

S-19 June & 6 July 2012 AC after Circulars from Circular No.84 & onwards - 13 -

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY
CIRCULAR NO. ACAD / NP /S.Y. B.Tech. /Syllabi/87/2012

It is hereby notified for the information of all concerned that, the Academic Council at its meeting held on 06-07-2012 has accepted the following **syllabi** in all **Branches** of **S. Y. B.TECH.** under the Faculty of Engineering & Technology as appended herewith :-

Sr. No.	Revised Syllabi
[1]	Second Year B.Tech. [CIVIL ENGINEERING],
[2]	Second Year B.Tech. [MECHANICAL / PRODUCTION ENGINEERING],
[3]	Second Year B.Tech. [ELECTRONICS & TELECOMMUNICATION ENGINEERING],
[4]	Second Year B.Tech. [COMPUTER SCIENCE & ENGINEERING],
[5]	Second Year B.Tech. [AGRICULTURAL ENGINEERING],
[6]	Second Year B.Tech. [PLASTICS AND POLYMER ENGINEERING],
[7]	Second Year B.Tech. [INSTRUMENTATION & CONTROL ENGINEERING],

This is effective from the academic year 2012-2013 and onwards.

All concerned are requested to note the contents of this circular for their information and necessary action.

University Campus,
 Aurangabad-431 004.
 REF.No. ACAD/ NP/ S.Y.B.TECH./
 2012/19011-33
A.C.S.S. I.No.82

Date:- 31-07-2012.

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Director,
Board of College and
University Development.

Copy forwarded with compliments to :-

- 1] The Principals, affiliated concerned Colleges,
 Dr. Babasaheb Ambedkar Marathwada University.

Copy to :-

- 1] The Controller of Examinations,
- 2] The Superintendent, [Engineering Unit],
- 3] The Superintendent, [Eligibility Unit],
- 4] The Record Keeper,
 Dr. Babasaheb Ambedkar Marathwada University.

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**Dr BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY,
AURANGABAD**



Revised Syllabus of Second Year

B. TECH.

CIVIL

EFFECTIVE FROM - 2012-13 & ONWARDS

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

(Faculty of Engineering & Technology)

Syllabus structure of S. Y. B. Tech. (Civil Engineering)

Sub No.	SEMESTER-III	Contact Hrs / Week				Examination Scheme						
	Subject	L	T	P	Total	CT	TH	TA	P	Total	Credits	Duration of Theory Exam
BSH201	Engineering Mathematics-III	3	1	-	4	20	80	-	-	100	4	3 Hrs
CED202	Surveying-I	3	1	-	4	20	80	-	-	100	4	3 Hrs
CED203	Fluid Mechanics-I	3	1	-	4	20	80	-	-	100	4	3 Hrs
CED204	Strength of Material	3	1	-	4	20	80	-	-	100	4	3 Hrs
CED205	Building construction and drawing	3	1	-	4	20	80	-	-	100	4	3 Hrs
CED206	Concrete Technology-I	2	-	-	2	10	40	-	-	50	2	2 Hrs
CED221	Lab I (Surveying -I)	-	-	2	2	-	-	25	25	50	1	
CED222	Lab II (Fluid Mechanics-I)	-	-	2	2	-	-	25	25	50	1	
CED223	Lab III (Strength of Material)	-	-	2	2	-	-	25	25	50	1	
CED224	Lab IV (Computer lab)	-	-	2	2	-	-	50	-	50	1	
BSH225	Lab V (Development of skill II)	-	-	2	2	-	-	50	-	50	1	
	Total of semester-I	17	5	10	32	110	440	175	75	800	27	
Sub No.	SEMESTER-IV	Contact Hrs / Week				Examination Scheme						
	Subject	L	T	P	Total	CT	TH	TA	P	Total	Credits	Duration of Theory Exam
BSH251	Engineering Mathematics-IV	3	1	-	4	20	80	-	-	100	4	3 Hrs
CED252	Surveying-II	3	1	-	4	20	80	-	-	100	4	3 Hrs
CED253	Fluid Mechanics-II	3	1	-	4	20	80	-	-	100	4	3 Hrs
CED254	Building Planning and Design	3	1	-	4	20	80	-	-	100	4	3 Hrs
CED255	Theory of Structure-I	3	1	-	4	20	80	-	-	100	4	3 Hrs
CED256	Concrete Technology-II	2	-	-	2	10	40	-	-	50	2	2 Hrs
CED271	Lab VI (Surveying-II)	-	-	2	2	-	-	25	25	50	1	
CED272	Lab VII (Fluid Mechanics-II)	-	-	2	2	-	-	25	25	50	1	
CED273	Lab VIII (Building Planning and Design)	-	-	2	2	-	-	25	25	50	1	
CED274	Lab IX (Concrete Technology)	-	-	2	2	-	-	50	-	50	1	
CED275	Lab X Technical report Writing	-	-	2	2	-	-	50	-	50	1	
	Total	17	5	10	32	110	440	175	75	800	27	
	Grand Total of III & IV									1600	54	

