary and Metamorphic rocks, Processes involved in their formation.

<u>UNIT - II</u>

Structural Geology, main structural features of stratified and unstratified rocks, Folding, Faulting and Jointing, Classification and major types of folds, faults, joints and unconformities. Their significance in Engineering Geology. Mountains - Types and Origin.

<u>UNIT - III</u>

Engineering properties of rocks, common methods for investigation of geological characteristics of sites and alignments for engineering projects, Geology aquifers and their characteristics, Stability of Slopes, landslide and other mass movements, their causes, types and methods to control them. Earthquakes : causes and effects, consideration for seismic designs, geological consideration for selection of sites-alignments for Dams, Tunnels, Highways, Water Storage Tanks, Multi-Storeyed buildings and Port Structures.

BOOKS RECOMMENDED :

1.ENGINEERING & GENERAL GEOLOGY 2.ELEMENTS OF STRUCTURAL GEOLOGY 3.INTRODUCTION TO PETROLOGY 4.ENGINEERING GEOLOGY & GEOTECHNICS 5.ELEMENTS OF MINERALOGY. BY PARBING SINGH BY HILLS, E.S. BY BRIAN BOLY. BY KRYNINE & JUDD RUTLEYS.

<u>NOTE</u> :-At the most three questions to be set from each unit, to the extent the maximum number of questions in the paper may not exceed 9. The student would be required to attempt Five questions selecting at least one question from each unit.

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FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS MARKS BRANCH: CIVIL ENGINEERING L T P Theory Sessional

COURSE NO. : EE-311 3 2 0 100 25 COURSE TITLE: ELECTRICAL ENGINEERING DURATION OF EXAMINATION: 3 HOURS

SECTION -I

D.C. SERIES PARALLEL CIRCUITS: - Superposition Principle, Thevenin's Theorem.

A.C. CIRCUITS: Pure resistance, capacitance and inductive circuits, RL, LC, RLC circuits, Series resonance.

D.C. GENERATORS:Constructional features, EMF Equation, Operating characteristics, Parallel operation.

D.C. Motors:Operating principle, Torque Equation, Starters, Speed control applications.

SECTION -- II

TRANSFORMERS:-Principle of operation, Vector Diagram, Regulation, Efficiency, Parallel operation.

SYNCHRONOUS GENERATORS: - Principle of operation, EMF Equation, Parallel operation.

SYNCHRONOUS MOTORS: - Principle of operation, V-curves, Starting methods, Application.

INDUCTION MACHINES: Principle of operation, Equivalent circuits, No loads and loaded motor tests, Applications.

BOOKS RECOMMENDED:

- 1. "Principle of Electrical Engineering" by V.DEL TORO
- 2. "Electrical Technology" by H. COTTON
- 3. "Theory of A.C. Machines" by A.S.Langsdorf
- 4. "Electrical Machines" by I.G. Nagrath and D.P. Kothari

<u>NOTE:</u> There shall be total Eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.

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FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

Branch: CIVIL ENGINEERING		\mathbf{L}	Т	MA	ARKS
Course Title : MECHANICAL ENGINEERING-I	3	2	Th.	Sess.	
Course No: M-312				100	25
D					

Duration of Exam: 3 Hours

<u>UNIT-I</u>

a) Basic linkages, Kinematic pairs, constrained motion, Kinematic chains, mechanisms, Inversion of a

mechanism, Inversion of slider crank chain.

b) Velocity/ acceleration diagrams; velocity diagrams of a link, Four bar chain, slider crank chain, Quick return

motion mechanism and other similar linkage system; acceleration diagrams for above mechanism (except that

Quick return mechanism or other like mechanisms which involve Corioli's component).

UNIT-II

a) Friction: concept, Laws of dry friction, analysis of a body on horizontal plane and inclined plane, screw jack, Thrust

bearing (Collar and Conical type), Clutches: Plate type and conical type.

b) Belts and belt drives: Flat belts and V belts, Belt tension, effect of slip, etc.

UNIT-III

- a) Gear: Basic definitions, shape of gear tooth, Gear trains: simple, compound and epicyclic.
- b) Cams: Different types of cams and cam followers and drawing of simple cam profiles.

UNIT-IV

a) Vibrations: Free, Forced, forced damped, Resonance, torsional vibrations.

b) Balancing: Balancing of rotating masses in a single plane and in different planes, force and couple polygon.

RECOMMENDED BOOKS:-

1.	Kinematic Analysis of Mechanisms	JE Shigley	McGraw Hill
2.	Kinematics & Dynamics of Machines	George H martin	McGraw Hill
3.	Mechanics of Machinery	CW Ham, EJ Craw & WL Rogers	McGraw Hill
4.	Theory of Machines	Thomas Bevan	Longmans, Green &

5. Elementary Kinematics of Mechanisms

Zimmerman

--John Wiley

<u>NOTE:</u> There shall be total Eight questions, Two from each Unit. Five questions have to be attempted selecting at least One from each Unit. Use of calculator is allowed.

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FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

Branch: CIVIL ENGINEERING Course Title : SURVEYING - I LAB Course No: C-305 Duration of Exam: 3 Hours P MARKS 2 50

LIST OF EXPERIMENTS:-

- 1. Chain Surveying of an area.
- 2. Measurement of angles with the help of a Prismatic Compass.
- 3. Plane Table Surveying of an area with emphasis on plotting of Structures, roads, and important features

important features.

- 4. Temporary and Permanent adjustment of a Dumpy level.
- 5. Plotting of longitudinal section and cross-section with the help of a level.

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FOR B.E. 3rd SEMESTER CIVIL ENGINEERING

LIST OF PRACTICALS:-

1. Drawing of Plan, Elevations, Sections of small buildings including drawings of a Hostel/ School Building.

2. Drawing of Plans and Sections of wooden doors & windows. Drawing of Timber Truss with joint details.

3. Drawing of R.C.C. Slabs, Beams, Columns with reinforcement details.

4. Drawing of elementary structured steel work like :

- i) Riveted lap and butt joint
- ii) Typical joint of a roof truss
- iii) Connection Beam to Column
- iv) Cross Section and elevation of plate girder

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FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

Branch: CIVIL ENGINEERINGPMARKSCourse Title : ENGG. GEOLOGY LAB.2/250Course No: C-30750

Duration of Exam: 3 Hours

Laboratory work :-

Megascopic and microscopic identification of minerals and rocks, study of salient characters of crystals with the help of models, study of Topographic features and geological structures (on models). Study of geological structures on sections in different directions.

Field Visit :-

Minimum 3 days field visit to acquaint with essentials of Geology.

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FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

CLASS: B.E. 3rd SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO. : EE-312

	L	Т	Р	MARKS
0	0	2		50

COURSE TITLE: ELECTRICAL ENGINEERING LAB.

1) Verification of Kirchhoff's Laws.

2) Verification of Superposition Theorem.

- 3) Verification of Thevinin's Theorem.
- 4) Verification of Reciprocity Theorem.
- 5) Verification of Maximum Power Transfer Theorem.
- 6) Measurement of current in various branches of RLC series-parallel circuit.
- 7) Single phase power measuring by using a Wattmeter.

8) Study of three-phase A.C Circuits with Star and Delta connected Load.

9) Study of single phase transformers. Determination of voltage Ratio, Turns Ratio and Polarity Test. Open circuit and short circuit test of given single phase transformer. Determination of regulation and efficiency.

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FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

Branch: CIVIL ENGINEERING	Р	MARKS
Course Title : MECHANICAL ENGINEERING	2/2	50
Course No: M-312		

Duration of Exam: 3 Hours

LIST OF EXPERIMENTS

- 1. To study the slider crank mechanism and its inversion.
- 2. To study different types of clutches.
- 3. To study different types of Flat and V-belt types of drivers.
- 4. To study different types of gear teeth, gears and gear trains.
- 5. To study different types of cams and cam followers.
- 6. To study free, damped and forced vibrations.
- 7. To study the screw jack.
- 8. To study the balancing of rotating masses in a single plane of rotation.

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FOR B.E. 3rd SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

Branch: CIVIL ENGINEERING	Р	MARKS
Course Title : MECHANICAL ENGINEERING LAB.	2/2	50
Course No: M-313		
Duration of Exam: 3 Hours		

LIST OF EXPERIMENTS

- 1. Study various types of cams and followers.
- 2. Study of various types of gear trains.
- 3. Study of Epicyclic gear train apparatus:
 - i) Internal and
 - ii) External.
- 4. Study of Gearbox.
- 5. Study of Quick return motion mechanism.
- 6. To study free vibrations of equivalent spring mass system.
- 7. To study the forced vibrations of equivalent spring mass system.
- 8. To study static and dynamic balancing apparatus.

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COURSE SCHEME FOR B.E. 4TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

S. No.	SUBJECT	Course	CLASSES			MARKS			
			L	т	Р	Theory	Sess.	Prac t.	Total
1	Surveying - II	C-401	3	2	0	100	25	-	125
2	Theory of Structure - I	C-402	3	2	0	100	25	-	125
3	Fluid Mechanics	C-403	3	2	0	100	25	-	125
4	Estimation & Costing	C-404	3	2	0	100	25	-	125
5	Engg.Mathematics - III	MTH-412	3	1	0	100	25	-	125
6	Mechanical Engg II	M-411	3	2	0	100	25	-	125
7	Surveying - II Lab.	C-405	0	0	2	-	-	75	75
8	Theory of Structure - I Lab.	C-406	0	0	2/2	-	-	50	50
9	Fluid Mechanics Lab.	C-407	0	0	2	-	-	75	75
10	Mechanical Engg II Lab.	M-412	0	0	2/2	-	-	50	50
			18	11	6	600	150	250	1000

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COURSE SCHEME FOR B.E. 4TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

Branch: CIVIL ENGINEERING	\mathbf{L}	Т	MARKS	
Course Title : SURVEYING - II	3	2	Th	Sess.
Course No: C-401			100	25
Duration of Exam: 3 Hours				

<u>UNIT - I</u>

Traverse Surveying, Omitted measurements. Theodolites : Construction, temporary and permanent adjustments of a transit theodolite.

<u>UNIT - II</u>

Trignometric levelling, curvature and refraction, Axis-signal correction. Methods of trignometric levelling.

Tacheometric surveying. Theory of Analytic lens. Distance and elevation formulae. Subtence bar method. Errors in stadia surveying.

<u>UNIT - III</u>

Curves : Elements of simple curve, Design and Setting of Compound Curve, Transition and Vertical Curve.

<u>UNIT - IV</u>

Geodetic Surveying. Measurement of angles. Reduction to centre. Base Line Measurement and its corrections.

Triangulation adjustments. Introduction to Hydrographic surveying and topographic surveying.

BOOKS RECOMMENDED :

1.SURVEYING AND LEVELLING VOL.II	BY KANETKAR & KULKARNI
2.SURVEYING VOLS.II & III	BY SHANNE
3.SURVEYING	BY CLARK
4.TEXT BOOK OF SURVEYING	BY HUSSAIN, S.K.
5.SURVEYING VOL.II	BY MODI

<u>NOTE:</u> There shall be total Eight questions, Two from each Unit. Five questions have to be attempted selecting at least One from each Unit. Use of calculator is allowed.