L: Lecture hours per week T: Tutorial hours per week P: Practical hours per week CT: Class Test
 TH: University Theory Examination TA: Teachers Assessment P: Practical/Oral Examination

Verhose

Atunni
 Dr. H. H. Shinde

J. J. J. J.
HEAD OF DEPT.
 Department of Civil Engg.
 M.I.T. Aurangabad.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-III	
Code No.: BSH201 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits: 04	Title: Engineering Mathematics –III Class Test: 20 Marks Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 80
Objectives	The contents aims to develop the knowledge of the student in the direction of solving the practical problem in the engineering and technology related to differential equation, Fourier Transforms, Statistical techniques Vectors and Probability.
Unit-I	Linear Differential Equation: Solution of linear differential equation of order n with constant coefficients: The complementary function, Method of finding particular integral: Short method, General method, Method of variation of parameters Equations reducible to linear form: i) The Cauchy's linear equation. ii) The Legendre's linear equation. Simultaneous differential equations. Application of linear differential equations to: i). Mechanical system. ii). Electrical System iii). Beam and Shafts (12+3 Hrs) Tutorials: Additional Practice Problems on each type of Application
Unit-II	Vector Differentiation: Differentiation of vectors, Radial, Transverse, Normal And tangential components of velocity and acceleration, Scalar and vector point function , Gradient of scalar point function , Divergence and curl of vector point function , Second order differentiation operator , Irrotational and solenoid fields. (7+3 Hrs) Tutorials: Additional Practice Problems on Irrotational and solenoid fields.
Unit-III	Statistics: Measures of central tendency: Mean Median, Quartiles and Mode. Measures of dispersion: Quartile deviation, Mean deviation, Standard deviation, coefficient of variation, Moments, Skewness, Kurtosis. (3+2 Hrs) Tutorials: Additional Practice Problems on coefficient of variation, Moments
Unit-IV	Laplace Transform: Definition, Laplace Transform of elementary function and its table, Theorem and properties of Laplace Transform: First shifting theorem, Second Shifting Theorem, Multiplication by t^n Division by t , Change of scale property, Laplace Transform of integral, Laplace Transform of Derivative . Laplace Transform of some special functions: Bessel's function, Periodic function, Error Function. Heaviside Unit Step Function, Displaced Heaviside Unit Step Function Laplace Transform using Heaviside Unit function, Dirac delta function. Method to find inverse Laplace Transform: i. Use of Laplace Transform table ii. Use of Theorem and properties of Laplace iii. Use of partial fraction iv. Convolution theorem v. Use of development of Heaviside Unit Step Function Application of Laplace Transform to solve linear differential equation , Simultaneous differential

	equation. (13+2 Hrs) Tutorial: Additional Practice Problems on Solution of Linear Differential Equation, Simultaneous differential equation.
Unit-V	Fourier Transform: Fourier integral: Complex form of Fourier integral, sine and cosine integral, Fourier transform and inverse transform. D.U.I.S. rule (only statement), Fourier transform and inverse transform for even and odd function, Fourier sine and cosine transform and inverse transform. (7+3 Hrs) Tutorials: Additional Practice Problems Fourier sine and cosine transform
Unit-VI	Probability: Introduction, Probability Distribution: Binomial Distribution, Poisson Distribution, Normal Distribution (3+2 Hrs) Tutorials: Additional Practice Problems on each type of Distribution
Reference Books:	<ol style="list-style-type: none"> 1. A Text Book Of Applied Mathematics Volume-III BY P.N. Wartikar J.N.Wartikar, Pune Vidyaryhi Griha Prakashan, Ninth edition. 2. Advanced Engineering Mathematics BY H.K.Dass, S.Chand and Co.Ltd, Eighteenth edition. 3. Higher Engineering Mathematics BY Dr.B.S.Grewal, Khanna Publishers, 46th edition. 4. Higher Engineering Mathematics BY B.V.Ramana, Tata McGraw-Hill Publishing Co.Ltd., First edition. 5. Solution to Higher Engineering Mathematics Volume -III BY C.P.Gandhi

Section A: Includes Unit I, II and III; **Section B:** Includes Unit IV, V and VI.