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COURSE SCHEME FOR B.E. 4TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

Branch: CIVIL ENGINEERING	L	Т		MARKS	5
Course Title : THEORY OF STRUCTURES – I	3	2	Th.	Sess.	
Course No: C-402			100	25	
Duration of Exam: 3 Hours					

<u>UNIT - I</u>

Simple Stresses and Strains, Hooks law, Composite sections.

Strain Energy, Stresses due to different type of loadings, Gradually & suddenly applied loads.

UNIT - 2

Shear force and Bending Moment for simply supported, cantilevers, fixed beam, continuous beams & members subjected to couples & oblique loadings.

<u>UNIT – 3</u>

Stresses in beams, Theory of simple bending, Neutral axis, Bending stress distribution, Shear stresses.

<u>UNIT -4</u>

Direct and Bending stresses, Eccentrically loaded rectangular columns, Circular section, hollow sections, Structural sections, walls and pillars.

<u>UNIT –5</u>

Deflection of beams, Slope, Deflection and radius of curvature, Derivation of slope deflection formula, Macaulay's method.

<u>UNIT -6</u>

Torsion of Shafts, Pure torsion, Torsional moment of resistance, composite shafts, Close coiled helical springs.

<u>UNIT –7</u>

Principal stresses and strains, Mohr's circle, Graphical and Analytical method, Strain energy in terms of principal stresses, Ellipse of strain, Thin cylinders, Circumferential & longitudinal stresses.

BOOKS RECOMMENDED :

1.STRENGTH OF MATERIALS 2.THEORY OF STRUTURES 3.ELEMENTARY THEORY OF STRUTURES 4.ANALYSIS OF STRUCTURES BY TEMOSHONKO & YOUNG BY TEMOSHONKO & YOUNG BY WILLUBER, NORIS BY O.P. JAIN

Note: There will be total eight questions at least one from each Unit. Students have to attempt Five questions in all.

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COURSE SCHEME FOR B.E. 4TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

Branch: CIVIL ENGINEERING	L	Т	MAR	KS
Course Title : FLUID MECHANICS – I	3	2	Th.	Sess
Course No: C-403			100	25

Duration of Exam: 3 Hours

<u>UNIT - I</u>

Properties of Fluids : Mass density, Specific weight, Specific volume, Viscosity, bulk modulus of elasticity, Surface tension and capillarity.

Fluid Statics : Fluid pressure, manometers, forces on immersed plane surfaces, floating bodies.

Kinematics of Fluid flow - Types of fluid flow, stream lines, path lines, streak lines, continuity equation, rotation, vorticity, circulation, velocity potential and stream function, flow nets.

<u>UNIT - II</u>

Equation of motion and energy theorem - Integration of Euler's theorem of motion along a stream line.

Applications of Bernoulli's Equation : Pressure distribution in irrotational flow, Hydraulic grade line and total energy line, flow through small and large orifices, Flow through mouth

pieces. Measuring devices in pipes, weirs, flow under a sluice gate.

UNIT - III

Momentum equation and its application. Dimensional analysis and similitude, important dimensional parameters, procedure for dimensional analysis.

UNIT - IV

Problems in Pipe Flow : Sudden expansion and diffusers. Flow in pipe bends. Pipe flow problems, pipe networks.

Forces on Immersed Bodies : Deformation drag, form drag, drag lift.

BOOKS RECOMMENDED :

1.ENGINEERING FLUID MECHANICS BY GARDE & MIRAJGAONKAR 2. ENGINEERING FLUID MECHANICS BY KUMAR, K.L. **3.FLUID MECHANICS** BY MOHANTY, A. K. 4.FLUID MECHANICS & FLUID POWER ENGG. BY KUMAR, D.S. 5.FLUID MECHANICS & ITS APPLICATIONS BY KRISHNAMACHAR, P 6.FLUID MECHANICS & ITS APPLICATIONS BY GUPTA & GUPTA 7.FLUID MECHANICS (THEORY & PROBLEMS) BY JAIN, S.C. 8. THEORY & APPLICATIONS OF FLUID MECHANICS BY SUBRAMANYA, K.

<u>NOTE:</u> There shall be total Eight questions, Two from each Unit. Five questions have to be attempted selecting at least One from each Unit. Use of calculator is allowed.

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COURSE SCHEME

FOR B.E. 4TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

Branch: CIVIL ENGINEERING	\mathbf{L}	Т	MARKS	
Course Title : ESTIMATING & COSTIN	3	2	Th.	Sess.
Course No: C-404			100	25
Duration of Exam: 3 Hours				

<u>UNIT - I</u>

Building Estimates - Methods of building estimates, Estimate of Masonary Platform, Single room building, two/three room building estimate. Estimate of office building. Estimate of R.C.C. works, R.C.C. water tank estimate and underground water tank estimate.

<u>UNIT - II</u>

Road Estimates - Methods, estimate of earthwork of road from L Section. Steel Roof Truss: Estimate of Rolled Section, G.I. Sheet, A.C. Sheet. Estimate of Septic Tank and Soak Pit including Sanitary and Water Supply Installations.

<u>UNIT - III</u>

Types of Estimates - Types of estimates, contingencies, work charged estimate. Layout plan, index plan. Sub-heads, Schedule of rates. Administrative approval, expenditure sanction. Technical sanction. Bill of quantities. Plinth area, floor area.

UNIT - IV

Analysis of Rates - Analysis of Rates, overhead costs, labour required. Materials for different items of work and their rates. Preparing analysis of rates for various items of building works. Specifications General specifications, detailed specifications for various items of work.

<u>UNIT - V</u>

Valuations - Valuation, Gross income, Net income, outgoings, Scrap and salvage values, capitalized value, sinking fund, depreciation, valuation of buildings, fixation of rent. Plinth area required.

BOOKS RECOMMENDED :

1.ESTIMATING & COSTING 2.CONTRACTS & ESTIMATES BY DUTTA & DUTTA BY PATEL, B.S.

NOTE: Question No.1 from Unit 1 is compulsory having a weight age of 40 Marks. Rest students have to attempt any four questions out of Six selecting at least one from each Unit having weightage of 15 Marks.

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COURSE SCHEME FOR B.E. 4TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

anch: CIVIL ENGINEERING ourse Title : SURVEYING - II LAB	Р	MARKS
Course Title : SURVEYING - II LAB	2	75
Course No: C-405		

List of Practicals :

Duration of Exam: 3 Hours

1. To find the height and horizontal distance of an inaccessible point using Theodolite.

- 2. To set out horizontal curves by offsets from
 - (i) Long Chord
 - (ii) Tangents
- 3. To lay out the junction of transition curve with the horizontal curves.
- 4. To determine the Tachometric constants.
- 5. To determine the level of any point by Trignometric levelling taking all corrections into

account.

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COURSE SCHEME FOR B.E. 4TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

Branch: CIVIL ENGINEERING	Р	MARKS
Course Title : THEORY OF STRUCTURE - I LAB	2/2	50
Course No: C-406		

Duration of Exam: 3 Hours

List of Practicals :

- 1. To conduct Tensile test on a given sample.
- 2. To conduct Torsion test on a given sample.
- 3. To conduct Hardness test on a given sample by
 - i) Brinell's method
 - ii) Rockwell method
- 4. To conduct Impact test on a given sample by
 - i) Charpy method
 - ii) Izod method
- 5. To conduct Ductility test on a given sample.
- 6. To conduct the Bending test on a given sample.

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COURSE SCHEME FOR B.E. 4TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

Branch: CIVIL ENGINEERING Course Title : FLUID MECHANICS LAB Course No: C-407 Duration of Exam: 3 Hours MARKS 75

Р

2

List of Practicals :

- 1. To verify Bernoulli's Theorem.
- 2. To find Metacentric height of a floating body.
- 3. To verify Impulse Momentum Equation.
- 4. To determine C_c , C_v and C_d for an Orifice/Mouthpiece.
- 5. To determine friction factor 'f' for a given pipe
- 6. To determine C_d for Venturimeter and Orificemeter.
- 7. To study Reynold's Experiment.
- 8. To determine C_d for Notch/Weir.
- 9. To determine Coefficient of Drag on a immersed body.
- 10. To visualise the flow patterns for irrotational flow around aerofoil using Hele Shaw apparatus.

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COURSE SCHEME

FOR B.E. 4TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

Branch: CIVIL ENGINEERING	\mathbf{L}	Т	MARKS	
Course Title : ENGG. MATHEMATICS - III	3	1	Th.	Sess.
Course No: MTH-412			100	25
Duration of Exam: 3 Hours				

SECTION - I

LAPLACE TRANSFORMS:

Laplace Transforms, Inverse Laplace Transforms, Properties of Laplace Transforms, LT of unit step function, Impulse function, Periodic function, Initial value theorem, Final value theorem, Convolution theorem, Application of LT to solve linear differential equations and convolution type integral equations.

INTEGRAL TRANSFORMS AND FOURIER INTEGRALS:

Integral transforms and Fourier Integrals Fourier integral theorem, Fourier sine and cosine Integrals, and their inverses.

SPECIAL FUNCTIONS:

SECTION - II

Special Functions Legendre polynomials, Rodgrigue's formula, Recurrence formulae, generating function,

Orthogonality of Legendre polynomials, Bessel function of Ist kind. Recurrence formulae, generating function,

Orthoganality of Bessel function.

BOOLEAN ALGEBRAS:

Boolean Algebras, Lattices, Finite Boolean algebra, C.N.F and D.N.F, Application of Boolean algebra to switching theory.

Books Recommended:-

- 01. Higher Engineering Mathematics
- 02. Boolean Lattices
- 03. Engineering Mathematics-III

B.S. Grewal V.K. Khanna Bhopinder Singh

NOTE: There shall be total Eight Questions of 20 marks each, Four questions from each section and students have to attempt at least Two from each section.

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COURSE SCHEME FOR B.E. 4TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

Branch: CIVIL ENGINEERING	L	Т	MA	RKS
Course Title : MECHANICAL ENGGII	3	2	Th.	Sess.
Course No: M-411			100	25

Duration of Exam: 3 Hours

UNIT-1

Thermodynamics: Basic concepts and definitions, system, property, state, process, cycle, equilibrium. dimensions and units.

Thermal equilibrium and Zeroth Law of Thermodynamics, Concept of temperature. Thermodynamic definitions of Work and Heat.

First Law of Thermodynamics: Internal energy and Open system and Steady flow energy equation. Second Law of Thermodynamics. Kelvin -Planck and Clausius's statements, Heat pump. Reversible and Irreversible process. Carnot cycle. Clausius inequality and entropy. Ideal gases and process calculations.

UNIT 2

Air Standard cycles: Otto cycle, Diesel cycle and Dual cycle Working principles of 4-stroke and 2-stroke engines and their relative merits. Valve timing diagrams. Spark ignition engines and compression ignition engines. Carburetion and fuel injection.

UNIT 3

Properties of pure substance-water, Steam quality.

Principles of refrigeration: Vapour compression cycle, Components of vapour compression system and its C.O.P.

Properties of air-water vapour mixture. Psychometric processes .

UNIT 4

Elements of Heat transfer: Conduction, Convection and Radiation . One dimensional Steady state heat conduction in slabs, cylinders and spheres. Kirchoff's Law and the black body.