Pattern of Question Paper:

The six/four units in the syllabus shall be divided in two equal parts i.e. 3 units respectively. Question paper shall be set having two sections A and B. Section A questions shall be set on first part and Section B questions on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Minimum ten questions
2. Five questions in each section
3. Question no 1 from section A and Question no 6 from section B be made compulsory and should cover complete syllabus of the respective section and should be set for ten marks each. The Question no.1 and 6 should be of objective nature.
4. Two questions of 15 marks each from remaining questions from each section A and B be asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-III	
Code No.: CED202 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits: 04	Title: Surveying - I Class Test: 20 Marks Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 80
Objectives	: A knowledge of surveying trains ability of engineers to visualize, think logically and pursue the engineer approach and therefore desirable as an integral part of engineering education and training, irrespective of the branch specialization.
Unit-I	: Introduction Basic definitions, objectives, divisions and importance of surveying to Engineers; Classification and principles of surveying, Overview of Land surveying; Ranging; Linear measurements accessories; testing, adjustment, methods, obstacles, precaution against error and mistake of chain and tape. Problems on chains and tape. (12 Hrs.)
Unit-II	: Chain surveying and Compass traversing : Basic definitions, Principles, selection of survey station, equipments for chain surveying and plotting with procedure. Compass traversing; Purpose, principle, types of compass, traversing methods, checks, plotting, sources and adjustment of errors; Problems on chain surveying and compass surveying. (10 Hrs.)
Unit-III	: Determination of elevation : Leveling – definitions, different types (dumpy, IOP & digital) and their salient parts, working principle, types of leveling operations : temporary and permanent adjustment , errors, corrections and mistakes . Problems on leveling operation and permanent adjustment, determination of stadia constant and distance by stadia methods. Contouring- definitions, characteristics, methods and applications. (08 Hrs.)
Unit-IV	: Mapping concept and Plane table surveying : Mapping concept – fundamentals, scales, sheet numbering, conventional symbols, plotting errors, map projection and coordinate system. Plane table surveying – Basic definitions, instruments, advantages and disadvantages, setting of instruments, methods, errors, precautions. (11 Hrs.)
Unit-V	: Theodolite traversing and Tachometry : Theodolite - Basic definitions and terms, different types (Transit and Digital) and their salient parts, temporary and permanent adjustments, measurement of horizontal and vertical angle, errors and mistakes in theodolite. Tachometry – Introduction, Basic definitions, methods, fundamental principles, stadia system -- fundamental, analytical lens, subtense bar method, error. (13 Hrs.)
Unit-VI	: Engineering Survey: General requirements and specification for engineering projects surveys, reconnaissance preliminary and location survey for highway, railway and canals, layout of culvert, canal, bridges and building Tunnel survey- correlation of underground and surface survey, shafts. (06 Hrs.)

Reference Books:	:	<ol style="list-style-type: none">1. A Text Book Of Applied Mathematics Volume-III BY P.N. Wartikar J.N.Wartikar, Pune Vidyaryhi Griha Prakashan, Ninth edition.2. Advanced Engineering Mathematics BY H.K.Dass, S.Chand and Co.Ltd, Eighteenth edition.3. Higher Engineering Mathematics BY Dr.B.S.Grewal, Khanna Publishers, 46th edition.4. Higher Engineering Mathematics BY B.V.Ramana, Tata McGraw-Hill Publishing Co.Ltd., First edition.5. Solution to Higher Engineering Mathematics Volume -III BY C.P.Gandhi
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Section A-Unit 1,2,3

Section B-Unit:4,5,6

Pattern of Question Paper:-

The six/four units in syllabus shall be divide in two equal parts i.e.3 units respectively. Question paper shall be set having two sections A & B. Section A question shall be on first part & section question on second part. Question paper should cover entire syllabus.