Boilers: Fire tube and water tube boilers. Babcock and Wilcox boiler, Cochran boiler. Boiler mountings and accessories. Steam Power plant, Rankine cycle and elementary calculations.

RECOMMENDED BOOKS:-

Thermal Engineering
 Heat Engineering
 Thermodynamics- Work and Heat Transfer
 Engineering Thermodynamics
 NOTE:-

PL Ballaney VP Vasandani Rogers & Mayhew PK Nag.

MIET [SYLLABUS FOR CIVIL ENGINEEING]

- 1. Two questions to be set from each unit.
- 2. Five questions out of eight to be attempted by the student selecting at least one from each unit in the theory examination paper.

<u>Use of Steam tables, Mollier diagram, Refrigeration tables & charts and a scientific calculator</u> will be allowed in the examination hall.

UNIVERSITY OF JAMMU, JAMMU FOR EXAMINATION TO BE HELD IN DECEMBER 2009, 2010 & 2011

HOURS / WEEK	MARKS
Р	Prac.
2	25
тер	

CLASS: B.E. 4TH SEMESTER BRANCH: MECHANICAL ENGINEERING COURSE TITLE: MECHANICAL ENGG.-II LAB. COURSE NO.412

LIST OF EXPERIMENTS

- 1. To find the thermal conductivity of a given insulating material.
- 2. To find out the dryness fraction of steam with throttling calorimeter.
- 3. To find the power of a four stroke petrol engine.
- 4. To draw the heat balance sheet of a boiler.
- 5. Study and analysis of various types of boilers.
- 6. (a) Study of multi-cylinder Petrol engine.
 - (b) Heat balance of the engine.
 - (c) Morse test.
 - (d) Valve timing diagram.
- 7. Study of domestic refrigerator & to find the C.O.P. of a refrigeration unit on a refrigeration tutor.

8. To find out the C.O.P. of the refrigeration plant.

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For Examination to be held in Dec. 2010 onwards. Course of Study for B. E. 5th Semester Branch: CIVIL ENGINEERING

S.	SUBJECT	Course	C	CLASSES		MARKS			
NO.			L	Т	Р	Theory	Sessional	Practical	Total
1	Engineering Math - IV	MTH- 501	3	2	0	100	25		125
2	Theory of Structures - II	C-501	4	1	0	100	25	-	125
3	Soil Mechanics (GEOTECHNICAL ENGG1)	C-502	4	1	0	100	25	-	125
4	Fluid Mechanics - II	C-503	4	1	0	100	25	-	125
5	Construction Planning & Management	C-504	4	1	0	100	25	-	125
6	Environment Engineering - I	C-505	3	1	0	100	25		125
7	Survey Camp *	C-506	-	-	-	-	-	100	100
8	Theory of Structures Lab- II	C-507	0	0	2	-	-	50	50
9	Soil Mechanics Lab	C-508	0	0	2	-	-	50	50
10	Environment Engineering Lab-I	C-509	0	0	2	-	-	50	50
	Total		22	7	6	600	150	250	1000

* Duration of Survey Camp will be at least 2 weeks

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For Examination to be held in Dec. 2010 onwards.

		Μ	ARKS
Т	Р	THEORY	SESSIONAL
2	0	100	25
	Т 2	T P 2 0	M T P THEORY 2 0 100

CLASS: BE 5TH SEMESTER **BRANCH: CIVIL ENGINEERING** COURSE NO: MTH- 501 COURSE TITLE: ENGINEERING MATHEMATICS - IV **DURATION OF EXAM: 3 HOURS**

SECTION - I

THEORY OF COMPLEX VARIABLES: Functions of a complex variable, Limits, Derivative, Analytic function, Cauchy-Riemann equations, Conformal Continuity, mappings, Standard Transformation, Bilinear transformation, Line integral, Cauchy's theorem, Cauchy's integral formula, Cauchy's inequality, Liouville's theorem, Taylor and Laurent series expansions, Poles and singularities, Contour integration, Residue theorem, Evaluation of Real Integrals using residue theorem, and Contour integration.

SECTION - II

NUMERICAL METHODS: Definition of operators, Finite and divided difference, Newton's and Lagrange's Interpolation formulas, Numerical differentiation and Numerical integration, Trapezoidal and Simpson's one-third Rule.

Numerical Solutions of Algebraic and Transcendental Equations by Regula Falsi, Newton-Raphson and direct iterative methods, Solution of difference equations, solution of differential equations by Picard's method, Euler's method, Modified Euler's method, Taylor's method, Runge-Kutta method.

BOOKS RECOMMENDED:

01.	Advance Engineering Mathematics	by Jain & Iyenga

- Numerical Methods in Engg. & Science by B.S. Grewal 02. by S.C. Sexena
- 03. Difference Calculus (New Edition)
- **Engineering Mathematics** 04.

NOTE: There shall be total Eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.

by S.S. Sastri

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For Examination to be held in Dec. 2010 onwards.

Class: B. E. 5 th SEMESTER			
Branch: CIVIL ENGINEERING	L	Т	MARKS
Course Title: THEORY OF STRUCTURE - II	4	1	Theory Sessional
Course No: C-501			100 25
Duration of Exam: 3 Hours			

UNIT - I

Strain Energy due to axial load, bending and torsion. Principle of Virtual work. Maxwell's reciprocal theorem. Betti's Law. First theorem of Castigliano, Deflection of Truss Joints (Determinate Trusses) by Maxwell's Method. Statically indeterminate Structures. The Second Theorem of Castigliano and its applications for beams and portal

frames. Degree of redundancy of structures. Forces in members of redundant trusses (Single Degree).

<u>UNIT - 2</u>

Fixed & Continuous Beams : Fixed beams, bending moment diagrams. Fixed beams with ends at different levels. Advantages & disadvantages. Continuous beams. Clapyron's three moment theorem.

<u>UNIT - 3</u>

Moment Distribution Method. Stiffness of Member. Distribution theorem, Analysis of beams and portal frames, B.M. & S.F. Diagrams. Temperature effects.

Rotation Contribution Method : Analysis of beams & Portal frames by Rotation Contribution Method (Kani's Method).

<u>UNIT - 4</u>

Columns & Struts : Short & Long Columns Euler's Theory. Effective Length, Empirical Formulae. Eccentrically Loaded Columns. Laterally Loaded Columns.

Column Anology Method. Application to non-prismatic fixed beams and symmetrical frames.

BOOKS RECOMMENDED :

1.ELEMENTARY STRUCTURAL ANALYSIS 2.THEORY OF STRUCTURES 3.INDETERMINATE STRUCTURAL ANALYSIS 4.THEORY AND ANALYSIS OF STRUCTURES BOGGS, R.G. RAMAMURTHAM, S. WANG, C.K. JAIN & ARYA

<u>NOTE</u>:- There shall be total eight questions of 20 marks each, two from each unit. Five questions have to be attempted selecting atleast one from each unit. Use of Calculator is allowed.

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For Examination to be held in Dec. 2010 onwards.

Class: B. E. 5th SEMESTERBranch: CIVIL ENGINEERINGLCourse Title: SOIL MECHANICS (GEOTECHNICAL ENGG.-1)41Theory SessionalCourse No: C-502100Duration of Exam: 3 Hours

<u>UNIT – I</u>

- 1.1 Introduction, Brief Historical Development, Formation and General Types of Soils.
- 1.2 Structure and Properties of Soils-Soil Particle Size and Shape, Specific Surface, composition of Clay Mineral, Soil Particle Water Relationship, Various Bonds,
- Soil Mass Structure.
 Soil Weight and Volume Relationships Three Phase Soil System. Inter relationships of different Parameters.
 - 1.4 Index Properties of Soils Specific Gravity, Determination of Grain Size distribution of Soils, Sieve Analysis, Wet Mechanical Analysis, Hydrometric Method of Analysis, Grain Size distribution Curves, Relative Density and Consistency of Soils, Atterberg Limits.

UNIT - 2

2.1 Identification and Classification of Soils - Field Identification, Various Classification Systems, General Comments on the Systems of Soil Classification.

MIET [SYLLABUS FOR CIVIL ENGINEEING]

- 2.2 Intergranular and Pore Water Pressures, Capillary Phenomena.
- 2.3 Permeability Introduction, Poiseuille's Law, Darcy's Law, Discharge and Seepage
 - Velocity, Methods of determination of Co-efficients of Permeability, Factors affecting Permeability, Field Permeability Tests.
- 2.4 Seepage through Soils Introduction, Flow net, Various Boundary conditions, Analytical and Electrical Analogy Methods, Uplift Pressures, Seepage through

Earth Dams, Piping Mechanics, Method of Locating Phreatic Line.

<u>UNIT – 3</u>

- 3.1 Compaction of Soils Methods, Field and Laboratory Methods, AASHO and Modified AASHO Tests, Zero Air void line, Factors affecting Dry Density.
- 3.2 Compressibility and Consolidation Principle of Consolidation, One dimensional Consolidation, Standard One-dimensional Consolidation Tests, Preconsolidation Pressure, Secondary Compression, Computation of Ultimate Settlement.

<u>UNIT – 4</u>

- 4.1. Stress distribution of Soils Boussuiesq's formula, Westergaard's formula, Comparison of the Two Point load, line load, Strip load, 2:1 method, Pressure Isobars, Stress Beneath loaded areas.
- 4.2 Shear Strength of Soils Basic Concepts, Coulumb's Equation, Box and Triaxial Shear Tests, Mohr's Circle, Mohr's Coulumb's Equation, Classification of ShearTests on the basis of drainage conditions.

BOOKS RECOMMENDED :

1.SOIL MECHANICS	- THEORY AND PRACTICE	ALAM SINGH
2.SOIL MECHANICS	& FOUNDATION ENGG.	ARORA K.R
3.SOIL MECHANICS	AND FOUNDATION ENGG.	PUNMIA B.C
4.GEOTECHNICAL E	INGINEERING	KASMALKAR, B.J.

<u>NOTE</u>:- There shall be total eight questions of 20 marks each, two from each unit. Five questions have to be attempted selecting atleast one from each unit. Use of Calculator is allowed.

UNIVERSITY OF JAMMU

For Examination to be held in Dec. 2010 onwards.

Class: B. E. 5 th SEMESTER				
Branch: CIVIL ENGINEERING	L	Т	MARKS	
Course Title: FLUID MECHANICS – II	4	1	Theory Sessiona	ıl
Course No: C-503			100 25	
Duration of Exam: 3 Hours				

<u>UNIT - I</u>

Laminar Flow: Navier Strokes Equations, Hagen-Poiseuille's Equation for Laminar flow in Pipes, Strokes Law, Darcy's Law Boundary Layer Theory : Definition and Characteristics, Laminar Boundary Layer, Turbulent Boundary Layer, Hydrodynamically Smooth and Rough Surfaces. Applications of Momentum Equation. Separation and its control.

<u>UNIT - 2</u>

Turbulent Flow : Characteristics, Turbulent Shear, Velocity distribution in Turbulent Flow, Commercial Pipes and their laying.Unsteady flow : Types, Equations of Motion, Water hammer, Surges in open channels, non-periodic flows.

<u>UNIT - 3</u>

Open Channel Flow : Steady uniform flow, most efficient channel section, specific energy, Hydraulic jump. Non-uniform flow equation : Gradually varied flow, Afflux and Back water curve, Channel Slopes and flow profiles.

UNIT - IV

Pumps : Classification, Reciprocating Pumps, Rotodynamic Pumps, Velocity diagram, Specific speed, Pump intakes. Turbines : Impulse Turbines, Pelton Wheel, Reactions Turbines, Francis Turbine, Kaplan Turbine, Selection of Turbine.

BOOKS RECOMMENDED :

1.ENGINEERING FLUID MECHANICS 2.FLUID MECHANICS AND APPLICATIONS 3.OPEN CHANNEL FLOW 4.FLUID MECHANICS & MACHINERY 5.HYDRAULIC MACHINES GARDE & MIRAJGOANKAR GUPTA & GUPTA RANGA RAJU MODI & SETH DR.JAGDISH LAL

<u>NOTE</u>:- There shall be total eight questions of 20 marks each, two from each unit. Five questions have to be attempted selecting atleast one from each unit. Use of Calculator is allowed.

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For Examination to be held in Dec. 2010 onwards.

Class: B. E. 5th SEMESTER Branch: CIVIL ENGINEERING L T MARKS Course Title : CONSTRUCTION PLANNING 4 1 Theory Sessional & MANAGEMENT5 100 25 Course No: C-504 Duration of Exam: 3 Hours

<u>UNIT - I</u>

Introduction to CPM and PERT, Network preparation and analysis, Critical Path method, Evaluation of total float, free float and independent float. Event Time, Determination of Slack, Critical Path and Semi-critical path, Scheduling by Bar Charts for Material, Equipment, Finance.

<u>UNIT - 2</u>

Resource smoothing, resource allocation and levelling, crashing of networks for getting optimum duration and optimum cost of project, feasibility report, cost benefit ratio.

<u>UNIT - 3</u>

Management of different Technical Personnel, Coordination, Material Management, Objectives, Purchasing Procedure, Records, Inventory Control and Storing.

Accounting, Cash Book, Imprest, Contractors, Bills, Store Account, Indent, Invoice, Debit and Credit Notes. Tenders, Earnest Money, Security Deposit, Comparative Statements, Contracts, Types and Conditions.

Construction hazards, Safety in construction and at site works. Standardisation, BIS, ISO.

<u>UNIT - 4</u>

Classification of construction equipment, selection, operation and investment cost, depreciation, economic life.

Equipment for excavation and transportation of earth. Drilling and Blasting equipment. Material handling and transportation equipments (size performance and limitation). Concrete equipment, mixers, vibrators, batch mixing plants. Transportation of concrete, pumps and placers.

BOOKS RECOMMENDED :

CONSTRUCTION PLANNING EQUIPMENT & METHODS
 CONSTRUCTION MANAGEMENT
 PERT & CPM - Principles & Applications
 MANAGEMENT IN CONSTRUCTION INDUSTRY
 STANDARDISATION - A New Discipline

PURIFOY, R.L. HARPAL SINGH SRINATH, DR.L.S. DHARWADKAR, P.P. VERMAN, L.C.

<u>NOTE</u>:- There shall be total eight questions of 20 marks each, two from each unit. Five questions have to be attempted selecting atleast one from each unit. Use of Calculator is allowed.

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For Examination to be held in Dec. 2010 onwards.

Class: B. E. 5th SEMESTER

Branch: CIVIL ENGINEERING	L	Т	MA	ARKS
Course Title: ENVIRONMENTAL ENGINEERING - I	3	1	Theory	Sessional
Course No: C-505			100	25
Duration of Exam: 3 Hours				

Section - I

Water Supply - Necessity and importance of Water Works, Components of Water Supply Scheme.

Quantity of Water - Population forecast, rate of water consumption for various purposes, factors affecting consumption, fire allowances, fluctuations in demand and its effects on design of Water Supply units.

Source of Water - Surface and Subsurface Sources of water, Hydraulic of ground and infiltration works.

Transmission of Raw Water : Various Transmission Systems, Design of gravity and rising main including optimization technique. Design of pipes, Stresses in pipes subjected to internal and external pressure. Gate valves, check valves, Air valves, Pressure regulating valves. Fire hydrants, Service fittings, Testing of pipes and fittings.

Section - II

Treatment of Water : Quality Standards, Physical Chemical and Bacteriological aspects of water, Details and Design of Screens, Principes and types of Plain Sedimentation, Mechanical Mixings and devices, Coagulation, Floculation, Clarification and Sludge removal. Theory of filtration. Details and Design of rapid and gravity filtration, Pressure filters and portable filters. Disinfection, different methods of Chlorination, Types of pre-post, Super chlorination, dechlorination, use of break point chlorination.

Miscellaneious Water Treatment Methods : Aeration Activated Carbon, Carbonate and Non-carbonate Hardness, Treatment of Sea Water.

Distribution of Water : Aim of Distribution of Water, Zoning of Areas, Service Reservoirs, Ground and Elevated, their purpose and capacity. Systems of Distribution : Pressures in Distribution System.

Determination of diameter of mains, Hydraulic gradient, flow of water in networks.

BOOKS RECOMMENDED :

1.WATER SUPPLY AND SEWAGE 2.ELEMENTS OF PUBLIC HEALTH ENGINEERING 3.WATER SUPPLY ENGINEERING VOL.1

STEEL,E.W. & McGHEE DUGGAL, K.N. GARG, S.K. <u>NOTE</u>:- There shall be total eight questions of 20 marks each, four from each section. Five questions have to be attempted selecting atleast two from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU

For Examination to be held in Dec. 2010 onwards.

Class: B. E. 5th SEMESTER Branch: CIVIL ENGINEERING Course Title : SURVEY CAMP Course No: C-506 Duration of Exam: 3 Hours

MARKS 100

Use of all the important Surveying Instruments shall be made over the entire duration of Survey Camp, for preparation of :

- 1. Site Plan of the Area.
- 2. Location of roads and important Installations.
- 3. Leveling of the area to determine the difference
- of altitudes, at specified location
- 4. Preparation of Contour Map of the prescribed area.

<u>NOTE:</u> The site for the Survey Camp shall be selected by the College and duration of the Survey Camp shall be of at-least two weeks. Normally the camp shall be conducted after 4th Semester concludes (Summer Vacations).

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For Examination to be held in Dec. 2010 onwards.

Class: B. E. 5th SEMESTER Branch: CIVIL ENGINEERING Course Title: THEORY OF STRUCTURE LAB - II Course No: C-507 Duration of Exam: 3 Hours

MARKS 50

Р

2

The practical work shall comprise any TEN of the following experiments:

- 1. To find horizontal thrust and draw the influence line for horizontal thrust for a two hinged arch.
- 2. Calibration of electrical strain gauge and determination of gauge factor.
- 3. To find deflection in fixed continuous beams.
- 4. To find maximum tension in the cable supporting suspension bridge carrying series of loads.
- 5. To find value of flexural rigidity (EI) for a given beam and compare it with theoretical value.
- 6. To verify moment area theorem.
- 7. To verify the Maxwell's reciprocal theorem for beam.
- 8. To measure strain in cantilever beam with the help of strain gauge.

MIET [SYLLABUS FOR CIVIL ENGINEEING]

- 9. To study the behaviour of different types of struts and to calculate Euler's buckling load.
- 10. Use of Begg's deformeter.
- 11. To determine reaction components of three hinged arch.
- 12. Determination of material fringe value.

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For Examination to be held in Dec. 2010 onwards.

Class: B. E. 5 th SEMESTER		
Branch: CIVIL ENGINEERING	Р	MARKS
Course Title SOIL MECHANICS LAB	2	50
Course No: C-508		
Duration of Exam: 3 Hours		

The practical work shall comprises of the following experiments :

- 1. Moisture content.
- 2. Specific gravity of Soil.
- 3. Grain Size distribution (Sieve Analysis)
- 4. Atterbergs Limits
- 5. Permeability by constant head or falling head method.
- 6. Proctors compaction test.
- 7. Field density determination Sand replacement method.
- 8. Field density determination Core cutter method.
- 9. Unconfined compression Test
- 10. Direct Shear Test.
- 11. Triaxial Compression Test.

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For Examination to be held in Dec. 2010 onwards.

Class: B. E. 5th SEMESTERBranch: CIVIL ENGINEERINGPMARKSCourse Title : ENVIRONMENTAL ENGG. LAB-I2Course No: C-509Duration of Exam: 3 Hours

The practical work shall comprises of the following experiments :

- 1. Determination of Solids (total, dissolved, suspended, organic, inorganic) in water.
- 2. Determination of turbidity of Water.

MIET [SYLLABUS FOR CIVIL ENGINEEING]

- 3. Determination of alkalinity of Water.
- 4. Determination of hardness of Water.
- 5. Determination of PH value of Water.
- 6. Determination of chlorides of Water.
- 7. Determination of Iron and Manganese in Water.
- 8. Determination of Sulphates & Sulphides in Water.
- 9. Determination of dissolved oxygen in Water.

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COURSE SCHEME FOR B.E 6TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE, 2011 ONWARDS

S.	SUBJECT	Course	CLASSES MARKS			RKS			
No.			L	Т	Р	Theory	Sess	Pract	Total
1	Foundation Engineering	C-601	4	1	0	100	50	-	150
	(GEOTECHNICAL ENGGII)								
2	Theory of Structure - III	C-602	4	2	0	100	50	-	150
3	Engineering Hydrology	C-603	3	2	0	100	50	-	150
4	Design of Structures - I	C-604	4	2	0	100	50	-	150
5	Environmental EnggII	C-605	3	2	0	100	50	-	150
6	Elective - I **	C-606/	4	1	0	100	50	-	150
		C-607/							
		MTH-608							
7	Environment Engg -II Lab	C-608	0	0	2		-	50	50
8	Design of Structure -I Lab	C-609	0	0	2		-	50	50
	Total		2	10	4	600	300	100	1000
			2						

**Note: The students have to choose one course out of the three elective courses shown under

course No. C- 606/ MTH-608 in consultation with the Department. The courses are:

C-606 Architecture & Townplanning

C-607 Advanced Hydraulics

MTH-608 Statistics

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For Examination to be held in June 2011 onwards.

Class: B. E. 6th SEMESTERBranch: CIVIL ENGINEERINGLTMARKSCourse Title : FOUNDATION ENGINEERING41TheorySessionalCourse No: C-60110050Duration of Exam: 3 Hours50

UNIT - 1

Lateral Earth Pressure various Theories, Rankine's Coulomb's Theories, Active and Passive Earth Pressure Cases, Earth Pressure in Walls, Soil Tension Effects, Rupture Zone, Graphical Solution for Lateral Earth Pressure.

Stability of Slopes - Finite and Infinite Slopes, Stability Number, Analysis for Stability of Slopes, Various Methods, Swedish Circle Method.

UNIT - 2

Various Types of Foundations - Shallow and deep types of foundations, bearing capacity; Terzaghi's approach, Indian Standard Code for B.C.,

Bearing Capacity for footings in layered Soils, Slopes, Bearing capacity from field tests, Bearing capacity on rocks,

UNIT - 3

Deep Foundations -Pile Foundations, Well Foundations:- Situations where adopted, Elements of wells, Types, Methods of Construction, Tilt & Shift, Remedial measures.

UNIT - 4

Soil Exploration: Objectives and Programme, Various approaches, Standard Penetration tests (SPT), boring, DCPT, SCPT, Correlations.