For 80 marks paper:-

1. Minimum ten questions.
2. Five question in each section.
3. Question no1 from section A & Question no 6 from section B made compulsory & should cover complete syllabus of the respective section& should be set for ten marks each. The question no.1 & 6 should be of objective nature.
4. Two question of 15 marks from each remaining question, from each section A & B asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-III	
Code No.: CED203 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits: 04	Title: Fluid Mechanics -I Class Test: 20 Marks Theory Examination (Duration): 03 Hrs. Theory Examination (Marks): 80
Objectives	The subject of Fluid Mechanics is an interdisciplinary subject. For a Civil Engineer it is mostly related with water. After the study of this subject, the student should be able to apply the concepts to civil engineering.
Unit-I	Introduction: Scope, Relevance of Fluid Mechanics, Properties of Fluids, Viscosity, Rheology, Ideal Real Fluids, Newtonian and Non Newtonian fluids, Classification of fluids, Simple Numerical b) Dimensions of physical quantities, dimensional homogeneity, dimensional analysis using Buckingham's π theorem method, geometric kinematic and dynamic similarity, important dimensionless parameters, Reynold's No., Froude No. and their significance. <p style="text-align: right;">(12Hrs)</p>
Unit-II	Fluid Statics: a) The basic equation of hydrostatics, concept of pressure head, measurement of pressure (absolute, gauge), application of the basic equation of hydrostatics, simple manometers, differential manometers and precision manometers. Introduction to pressure transducers. Centre of pressure, total pressure on plane and curved surfaces, pressure diagrams, practical applications. b) Principle of floatation and buoyancy, equilibrium of floating bodies, stability of floating bodies. Metacentre and metacentric height and its determination (experimental & analytical). Relative Equilibrium, uniform linear acceleration, rotation about a vertical axis. <p style="text-align: right;">(12Hrs)</p>
Unit-III	Fluid Kinematics: Fluid in motion, Schools of thoughts of fluid motion, classification of fluid flow, steady, unsteady, uniform, non uniform, laminar, turbulent, rotational, irrotational flows, Flow net, Applications of flow net, Velocity Potential, Stream Function. Velocity, acceleration, free and forced vortex flow, radial flow <p style="text-align: right;">(8 Hrs)</p>
Unit-IV	Fluid Dynamics: Forces acting on fluids in motion, Euler's equation of motion, Cartesian co-ordinates along streamline. Bernoulli's equation, Momentum equation, Kinetic and Momentum correction factors <p style="text-align: right;">(12Hrs)</p>
Unit-V	Measurement of Flow: Various instruments used for measuring flow like Venturimeter, Pitot tube. Orifices and Mouthpieces, Notches and Weirs <p style="text-align: right;">(8 Hrs)</p>
Unit-VI	Boundary Layer Theory: Concept of Boundary Layer, Thickness of Boundary Layer, types of boundary layer, separation of boundary layer. Forces on immersed bodies in flowing fluids, General Equations, lift, drag, aerofoil, Magnus Effect <p style="text-align: right;">(8 Hrs)</p>

Reference Books:	Sr.No.	Title	Author	Publication	Edition
	1	Hydraulics and Fluid Mechanics	Modi & Seth	Standard Book House	14 th
	2	Fluid Mechanics and Hydraulic Machines	R.K.Bansal	Laxmi Publications	4 th
	3	Fluid Mechanics and Hydraulic Machines	S. Ramamrutham	Dhanpatrai Publications	8 th
	4	Fluid Mechanics	V.L. Streeter & E.B. Wylie	TMH	3 rd

Section A-Unit I, II, III

Section B-Unit IV, V, VI

Pattern of Question Paper:-

The six/four units in syllabus shall be divide in two equal parts i.e.3 units respectively. Question paper shall be set having two sections A & B. Section A question shall be on first part & section question on second part. Question paper should cover entire syllabus.