Settlement : Components of Settlement, limits of settlement, stresses in soil below loaded areas, Boussinesq's equation for vertical stress, concept of bulb, Newmark chart, Westergard and I.S.code method.

BOOKS RECOMMENDED:-

1.Soil Mechanics in Theory and Practice	Alam Singh
2.Soil Mechanics & Foundation Engineering	Arora, K.K.
3.Handbook on Design of Foundations	Kaniraj
4. Analysis and Design of Foundations	Prakash, S

<u>NOTE</u>:- There shall be eight question of 20 marks each, two from each unit .Five question have to be attempted selecting atleast one question from each unit. Use of Calculator is allowed.

UNIVERSITY OF JAMMU

For Examination to be held in June 2011 onwards.

Class: B. E. 6 th SEMESTER				
Branch: CIVIL ENGINEERING	L	Т	MA	RKS
Course Title: THEORY OF STRUCTURE-III	4	2	Theory	Sessional
Course No: C-602			100	50
Duration of Exam: 3 Hours				

UNIT - 1

Arches :-Analysis of three hinged, two hinged and fixed arches, Reaction locus, Settlement, Temperature effects, Influence Lines.

Cables & Suspension Bridges :- Equilibrium of loaded chord. Cables with ends at different levels. Temperature stresses, Suspension Bridge with three hinged stiffening girder and two hinged stiffening girder.

UNIT - 2

Influence lines for reaction, shear and bending moment in simply supported beams, overhanging beams, compound beams. Influence lines for forces in members of trusses, criteria for maximum effects in beams and trusses. Reversal of stress. Muller-Breaslau's Principle for determination of influence for continuous beams. Max. bending moment and shear force diagrams. Rolling loads on beams. Max. bending moment and shear force.

UNIT - 3

Slope Deflection Methods:-Analysis of beams and frames by slope deflection method. Conjugate Beam Method Concept. Relation between given beam and Conjugate beam.

UNIT - 4

Plastic Theory :-Plastic bending of beams, Plastic hinge, Plastic moment, Shape factor, Plastic Modulus, Analysis of Rectangular, T and I sections, Simply supported beams, propped cantilevers, Continuous beams, Portal frames.

Analysis of redundant beams using stiffness and force methods (matrix method).

BOOKS RECOMMENDED:

DOOM		
1.	Elementary Structural Analysis	Wilbur, Norris
2.	Theory of Structures	Ramamurtham, S
3.	Elementary Matrix Analysis of Structures	Manickaselvam, V.K.
4.	Structural Mechanics	Dr.Desai & Dr.Thadani
5.	Structural Analysis	Williams & Lucas

<u>NOTE</u>:- There shall be eight question of 20 marks each, two from each unit .Five question have to be attempted selecting atleast one question from each unit. Use of Calculator is allowed.

UNIVERSITY OF JAMMU

For Examination to be held in June 2011 onwards.

Class: B. E. 6 th SEMESTER				
Branch: CIVIL ENGINEERING	L	Т	MA	RKS
Course Title : ENGINEERING HYDROLOGY	3	2	Theory	Sessional
Course No: C-603			100	50
Duration of Exam: 3 Hours				

UNIT - 1

Hydrological Cycle, Precipitation, Evaporation, Infiltration. Factors affecting precipitation over India. Automatic and non-automatic rain gauges, selection of site. Analysis of rain fall data, Hydrographs and mass curves. Intensity duration-frequency and depth area duration analysis. Sources and components of runoff,, estimation, Rainfall-runoff relations.

UNIT - 2

Typical flood hydrograph and its components. Base flow and separation. Theory of Unit Hydrograph, Relationship between s-curve and hydrograph, Relationship between Instantaneous hydrograph and unit hydrograph, Determination of Unit hydrograph by Collin's method.

UNIT - 3

Floods causes and effects. Importance of flood studies. Estimation of peak flows. Low flow. Flood forecasting, return period. Flood routing through reservoir, Flow duration curves.

UNIT - 4

Elements of ground water hydrology. Porosity, permeability, transmission, specific yield and specific retention. Darcy's law. Hydraulics of wells. Boundary effects. Confined and Unconfined Wells. Transmissibility and Storage Coefficient. Thein method, Jacob's method. Ground water investigation. Tube Wells, Quality of ground water.

Subramanya, K

Garg, S.P.

Linsley, Kohler & Paulhus

BOOKS RECOMMENDED:-

1.	Engineering Hydrology	
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- 2. Hydrology for Engineers
- 3. Ground Water
- 4. Hydrology and Water Resources Engineering Garg, S.K.
- <u>NOTE</u>:- There shall be eight question of 20 marks each, two from each unit .Five question have to be attempted selecting atleast one question from each unit. Use of Calculator is allowed.

UNIVERSITY OF JAMMU

For Examination to be held in June 2011 onwards.

Class: B. E. 6 th SEMESTER			
Branch: CIVIL ENGINEERING	L	Т	MARKS
Course Title: DESIGN OF STRUCTURES – I	4	2	Theory Sessional
Course No: C- 604			100 50
Duration of Exam: 3 Hours			

UNIT - 1

Introduction, Materials - basic properties of concrete & reinforcement, characteristic strength, admixtures, quality control. I.S. Specifications. Design of Concrete Mix. Acceptance Criteria, various methods - I.S. Code method in detail.

Timber - properties, factors affecting strength of timber, allowable stresses, design of simple beams, struts and ties.

UNIT - 2

Design philosophies, knowledge of working stress method. Ultimate Load Method. Limit State Method in detail and its statistical back ground. Various Limit States.

Analysis and design of singly, doubly reinforced beams, T-beams, cantilever beams using Limit State Method.

UNIT - 3

Shear, bond, anchorage provisions for rectangular beams using Limit State method. Serviceability conditions. Reinforcement detailing and drawings. Design of beams for Torsion, Design of continuous R.C.beams.

UNIT - 4

Analysis and design of columns by working stress method and Limit State method. Short and long columns, biaxial bending. Use of design charts, Analysis and design of isolated footing, eccentric footing, combined footing, Rafts.

BOOKS RECOMMENDED :

1.	Reinforced Concrete Structures and Limit State Design	Jain, A.K.
2.	Limit State Design of R.C.C.	Hughes
3.	Plain and Reinforced Concrete	Jain & Jaikrishen

4. Relevant I.S.Codes

<u>NOTE</u>:- There shall be eight question of 20 marks each, two from each unit .Five question have to be attempted selecting atleast one question from each unit. Use of Calculator as well IS code books are allowed in Examination.

UNIVERSITY OF JAMMU

For Examination to be held in June 2011 onwards.

Class: B. E. 6 th SEMESTER				
Branch: CIVIL ENGINEERING	L	Т	MA	RKS
Course Title : ENVIRONMENTAL ENGINEERING – II	3	2	Theory	Sessional
Course No: C-605			100	50
Duration of Exam: 3 Hours				

SECTION - I

General

Sewerage, domestic sewage, sewage treatment, disposal, scope, role of an environmental engineer, historical overview.

Sewage Characteristics

Quality Parameters : BOD, COD, TOC, Solids, DO, Nitrogen, Phosphorus, Standards of disposal into natural water courses and on land, Indian standards.

Collection of Sewage

System of Sewerage : Separate, combined and partially separate, components of sewerage systems, systems of layout, quantity of sanitary sewage and variations, quantity of storm water, Rational method, shapes of sewer, circular and egg shaped, Hydraulic design of sewers : diameter, self cleansing velocity and slopes, Construction and testing of sewer lines, Sewer materials, joints and appurtenances, Sewage pumping and pumping stations, Maintenance of sewerage system.

Air Pollution

Types of air pollutants and sources, air quality and emission standards, effect of air pollutants, control measures.

SECTION - II

Sewage Treatment

Various Units : Their purposes sequence and efficiencies, Preliminary treatment : screening and grit removal units, oil and grease removal, Primary treatment, Secondary treatment : activated sludge process, trickling filter, Sludge digestion and drying beds. Stabilization pond, Septic tank, Soakage systems, Imhoff tank, Recent trends in sewage treatment, advanced waste water treatment : nutrient removal, solids removal.

Waste Water Disposal and Reuse

Disposal of sewage by dilution, self purification of streams, sewage disposal by irrigation & sewage farming, waste water reuse.

Solid Waste Management :

Generation, collection and disposal

BOOKS RECOMMENDED:-

1.Environmental Engineering	Peavy
2. Water Supply and Sewage	McGhee
3. Air Pollution and Control	Rao
4.Waste Water Engg. Vol.II	Garg, S.K.

<u>NOTE</u>:- There shall be eight question of 20 marks each, Four from each section .Five question have to be attempted selecting atleast two from each section. Use of Calculator is allowed in Examination.

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For Examination to be held in June 2011 onwards.

Class: B. E. 6th SEMESTER Branch: CIVIL ENGINEERING Т L MARKS Course Title : ARCHITECTURE AND TOWN PLANNING 4 1 Theory Sessional Course No: C-606 100 50 Duration of Exam: 3 Hours **UNIT - 1** Introduction : Architecture and Civil Engineering, History, Brief Historical Review of various styles of Architecture and factors influencing their Development. Contemporary Architecture. Design Principles like Aesthetics, Utility and the Structure. Elements like contrast, symmetry etc. **UNIT - 2** General Principles of composition of various types of spaces and forces. Design consideration of residential and public buildings including interior decoration. **UNIT - 3** TOWN PLANNING : Planning at various levels, National, Regional, City and Village level. Origin and growth of Towns-Horizontal and vertical development. Satellite and neighbour hood planning. **UNIT - 4** MASTER PLAN : It's importance for redevelopment of existing towns. Building Bye-Laws. Zoning regulations for various urban land uses. Place of Multistorey buildings in zoning. Various road patterns, Express ways, Junctions, Parkways etc. Slum Formation: Their clearance, Garden City concept. **BOOKS RECOMMENDED:-**

- 1. A History of World Architecture
- 2. Design Fundamentals
- 3. Theory of Architectural Design
- 4. Urban Planning

Fletcher, Banistere Scof Broadbent Gallien

<u>NOTE</u>:- There shall be eight question of 20 marks each, two from each unit .Five question have to be attempted selecting atleast one question from each unit. Use of Calculator are allowed in Examination.

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For Examination to be held in June 2011 onwards.

Class: B. E. 6th SEMESTER Branch: CIVIL ENGINEERING Course Title: ADVANCED HYDRAULICS Course No: C-607 Duration of Exam: 3 Hours

L T MARKS 4 1 Theory Sessional 100 50

UNIT - 1

Introduction to Sediment and Fluvial Hydraulics, Nature of Sediment Problems, Origin and Properties of Sediments, Fundamental properties of individual Sedimentary particles, Bulk properties of Sediments, Incipient motion of Sediment particles, Competent velocity, Lift concept, Critical Tractive Force, Critical Tractive Stress of Cohesive materials.

UNIT - 2

Regimes of flow, ripple and dune regime, Antidune regime, importance and prediction of regimes of flow, Resistance of flow and velocity distribution, Rough boundaries, resistance to flow in Alluvial Streams, Velocity distribution in Alluvial Streams.

UNIT - 3

Bed load transport and saltation, bed load equations-dimensional considerations, Semitheoretical equations. Suspended load transport, Mechanism of suspension, Assumptions in derivation of Sediment Distribution Equation, Simple relations for suspended load, wash load etc. Total load transport microscopic method, macroscopic method, sediment yield from catchment.

UNIT - 4

Design of stable channels, tractive force method and regime method, Sediment control in canals, water requirements, River training and bank protection for flood control, navigation etc. Alluvial river models, debris flow, density currents. Introduction to Sediment transport through pipes, Degradation and aggradation of alluvial rivers and their bed-level variation.

BOOKS RECOMMENDED:-

- 1. Loose Boundary Hydraulics
- 2. Sediment Transport and Alluvial River Problems
- 3. Sediment Transport
- 4. Flow Through Open Channel

Randkivi, A.J. Garde & RangaRaju Graf RangaRaju.

<u>NOTE</u>:- There shall be eight question of 20 marks each, two from each unit .Five question have to be attempted selecting atleast one question from each unit. Use of Calculator are allowed in Examination.

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For Examination to be held in June 2011 onwards.

Class: B. E. 6 th SEMESTER			
Branch: CIVIL ENGINEERING	L	Т	MARKS
Course Title: STATISTICS Course No: MTH - 608	4	1	Theory Sessional 100 50
Duration of Exam: 3 Hours			

SECTION-A

Special Continuous Distributions: Probability distribution of a continuous random variable. Mean, Variance and other moments. Moments generating function and characteristic function. Normal distribution. Properties of normal probability curve. Additive property. Beta and Gamma distributions. Sampling distributions: Chi-square χ distribution and its properties, Sampling distribution of the sample of the sample mean and sample variance, t, F and Zdistributions and their properties. Inter-relations between t, F, Z, χ and normal distribution.

Theory of Estimation (Point estimation): The problem of estimation, Fisher's criterion of the best estimator, Unbiased estimator, Consistent estimator and efficient estimator, Sufficient estimator, Likelihood function, Roa-Blackwall Theorem.

Method of Estimation: Maximum likelihood method of estimation, Properties of the M.L. estimation, Intrinsic accuracy and amount of information, Fisher's inequality.

Minimum variance method of estimation, Rao-Cramer inequality, Least square method of estimation, Bayesian method of estimation.

Theory of Estimation (Interval estimation): Confidence Interval (C.I.) and its interpretation, confidence region, C.I. for large samples, C.I. for population parameters, C.I. for means, C.I. for proportions, C.I. for difference and C.I. for variance ratios.

SECTION-B

Testing of Hypothesis: Statistical hypothesis- Null hypothesis and tests of hypothesis. Type I and Type II errors, Level of significance, tests involving normal distribution, One –tailed and Two –Tailed tests, Tests for large samples and small samples. Relation between estimation theory and hypothesis testing, Operating characteristic curve (O.C. curve), Power of test, Simple and Composite hypothesis, Likelihood Ratio test.

Non-Parametric Tests: The Sign Test, The Run Test, The Madian Test, The Wilcoxon Two Sample Rank Test, The H-Test.

BOOKS RECOMMENDED:-

1. Statistical Methods , by S.P.Gupta, S Chand & Sons, New Delhi

2. Probability and Statistics for Engineers, by Richard A . Johnson, PHI, New Delhi

- 3. Elements of Probability and Statistics, by A.P. Baisnab and Manoranjan Jas, Tata McGraw Hill, New Delhi.
- 4. Engineering Mathematics, by Srivastava, R.S.L.
- <u>NOTE</u>:- There shall be eight question of 20 marks each, four from each section .Five question have to be attempted selecting atleast two question from each section. Use of Calculator is allowed in Examination.

UNIVERSITY OF JAMMU

For Examination to be held in June 2011 onwards.

Class: B. E. 6th SEMESTER Branch: CIVIL ENGINEERING P MARKS Course Title : ENVIRONMENTAL ENGINEERING - II LAB 2 50 Course No: C-608 Duration of Exam: 3 Hours

List of Experiments

- 1. Determination of B.O.D. of Sewage.
- 2. Determination of C.O.D. of domestic and industrial sewage.
- 3. Determination of Kjeldal nitrogen.
- 4. Determination of volatile, mixed, filtrable and dissolved solids.
- 5. Determination of optimum dose of coagulants.
- 6. Determination of iron and two heavy metals.
- 7. Measurement of SO_2 in ambient air.
- 8. Measurement of Particulate matter in air.

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For Examination to be held in June 2011 onwards.

Class: B. E. 6th SEMESTER Branch: CIVIL ENGINEERING Course Title: DESIGN OF STRUCTUR LAB Course No: C-609 Duration of Exam: 3 Hours

P MARKS 2 50

THE PRACTICAL WORK CONSISTS OF FOLLOWING EXPERIMENTS:

- 1. To determine the physical properties of cement using Vicat's apparatus (consistency, initial setting time, final setting time and compressive strength).
- 2. To find the specific surface area of given combined aggregates.
- 3. To determine the fineness modulus of fine and course aggregates.
- 4. To find bulk density and bulking factor of medium sand, fine sand and coarse sand.
- 5. To perform soundness test on cement using Le Chatlier's apparatus.
- 6. To find out absolute density of cement using specific gravity bottle.
- 7. To determine workability of concrete (any grade) by compaction factor apparatus and slump test.
- 8. To determine the tensile strength of concrete by split cylinder test.
- 9. To establish (i) age Vs Cube Strength relationship (ii) Strength Vs W.C. Ratio relationship.
- 10. Concrete mix design completes (any grade).
- 11. Study of nondestructive test on concrete.

UNIVERSITY OF JAMMU, JAMMU.

COURSE SCHEME FOR B.E 7TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS

Course No.	Name of the Course	Hours Per				Marks		
		Week						
		L	Т	Р	Theory	Sessional	Practical	Total
C-701	Design of Structure-II	4	2	-	150	50	-	200
C-702	Irrigation and flood control	4	2	-	100	50	-	150
C-703	Transportation Engg.I		2	-	100	50	-	150
C-704	Minor Project		-	6	-	-	100	100
C-705	Industrial Training	-	-	-	-	-	75	75
Elective-II								
C-706	Water Resource							
	Engineering							
C-707	Environmental Pollution	4	2	0	100	50	-	150
	Control Engineering							
COM-709	Computer Basics and Applications							
C-708								
0-700	Seminar	-	-	2	-	75	-	75
C-709	Irrigation and Flood Control	-	-	2	-	-	50	50
	Laboratory							
C-710	Transportation EnggI Lab.	-	-	2	-	-	50	50
Total			8	12	450	275	275	1000

CLASS: BE 7TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-701 COURSE TITLE: DESIGN OF STRUCTURE - II DURATION OF EXAM: 3 HOURS.

			IVIA	IKN3
L	Т	Р	THEORY	SESSIONAL
4	2	0	150	50

SECTION – A

R.C.C. DESIGN

Design of one way slab, Design of two way slab with simply supported and restrained edges. Design of stairs.

Retaining Walls, types, forces, stability requirements. Design of cantilever and counterfort retaining walls, surcharge.

Pre-stressed concrete, Advantages, Prestressing systems, losses, initial and final stresses. Moment of Resistance, shear reinforcement, simple design problems.

<u>SECTION – B</u>

STEEL STRUCTURES

Types and Properties of structural steel, I.S. rolled sections, Loads, Design of riveted and welded connections. Eccentrically loaded joints, beam to column connections. Tension and compression members – tension members, design of axially loaded tension members, struts and columns including built up columns, lacing and battens. Column bases:- design of slab base and gusseted base, Grillage foundations. Beams:- design of laterally restrained and unrestrained beams, web buckling.

BOOKS RECOMMENDED:-

- 1. Reinforced Concrete Limit State Design
- 2. Reinforced Concrete Design
- 3. Design of Steel Structures
- 4. Design of Steel Structures
- <u>NOTE</u>: There shall be total seven questions, from two sections. Four questions have to be attempted selecting atleast two from each section. Use of Calculator, relevant IS codes and steel tables are allowed.

Jain, A.K. Sinha, S.N. Duggal, S.K. Raghupathi, M.

CLASS: BE 7TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-702 COURSE TITLE: IRRIGATION & FLOOD CONTROL DURATION OF EXAM: 3 HOURS.

			MAR	KS
L	Т	Ρ	THEORY	SESSIONAL
4	2	0	100	50

SECTION - A

Introduction : Lift and Flow Irrigation. Advantages of Irrigation. Development of Irrigation in India. Water requirement of Crops. Irrigation methods.

Design procedure for Irrigation Channels, Stable Channel Design. Water Logging and its control. Lining of Channels and Drainage.

Irrigation Outlets : Classes of outlets. Non modular outlets. Types of Semi Modules, Rigid Modules.

Principles of Design for Canal Masonary Works. River Training Methods.

SECTION – B

Khosla's Theory for determination of pressures and exit gradients, Bligh's creep theory. Regulation Works : Falls, Distributory head Regulators and other works.

Cross Drainage Works : Necessity and types. Design of Syphon, Syphon Acqueducts, and Superpassage, Level crossings.

Canal Headworks : Locations of Headworks, Weir, Divide Wall, Fish Ladder. **Earthen Dams :** Investigation and Planning Materials used, Criteria for Safe Design including design of filter.

BOOKS RECOMMENDED:-

- 1. Irrigation Engineering & Hydraulic Structures
- 2. Irrigation (Practice & Design)
- 3. Theory and Design of Irrigation Structures
- 4. Irrigation Engineering & Hydraulic Structures

<u>NOTE</u>:- There shall be total Eight questions, Four from each section. Five questions have to be attempted selecting atleast two from each section. Use of Calculator is allowed.

Garg, S.K. Khushalani, K.B Varshney, R.S. & Gupta Sahasrabudhe, S.R.

CLASS: BE 7TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-703 COURSE TITLE: TRANSPORTATION ENGINEERING-I DURATION OF EXAM: 3 HOURS.

			MARKS		
L	т	Ρ	THEORY	SESSIONAL	
4	1	0	100	50	

SECTION - A

Highway Engineering

Introduction, History and Classification of Roads. Alignment Design, Highway Location, Route Surveys.

Highway Geometric Design:- elements, Signs, Distance, Design of horizontal and Vertical alignments.

Highway Materials : Subgrade Soil and its preparation, properties and tests for subgrade soil, road stone aggregates and bituminous materials.

Design of bituminous concrete mix.

Traffic Engineering : Introduction, Scope and Characteristics of Traffic, Traffic Studies, Traffic Capacity. Design of Intersections, Signals and Parking facilities. Highway lighting. Hill Roads : Problems of alignment, geometric design requirements and drainage.

SECTION - B

Highway Pavement Design : Types of Pavement Structure, Objects and requirements of Pavements, Functions of Pavement Components, Design factors for Pavement, ESWL. Strength Characteristics of Pavement Materials. Various methods of design of Flexible Pavements e.g., group index method, CBR method and Burmister's method, Triaxial Method. General design consideration of Rigid Pavements, difference between Rigid and Flexible Pavements, Westergaard's Method for design of Rigid Pavements and concept for stresses due to load and temperature in rigid pavements. Joints in Cement Concrete roads, Highway Drainage

Air Port Engineering

Introduction, ICAO Classification of Airports, Layout, Classification of Flying activity, Aircraft characteristics, Airport site selection.