For 80 marks paper:-

1. Minimum ten questions.
2. Five question in each section.
3. Question no1 from section A & Question no 6 from section B made compulsory & should cover complete syllabus of the respective section& should be set for ten marks each. The question no.1 & 6 should be of objective nature.
4. Two question of 15 marks from each remaining question, from each section A & B asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-III	
Code No.: CED204 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits:04	Title: Strength of Materials Class Test: 20 Marks Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 80
Objectives	The purpose of the subject of Strength of Materials is to make the students aware of the limiting values of stresses, safe carrying stresses and various mechanical properties of materials
Unit-I	Shear Force and Bending Moment: Concept, relation between load intensity, shear and bending moments and BM diagrams for various types of loadings like udl, uvl, bracket loads, point loads, moments etc. (8 Hr)
Unit-II	Simple Stresses and strains: Simple stress and strain due to axial tension and compression, shear, temperature stresses for simple and composite sections, elongation of uniform and tapering sections, lateral strains and linear strains, elastic constants. Strain Energy: Strain energy due to gradually applied loads, suddenly applied loads and impact loads. (16 Hr)
Unit-III	Principal stresses and strains: Concept, stress on oblique plane, two dimensional stress system, planes of maximum shear stress, Mohr's circle diagram for principal stress. (6Hr).
Unit-IV	Stresses in Beam : Theory of simple bending: Pure bending, assumptions made in theory of simple bending, neutral axis, moment of resistance, section modulus, bending stress distribution diagrams for various end conditions and loading conditions of beams, flitched beams. Shear stress distribution : Shear stresses in beams, complimentary shear, various end conditions and loading conditions of beams Direct and bending stresses: Bending combined with axial loads, eccentrically loaded short struts, chimneys. (18 Hr)
Unit-V	Theory of torsion: Circular shafts subjected to torsion, torsional stresses, power transmission, torsion combined with bending and axial forces. (6 Hr)
Unit-VI	Thin cylindrical and spherical shells: Thin pressure vessels, circumferential and longitudinal stresses, cylindrical and spherical objects subjected to internal fluid pressure, volumetric strains. (6 Hr)

Reference Books:	Sr.No.	Title	Author	Publication	Edition
	1	Strength of Materials	S.Ramamrutham	Dhanpatrai and Sons	14 th
	2	Strength of Materials	R.K.Bansal	Laxmi	4 th
	3	Strength of Materials	R.S.Khurmi	S.Chand	10 th
	4	Mechanics of Structure Vol-I	Junnarkar	Charotar	4 th

Pattern of Question Paper:-

The six/four units in syllabus shall be divide in two equal parts i.e.3 units respectively. Question paper shall be set having two sections A & B. Section A question shall be on first part & section question on second part. Question paper should cover entire syllabus.

For 80 marks paper:-

1. Minimum ten questions.
2. Five question in each section.
3. Question no1 from section A & Question no 6 from section B made compulsory & should cover complete syllabus of the respective section& should be set for ten marks each. The question no.1 & 6 should be of objective nature.
4. Two question of 15 marks from each remaining question, from each section A & B asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-III	
Code No.: CED205 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits: 04	Title: Building Construction & Drawing Class Test: 20Marks Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 80
Objectives	The student should be able to conceive the civil engineering, aspects of construction of various buildings and also should make their self capable of executing various construction activities.
Unit-I	Substructure:- Functional requirements, Bearing capacity of soil and rock, necessity and concept of site investigation, setting out and layout of foundation plan, Excavation & Timbering of excavation trenches, Foundation, its function & types – shallow and deep and their suitability, Damp proof course, basement construction, plinth filling and soling. <div style="text-align: right;">(8 Hrs)</div>
Unit-II	Superstructure I Framed, Load bearing, Composite structures. A) Stone & Stone masonry:- Stones – Requirements of good building stones, IS specification and field tests on stones ; Stone masonry – principal terms, Types of stone masonry, merits & demerits, procedure for UCR and CR masonry, mortar preparation, types of mortar, Pointing –Purpose and types. B) Brick & Block Masonry:- Characteristics of good building bricks. IS specifications and test; Classification of bricks- silica, refractory, fire etc; Brick work – terms, types of bonds – English, Flemish, Stretcher, Header; Construction procedure, supervision, Openings in walls, mortar preparation; Block masonry –Hollow, solid, cavity wall construction; Partition wall <div style="text-align: right;">(12 Hrs)</div>
Unit-III	Superstructure II A) Doors & Windows:- Functional requirements, Material used for door & window, Types of door & window, fixtures & fastening B) Arches & Lintels:- various terms in arches, types of arches, method of arch construction, Types & necessity of lintels, chajja or weather shed <div style="text-align: right;">(08 Hrs)</div>
Unit-IV	Superstructure III A) Flooring :- functional requirement, types of flooring- ground floors, upper floors, construction details of concrete, tile, & stone flooring B) Roofing:- Types of roofs, roofing materials, Flat roof & pitched roof C) Protective coatings:- Plastering types and application, Painting and varnishing- types and application; White washing, distempering, oil paints; Wall cladding – materials, methods of fixing, wall papering and glazing work <div style="text-align: right;">(10 Hrs)</div>