Runways and taxiways, runway length. Wind rose diagram, orientation and pattern of runways. Introduction to various design methods of airport pavement design, drainage and navigation aids.

BOOKS RECOMMENDED:-

- 1. Traffic Engineering and Transportation Planning
- 2. Highway Engineering
- 3. Highway Engineering
- 4. Planning and Design of Airports

<u>NOTE</u>:- There shall be total Eight questions, Four from each section. Five questions have to be attempted selecting atleast two from each section. Use of Calculator is allowed.

Kadiyali, L.R. Khanna & Justo O'flherty Horonjoff

CLASS: BE 7TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-704 COURSE TITLE: MINOR PROJECT

L	т	Р	MARKS
0	0	5	100

Project work will be taken up by every student of 7th semester Civil Engineering at the beginning of the Semester. However, the problem will be enunciated by the Department. The project may be on one of the followings:

- 1. Geometric design of a typical stretch of a Highway.
- 2. Public health and water supply project for a given locality.
- 3. Detailed design of a Plate Girder Bridge.
- 4. Development of interactive computer programme for some Civil Engineering design problems.
- 5. Detailed estimation and costing of a building.

Distribution of Marks as per University statues:

Total Marks for End semester Evaluation	=	100 marks	
1) Presentation/ Demonstration	=	40 marks	30%
2) Viva-voce	=	40 marks	30%
3) Actual work done	=	60marks 40%	

Award of Marks

- Marks under (1) and (2) will be awarded by the Departmental committee constituted comprises of convener and atleast two members.
- Marks under (3) will be awarded by the Project Guide/supervisor concern.

CLASS: BE 7TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-705 COURSE TITLE: INDUSTRIAL TRAINING

MARKS

75

Students shall be deputed by the college for practical training to various Sites/Agencies for one month normally during the summer vacations. However, in case the summer vacations falls after the 7th Semester is over, the students shall have to go in for such training during these vacations. After the successful completion of this training each student has to submit a report of work done at the site or in the organization deputed to. The report of work done by the individual student shall be authenticated by a competent officer of the agency.

Also the department shall evaluate the student on the basis of the report presented and the viva-voce examination conducted by the departmental committee.

Guidelines for evaluation of Practical Training:

The evaluation shall be done by the departmental committee by the end of 7th semester. The committee shall have a convener and atleast two member.

Distribution of Marks as per the University statues:

Total	Marks for Evaluation	= 75 marks	
i)	Report	= 30	40%
ii)	Viva-Voce	= 22.5	30%
iii)	Miscellaneous Marks	= 22.5	30%

Due weightage will be given to those who have opted Industrial Training outside the State as well as keeping in view the profile of that Industry.

Award of the Marks:

Marks under (i), (ii) & (iii) will be awarded by the departmental committee constituted for the purpose.

CLASS: BE 7TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-706 (ELECTIVE-II) COURSE TITLE: WATER RESOURCE ENGINEERING DURATION OF EXAM: 3 HOURS.

			MARKS	
L	Т	Ρ	THEORY	SESSIONAL
4	2	0	100	50

SECTION-A

Introduction : Water Resources of World and India. Necessity for Conservation and Development of Country's Water Resources. Different uses of Water Resources. Need for multipurpose and Single Purpose Projects. River systems in India and Environment impacts on water resources.

Project Planning for Water Resources, different types of data and their collection. Project formulation. Interstate Water transfer and Interstate River disputes.

SECTION-B

Optimization Techniques, elementary principles, graphical techniques for single purpose and multipurpose projects. Dynamic programming.

Economics of Water Resource Planning, Principles of Engineering Economics, Mathematics of Economic Analysis.

Economic Planning for flood control, domestic and Industrial Water Supply, Irrigation and Hydroelectric Power.

Cost allocation in multipurpose projects.

BOOKS RECOMMENDED:-

- 1. Water Resource Engineering
- 2. Economics of Water Resource Planning
- 3. A Text Book of Hydrology & Water Resources
- 4. Water Resource Project Planning
- **<u>NOTE</u>:-** There shall be total Eight questions, Four from each section. Five questions have to be attempted selecting atleast two from each section. Use of Calculator is allowed.
- Linsley James & Lee Sharma, R.K. Kuiper

CLASS: BE 7TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-707 (ELECTIVE-II) COURSE TITLE: ENVIRONMENTAL POLLUTION CONTROL ENGINEERING DURATION OF EXAM: 3 HOURS.

L	т	Р	MARKS		
			THEORY	SESSIONAL	
4	2	0	100	50	

SECTION - A

Environmental Pollution- Inter relationship between various forms of pollution.

Surface Water Pollution Surveys - Integrated River Basin Water Management - Restoration of Water bodies - water quality parameters and optimization of treatment - water quality changes by domestic use, Industrial use, radio active materials - Thermal pollution and underground disposal - Types of water pollutants and their effects - Instrumentation for water quality and treatment - Role of waste water treatment as pollution control measure.

Light Pollution - Light and its characteristics - Visual activity and visual performance -Glare - Outdoor lighting and glare sources - Corrective procedures.

Water Pollution Laws and Regulations - Air Pollution Control Act of India- Chimney heights - Land Pollution Laws and Regulations.

SECTION - B

Air Pollution Control Strategy - Basic approaches - Areas of legal responsibility - Source identification - Particulate control and control of gases and vapours - Factors affecting control approach selection - Air pollution control technology - Settling chambers, filters, electrostatic precipitators, wet scrubbers, entrainment separators - Gas absorption, gas absorption and combustion.

Land Pollution - The pollution cycle - Ecological factors in plant site selection - Ecological aspects of vegetation control.

Noise Pollution - The physics of sound and hearing - Effects of noise - Sources - Instruments and techniques for noise measurement.

BOOKS RECOMMENDED :-

- 1. Water Pollution Control Act (1974) passed by Govt. of India.
- 2. Solid waste management in developing countries A.D.Bhide
- 3. Solid waste management course manual
- 4. Air Pollution control Tech.

Roert M. Bethea

NEERI

- Air Pollution Control Act of India.
 Relevant Indian Standards & Factory Acts.
- **<u>NOTE</u>:-** There shall be total Eight questions, Four from each section. Five questions have to be attempted selecting atleast two from each section. Use of Calculator is allowed.
CLASS: BE 7TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: COM-709(ELECTIVE-II) COURSE TITLE: COMPUTER BASICS AND APPLICATIONS DURATION OF EXAM: 3 HOURS.

			MAR	KS
L	т	Ρ	THEORY	SESSIONAL
4	2	0	100	50

SECTION-A

Computer basics and characteristics. Technological Advances. Various components, Hardware Processor. Memory overview and organisation, basic input output unit. Binary number system. Data and its representation. Information representation in Digital Computers. Stirage devices and peripherials. Operating system and its importance. Networking Computer and Communication.

High Speed Computation, Computer Arithmatic, Errors, Machine Computations. Numerical methods, Polynomial equations bisection method, iteration method, rate of ocnvergance, iterative method for system of linear equations- complete with analysis, flow charts and FORTRAN/C Programmes.

SECTION-B

Computer Automated Design and Management (CAD/CAM), Various Engineering Utilizations. CAD/CAM tools. Over view of geometric modelling and graphics application. CAD specific characteristics of an application. Harware requirements. Types of Systems. Input output devices. CAD/CAM Software. Basic definitions, data structure, database, coordinate systems. User interface. Introduction to curve representation.

Data base, data organization. Conceptual understanding and advantages of data base management system, basic concepts. Table Design, querries. Relational approach. Overview of database models. Security and concurrency.

BOOKS RECOMMENDED :-

1.	Computer Organization	Hamacher, V
2.	CAD/CAM Theory and Practice	Zeid Ibrahim
3.	Computer Database Organization	Martin, J.

<u>NOTE</u>:- There shall be total Eight questions, Four from each section. Five questions have to be attempted selecting atleast two from each section. Use of Calculator is allowed.

CLASS: BE 7TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-708 COURSE TITLE: SEMINAR

L	т	Р	MARKS
0	0	2	75

This will involve a detailed study of a topic of interest reproduced in the candidate's own style. For this, a student has to prepare a seminar by doing proper survey of literature, compilation of information so gathered and then presentation of the same followed by question-answer session. The report of which has to be submitted by the student well before the conduct of seminar. The handout submitted by the student will be in accordance with the standards of technical papers.

Guidelines and evaluation of Seminar in 7th semester:

The topic of the Seminar is to be finalized and approved by the departmental committee by the end of 6^{th} Semester. The committee shall have a convener and atleast two members.

Distribution of Marks:

Total Marks for Seminar Evaluation	=	75 marks
1) Project Report	=	25 marks
2) Presentation	=	35 marks
3) Attendance	=	15 marks.

Award of Marks:

- Marks Under (1) will be awarded by the Seminar Incharge.
- Marks Under (2) and (3) will be awarded by the Departmental committee constituted for the purpose.

CLASS: BE 7TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-709 COURSE TITLE: IRRIGATION & FLOOD CONTROL LAB DURATION OF EXAM: 3 HOURS.

L T P MARKS 0 0 2 50

The practical work consists of :

- 1. Complete design and drawing of Irrigation Channel with the data provided by the Department. The drawings shall include Longitudinal Section and Cross Section, showing all important details.
- 2. Design and drawing of a weir or a barrage with the data provided by the department. The students shall be required to furnish hydraulic and structural design.
- 3. Design and drawing of a cross drainage work with the given data.
- 4. Complete design and drawing of a earthen dam with the given data.

<u>NOTE</u>: The Department will ensure that students design and prepare the drawing of atleast two of the above problems.

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CLASS: BE 7TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-710 COURSE TITLE: TRANSPORATION ENGINEERING LAB DURATION OF EXAM: 3 HOURS.

L	т	Р	MARKS
0	0	2	50

Practical work shall comprise of atleast Five experiments out of the following experiments :

1.	Subgrade Soil :	Classification,	group index,	CBR test
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	U	
2.	Aggregates :	Specific gravity & Water absorption, flakiness index,
		impact, crushing and abrasion value tests. Petrographic
		identification.
3.	Bitumen :	Penetration, Softening Point, Flash Point. Ductility,
		Stripping, Viscosity of Tar and Cut back.
4.	Stablized Mixes:	Compressive Strength, Durability.

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COURSE SCHEME FOR B.E 8TH SEMESTER CIVIL ENGINEERING FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

Course No.	Name of the Course	Hours Per		Marks				
		1	Week					
		L	Т	Р	Theory	Sessional	Practical	Total
C-801	Design of Structure-III	4	2	0	150	50	-	200
C-802	Water Power Engg.	4	2	0	100	50	-	150
C-803	Transportation Engg	4	2	0	100	50	-	150
C-804	Major Project	0	0	8	-	-	225	225
Elective-III								
C-805	Computational Hydraulics	4	2	0	100	50	-	150
C-806	Structural Analysis							
HUM-807	Org & Management	3	1	0	100	25		125
Total			9	8	550	225	225	1000

Note: The students have to choose one elective course under Elective -III.

CLASS: BE 8TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-801 COURSE TITLE: DESIGN OF STRUCTURES - III DURATION OF EXAM: 3 HOURS.

			MA	RKS
L	т	Ρ	THEORY	SESSIONAL
4	2	0	150	50

SECTION-I

R.C.C. Design

Multi-storeyed Building Frames. Analysis and design of Single Bay single storeyed Portal Frames.

Water Tanks : Tanks resting on ground, overhead tanks, underground tanks (rectangular and circular) Bracings, staging.

Culverts & Bridges : Design of slab culverts, T-beam bridge, Box culverts as per I.R.C. loadings.

SECTION-II

<u>Steel Design</u>

Roof trusses, types of trusses, spacing, design loads, wind load calculation.

Design of various members of a roof truss and joint bracings.

Plate Girder Bridges, components. Complete design with curtailment of flange plates, various connections, web stiffeners. Design of bearings.

Truss Bridges - General arrangement, Design Loads, Design of Truss bridge for railway loadings. (Main components only).

Pressed Steel Water Tanks with Staging,

BOOKS RECOMMENDED:-

- 1. Reinforced Concrete Limit State Design
- 2. Reinforced Concrete Design
- 3. Design of Steel Structures

4. Design of Steel Structures

by Jain, A.K. by Sinha, S.N. by Duggal, S.K. by Raghupatti, M.

<u>NOTE</u>: There shall be atleast Five questions. Three questions have to be attempted selecting atleast One from each section. Use of Calculator, relevant IS codes and steel tables is allowed.

CLASS: BE 8TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-802 COURSE TITLE: WATER POWER ENGINEERING DURATION OF EXAM: 3 HOURS.

-			MAR	MARKS			
L	т	Р	THEORY	SESSIONAL			
4	2	0	100	50			

SECTION-I

Introduction, Sources of Energy, Status of Power in India, Place of Hydro-power in a Power System, Estimation of Water Power Potential.

Run-off and Stream Flow, Stream Flow Analysis (Data Generation), Mass Curve, Flow Duration Curve.

Electrical Load on Hydro-Turbines - Load Curve, Load Factor, capacity Factor, Utilization Factor, Diversity Factor, Load duration Curve, Firm Power, Secondary Power, Prediction of Load.

Types of Hydro-Power Plants - Clasification of Hydel Plants, Run-off River Plants, Valley Plants, Diversion Canal Plants, Storage and Pondage.

Pumped Storage Power Plants- Advantages of Pumped Storage Plants, Two Unit and Three Unit Arrangement, Efficiency of Pump Storage Plants.

SECTION-II

Dams and Spillways : Classification of Dams, Gravity Dam, Embankment Dam, Arch Dam, Buttress Dam, Safety of Dams, Types of Spillways, Gates, Energy Dissipation Below Spillways.

Penstocks - Design Criteria, Economic Diameter of Penstocks, Anchor Blocks, Conduit Values, Water Hammer, Resonance, Channel Surges, Intakes, Air Entrainment at Intakes, Canals, Forebay and Tunnels.

Turbines - Layout arrangement, Hydraulics of Turbines, Draft Tubes, Cavitation in Turbines. Power House Planning, Surface Power Station, Underground Power Station, Introduction to Structural Design of Power Houses.

BOOKS RECOMMENDED:-

1.	Irrigation Engineering and Hydraulic Structures	Garg, S.K.
2.	Hydro Power Engineering	Dandekar & Sharma
3.	Water Power Engineering	Barrows
4.	Water Power Engineering (Vol.I & II)	Massony

<u>NOTE</u>:- There shall be total Eight questions, Four from each section. Five questions have to be attempted selecting atleast two from each section. Use of Calculator is allowed.

MIET [SYLLABUS FOR CIVIL ENGINEEING]

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CLASS: BE 8TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-803 COURSE TITLE: TRANSPORTATION ENGINEERING – II DURATION OF EXAM: 3 HOURS.

			IWIAKKS		
L	т	Ρ	THEORY	SESSIONAL	
4	2	0	100	50	

SECTION-I

Railway Track - Introduction, Gauge, Axle Loads and Train Resistance, Grades and Curve Compensation, Coning of Wheel and Canting of Rails.

Rails - Requirements of Rail Section, Types of Rails, Nominal Weight of Rails, Standard Rail Section, Defects in Rails, Service Life of Rails.

Rail Joint - Need for Rail Joint Requirements of a Rail Joint, Standard Joint, Combination Fishplate, Insulated Rail Joints.

Sleepers : Historical Development, Requirements, Sleeper Density and Sleeper Spacing, Type of Sleepers, Design of Sleepers, Ballastless Track.

Ballast - Functional Requirements, Types, Size, Specifications, Sub-Ballast and Blanket.

Formation -Function, Earth Work for Formation, Width, Consolidation and Compaction, Formation Treatment Methods, Troublesome Formations.

Railway Curves-Necessity of Curves, Geometrical Terms, Classification of Curve, Degree of a Curve, Maximum Degree of a Curve, Branching of Curves, Superelevation (Cant).

Welding of Rails-Gap Between Rail Ends, Methods of Welding, Long Welded Rails.

Rail to Sleeper Fastenings-Conventional Fastening for Sleepers, Elastic Fastenings, Check Rails and Guard Rails.

SECTION-II

Switches and Crossings : Switches, Switch Assembly and Crossing Assembly, Turnouts, Crossovers.

Track Stresses - Bending Stresses, Thermal Stresses, Rail Wheel Contact Stresses, Combined Stresses in the Rail Head, Formation Pressures, Track Deterioration and Maintainability of Track.

Bridges : Introduction, Different Stages of Investigation, Techno-economic Study, Classification of Bridges, Soil Particulars, Topographical details, Hydrologic Particulars.

Site Selection, River Regime, Design Flood Discharge determination by various Methods.

Linear Waterway, Economic Span, Superstructure, Foundations for piers and abutments, Pile Foundations, Well Foundations.

Docks and Harbours - Introduction, Harbours, Various Types of Harbours, Natural and Artificial Harbours, Breakwaters, Dry and Wet Docks, Flotation Docks.

BOOKS RECOMMENDED :

Railway Engineering
Railway Track Design

(New Book Co.Pvt.Ltd. Mumbai)3. Design and Construction of Ports

Quinn (McGrawHill)

Sexena and Arora

Antia K.F.

<u>NOTE</u>:- There shall be total Eight questions, Four from each section. Five questions have to be attempted selecting atleast two from each section. Use of Calculator is allowed.

CLASS: BE 8TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-804 COURSE TITLE: MAJOR PROJECT

> MARKS L T P PRACTICAL 0 0 8 225

Major Project work will be taken up by every student of 8th semester Civil Engineering at the beginning of the Semester. However, the problem will be enunciated by the Department. The project will consists of :

- 1. a real life problem, as may be obtained from the field conditions.
- 2. will include almost all important design and other aspects of Civil Engineering.

Guidelines for evaluation of Project work in 8th semester:

Sub-distribution of marks:

•	For External Examiner	:	100
	E a a lasta na al Essa astra a a		405

For Internal Examiner : 125

Sub distribution of internal Marks:

• Mark distribution of internal Project work as per the University statues shall be based on:

a.	Viva-Voce	=	30	30%
b.	Presentation	=	30	30%
c.	Report	=	40	40%
	Total	=	100	

CLASS: BE 8TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-805 (ELECTIVE-III) COURSE TITLE: COMPUTATIONAL HYDRAULICS DURATION OF EXAM: 3 HOURS.

			N	MARKS	
L	т	Ρ	THEORY	SESSIONAL	
4	2	0	100	50	

Gradually Varied Flow : Numerical solution of GVF problems, Direct step method, Standard step method, Advanced Numerical method, Graphical method. Flow profiles in divided channels. Delivery in mild channels under varying downstream pool elevation.

Hydraulic jump in channels, jump on a sloping floor, length of jump, jump as an energy dissipator, location of jump, means of control of hydraulic jump, abrupt drop, abrupt rise, efficiency of jump etc.

Gradually varied unsteady flow : Continuity and dynamic equation for unsteady flow, monoclinical rising wave, uniformly progressive flow, wave propagation.

Hydraulic flood routing : Method of characteristics. Numerical methods.

BOOKS RECOMMENDED :

1.	Open Channel Hydraulics	Chou, Ven-Te
2.	Flow in Open Channels Vol.I & V.II	Subramanya, K
3.	Flow through Open Channels	Ranga Raju
4.	Open Channel Flow	French

<u>NOTE</u>:- There shall be total Eight questions. The students have to attempt Five questions. Use of Calculator is allowed.

CLASS: BE 8TH SEMESTER BRANCH: CIVIL ENGINEERING COURSE NO: C-806 (ELECTIVE-III) COURSE TITLE: STRUCTURAL ANALYSIS DURATION OF EXAM: 3 HOURS.

			M	MARKS	
L	т	Ρ	THEORY	SESSIONAL	
4	2	0	100	50	

Desai & Abel

Review of Matrix Algebra, Flexibility and stiffness Matrices. Static and Kinematic indeterminacy. Concept of Flexibility Matrix Method. Stiffness method. End Action of restrained members. Steps in flexibility matrix and stiffness matrix methods.

Review of Principle of virtual work. Theorem of minimum potential energy. Lagrange interpolation. Ritz method, Elements of theory of elasticity. Finite element formulation. One dimensional prismatic elements.

Space frames using vector method, statical conditions. Method of Joints. Forces in the members. Approximate analysis of frames by substitute method.

BOOKS RECOMMENDED :

1.	Finite Element Analysis Fundamentals	Gallagher, R.H.
2.	Statically Indeterminate Structures	Wang, C.K.
3.	Elementary Matrix Analysis of Structures	Manickaselvam

4. Introduction to Finite Element method

<u>NOTE</u>:- There shall be total Seven questions. The students have to attempt Four questions. Use of Calculator is allowed.

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CLASS: BE 8TH SEMESTER BRANCH: CIVIL ENGINEERING

COURSE NO: HUM-813 COURSE TITLE: ORGANISATION & MANAGEMENT DURATION OF EXAM: 3 HOURS.

			MARKS		
L	т	Р	THEORY	SESSIONAL	
3	1	0	100	25	

Section - A

The Nature of Management and Organisational Behaviour : Approaches to Organisation and Management, The Classical Approach, Scientific Management, The Human Relation Approach, Contingency Theory.

Organisations : Setting, Classification, Organisational Goals and Objectives, Structures and Systems.

Staffing : Manpower Planning, Recruitment and Selection Process.

Management : Managerial Behaviour, Delegation, Motivation, Job Satisfaction, Job Design.

Behaviour in Groups : Communication, Group Performance and Effectiveness, Brain storming, Group Dynamics.

Section – B

Leadership : Traits, Approach, Situational Approach, Functional Approach, Leadership Styles. **Management Control :** Meaning, Approaches, elements, Forms and Classification of Control Systems, Strategies of Control, Effective Management Control.

Management Information System

Organisational Development - Organisational Climate, Employee Commitment, Organisational Conflict, Views of Conflict, Sources of Conflict, Managing Conflict, Organisational Change and Its Management.

The Relation between Management Development and Organisational Effectiveness - Management Development, Management Education and Training.

BOOKS RECOMMENDED:-

1. Management and Organisational Behaviour

Business Organisation and Management

2. Organisational Behaviour

Principles of Management

3.

4.

- by Mullins, Laurie, J.
- by Keith Davis
- by Shukla, M.C.
- by Terry, G.R.
- NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section.