Unit-V	: A) Vertical Circulation – Stairs, Technical terms, Requirement of good stair, Dimensions of Step, Classification of stairs, Details of ramp, lift & escalators B) Shoring, Underpinning and scaffolding C) Damp proofing - Sources, causes of dampness in buildings, ill effects of dampness, Methods of damp proofing D) Water proofing – Causes and effects of water leakages, Methods of water proofing, Materials used for waterproofing E) Termite proofing – Types of termites, Anti termite treatment, Methods <p style="text-align: right;">(12 Hrs)</p>																														
Unit-VI	: A) Fire protection – Fire hazards, Fire load grading of structural Elements, grading of building, Characteristic of fire proofing material, general fire safety requirements of buildings, Thermal insulation, Methods of thermal insulation, IS specification B) Acoustics and sound insulation – Characteristic and behavior of Sound, Reflection and reverberation of sound, Absorption of sound, Acoustical defects, IS specification, Acoustical design of halls C) Ventilation and air conditioning – System of ventilation, essential of comfort air conditioning and system of air conditioning. <p style="text-align: right;">(10 Hrs)</p>																														
Reference Books:	: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="378 842 451 898">Sr. No.</th> <th data-bbox="451 842 751 898">Title</th> <th data-bbox="751 842 922 898">Author</th> <th data-bbox="922 842 1222 898">Publication</th> <th data-bbox="1222 842 1464 898">Edition</th> </tr> </thead> <tbody> <tr> <td data-bbox="378 898 451 930">1</td> <td data-bbox="451 898 751 930">Building construction</td> <td data-bbox="751 898 922 930">B.C.Pannia</td> <td data-bbox="922 898 1222 930">Laxmi</td> <td data-bbox="1222 898 1464 930">5th</td> </tr> <tr> <td data-bbox="378 930 451 961">2</td> <td data-bbox="451 930 751 961">Building Construction</td> <td data-bbox="751 930 922 961">Sushil Kumar</td> <td data-bbox="922 930 1222 961">Khanna publishers</td> <td data-bbox="1222 930 1464 961">8th</td> </tr> <tr> <td data-bbox="378 961 451 1024">3</td> <td data-bbox="451 961 751 1024">Building Construction</td> <td data-bbox="751 961 922 1024">Bindra Arrora</td> <td data-bbox="922 961 1222 1024">Dhanpatrai & Sons</td> <td data-bbox="1222 961 1464 1024">10th</td> </tr> <tr> <td data-bbox="378 1024 451 1119">4</td> <td data-bbox="451 1024 751 1119">Building Construction (Vol. I to Vol.V)</td> <td data-bbox="751 1024 922 1119">W.B.McKay</td> <td data-bbox="922 1024 1222 1119">Orient Longmann Ltd.</td> <td data-bbox="1222 1024 1464 1119">2nd</td> </tr> <tr> <td data-bbox="378 1119 451 1176">5</td> <td data-bbox="451 1119 751 1176">National building code of India SP1 ISI</td> <td data-bbox="751 1119 922 1176"></td> <td data-bbox="922 1119 1222 1176"></td> <td data-bbox="1222 1119 1464 1176"></td> </tr> </tbody> </table>	Sr. No.	Title	Author	Publication	Edition	1	Building construction	B.C.Pannia	Laxmi	5 th	2	Building Construction	Sushil Kumar	Khanna publishers	8 th	3	Building Construction	Bindra Arrora	Dhanpatrai & Sons	10 th	4	Building Construction (Vol. I to Vol.V)	W.B.McKay	Orient Longmann Ltd.	2 nd	5	National building code of India SP1 ISI			
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5	National building code of India SP1 ISI																														

Section A-Unit I, II, III

Section B-Unit IV, V, VI

Pattern of Question Paper:-

The six/four units in syllabus shall be divide in two equal parts i.e.3 units respectively. Question paper shall be set having two sections A & B. Section A question shall be on first part & section question on second part. Question paper should cover entire syllabus.

For 80 marks paper:-

1. Minimum ten questions.
2. Five question in each section.
3. Question no1 from section A & Question no 6 from section B made compulsory & should cover complete syllabus of the respective section& should be set for ten marks each. The question no.1 & 6 should be of objective nature.
4. Two question of 15 marks each from remaining question from each section A & B asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-III	
Code No.: CED206 Teaching Scheme: Theory: 02Hrs/week Credits:02	Title: Concrete Technology I Class Test: 10 Marks Theory Examination (Duration): 02 Hrs Theory Examination (Marks): 40
Objectives	Concrete is one of the most commonly used building materials next to water. Objective of this subject is to make the students aware of various properties of concrete and its constituent materials as well as to have knowledge of good concrete making techniques.
Unit-I	Constituent materials and their properties: a) Cement- general, chemical composition, role of each ingredient, hydration of cement, bogues compounds, manufacturing process, physical and chemical tests, procedure, types of cement. (07Hrs)
Unit-II	b) Fine Aggregate - Classification, Particle size analysis, Properties, Fineness modulus, Testing of fine aggregate, Standard Specification. (03Hrs)
Unit-III	c) Coarse Aggregate - Classification, Particle size analysis, Properties, Fineness modulus, Testing of coarse aggregate, Standard Specification. d) Water – quality, use of sea water (05Hrs).
Unit-IV	Fresh Concrete: a) Workability: Concept, properties of fresh concrete, Workability- concept, factors affecting on workability, Methods of measurement – slump test, Compaction factor test, Vee – Bee consist meter, flow table test, Segregation and bleeding. b) Batching :concept Methods of batching. (05 Hrs)
Unit-V	c) Mixing: methods of mixing, transportation of concrete, methods of transportation. d) Compaction : necessity, methods of Compaction, types of vibrators and their principles. e) Curing of concrete: necessity, Methods of curing. (02 Hrs)
Unit-VI	Hardened concrete: a) Strength of concrete: different grades of concrete, factors affecting on strength of concrete, gain of with age, compressive, tensile, shear and bond strength of concrete. b) Elasticity, shrinkage, creep: elastic properties of concrete, relation between modulus of elasticity & strength, factors affecting on modulus of elasticity, Measurement of creep, factors affecting on creep & shrinkage (08 Hrs)

Reference Books:	Sr.No.	Title	Author	Publication	Edition
	1	Concrete Technology	M. S. Shetty	S. Chand	2006
	2	Concrete Technology	M. L. Gambhir	Tata-Mc Graw Hill Book, Inc	2 nd
	4	Properties of Concrete	A. M. Navelle	Pearson Education Asia	5 th
	5	All IS Codes practices related to Cement and Concrete		IS Codes	Latest

Section A-Unit I, II, III

Section B-Unit IV, V, VI

Pattern of Question Paper:-

The six/four units in syllabus shall be divide in two equal parts i.e.3 units respectively. Question paper shall be set having two sections A & B. Section A question shall be on first part & section question on second part. Question paper should cover entire syllabus.

For 40 marks paper:-

1. Minimum Eight questions.
2. Four question in each section.
3. Question no1 from section A & Question no5 from section B made compulsory & should cover complete syllabus of the respective section& should be set for six marks each. The question no.1 & 5 should be of objective nature.
4. Two question of 07 marks each from remaining question, from each section A & B asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-III					
Code No.: CED 221		Title: Lab I Surveying- I			
Teaching Scheme :		Teachers Assessment: 25 Marks			
Practical/Term work: 02Hrs/week		Practical/Oral Examination : 25 Marks			
Credits: 01					
Objectives	:	The objective of this subject is student should be able to various types of surveys related to civil Engineering's.			
List of Experiments	:	Minimum Eight survey required 1. Chain and compass survey. 2. Measuring bearing of traverse lines, calculation of included angles and checks. 3. Study of dumpy level and reduction of levels. 4. Profile, Fly, differential, and check leveling. 5. Study and use of plane table survey by all methods. 6. Measurement of horizontal and vertical angles by simple methods. 7. Measurement of direct, deflection angle and magnetic bearing with theodolite. 8. Study tacheometer and determination of tacheometer constant. 9. Determination of horizontal distance and reduced level of point by tacheometric observation with horizontal and inclined line of sight of vertical staff. 10. Study and use of substance bar.			
Projects	:	Minimum four survey for performance. 1. Chain and compass survey. 2. Block contouring. 3. Plane table traversing. 4. Road profile. 5. Theodolite traversing			
Reference Books:	:	Sr. No.	Title	Author	Publicat on Edition
		1	Surveying vol. I	S.K. Duggal	Tata McGraw Hill 3 rd
		2	Surveying vol. I	Dr. B.C. Punmia	Laxmi 5 th
		3	Surveying vol. I	Kulkarni, Kanetkar	PVG Pune 17 th
		4	Plane Surveying	David Clark	Tata McGraw Hill 3 rd
		5	Surveying	Norman Thomas	Tata McGraw Hill 2 nd

The assessment of term work shall be done on the basis of the following:

- Continuous Assessment
- Performing the experiment given in Laboratory

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S.Y. B.Tech. (Civil Engineering) Semester III						
Code No: CED222 Teaching Scheme: Practical / Term work: 2Hrs / week Credits: 1		Title: Lab II Fluid Mechanics –I Teachers Assessment: 25 Marks Practical/Oral Examination: 25 Marks				
Objective	:	To experiment basic properties of fluid and kinematic properties of fluid. It will develop practical approach of students.				
List of Experiments	:	1. Study of pressure measuring devices 2. Determination of metacentric height 3. Verification of Bernoulli's equation. 4. Calibration of Venturimeter. 5. Determination of coefficient of discharge for an orifice. 6. Determination of coefficient of discharge for a mouthpiece. 7. Calibration of rectangular notch. 8. Calibration of triangular notch. 9. Study of electrical analogy method for plotting of flow nets.				
References book	:	Sr.No.	Title	Author	Publication	Edition
		1	Lab. Work in Hydraulic engineering	C.L. Asawa	New Age International	1st reprint 2011
		2	Fluid Mechanics	A.K. Upadhyay	S.K. Katar'ya & sons	1st

The assessment of term work shall be done on the basis of the following:

- Continuous Assessment
- Performing the experiment given in Laboratory

<p align="center">Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty Of Engineering & Technology) Syllabus of S.Y. B.Tech. (Civil Engineering) Semester III</p>						
<p>Code No: CED223 Teaching Scheme: Practical / Term work: 2Hrs / week Credits: 1</p>		<p>Title: Lab III Strength of Materials Teachers Assessment: 25 Marks Practical/Oral Examination: 25 Marks</p>				
Objective	:	To experiment strengths of materials for construction i.e. steel, timber, tiles, etc. It will develop practical approach of students.				
List of Experiments	:	<p>Practical/Drawing/Design Term work: (Any six)</p> <ol style="list-style-type: none"> 1. Tension test on the ductile materials like mild steel and TOR steel 2. Flexural test on timber beam 3. Shear test on metals. 4. Testing on bricks-water absorption and compression. 5. Transverse test on flooring tiles. 6. Abrasion test on flooring tiles. 7. Impact tests on metals-Ized and Charpy. 8. Torsion test on steel. 9. Hardness test. <p>Assignments: Numerical examples based on</p> <ol style="list-style-type: none"> 1. Theory of simple bending 2. Deflection of beams 3. SFD and BMD. 				
References book	:	Sr.No.	Title	Author	Publication	Edition
		1	Strength of materials	R.S.Khurmi		
		2	Strength of materials	Rajput		
		3	Strength of materials	Sunil Deo	Nirali Publication, Pune	
		4	Strength of materials	Ramamrutham		

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S.Y. B.Tech. (Civil Engineering) Semester III																	
Code No: CED224 Teaching Scheme: Practical / Term work: 2Hrs / week Credits: 1	Title: Lab IV Computer Lab Teacher's Assessment: 50 Marks																
Objective	: To provide the student with an appreciation of the capabilities and limitations of the Auto Cad program. Course topics include basic Auto Cad commands and functions as well as practical applications.																
List of Experiment	: <p>A) Study of Auto-CAD</p> <ol style="list-style-type: none"> 1. History & Features of AutoCAD 2. Toolbars such as draw, modify, dimension, solids, surfaces, preferences, render, external database, select object, object snap, UCS, object properties, standard toolbar, Inquiry, Insert, Viewport, Zoom 3. Precision Drawing & Drawing Aids 4. Geometric Shapes 5. Basic Printing 6. Editing Tools 7. Architectural Views & Drafting Views 8. 3D modeling with AutoCAD (Surfaces, Solids) 9. 3D Modeling with Sketch Up 10. Annotating in AutoCAD with Text & Hatching 11. Layers 12. Templates & Design Center 13. Advanced plotting (Layouts, Viewports), Office Standards 14. Dimensioning 15. Internet and collaboration 16. Blocks, Drafting symbols, Attributes, Extracting data <p>B) Application of Auto-CAD</p> <ol style="list-style-type: none"> 17. Preparation of 2D AutoCAD drawing from building drawing like, types of foundation, types of bond in brick masonry, section through wall, steel roofing. 18. Preparation of ANY one of the working drawings of Project prepared in the Term work of subject Surveying I. 19. Assignment to draw at least two sketches based on 2D application & 3D application <p>C) Introduction to 3D max.</p>																
References book	: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">Sr. No.</th> <th style="width: 35%;">Title</th> <th style="width: 20%;">Author</th> <th style="width: 40%;">Publication</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>AutoCAD</td> <td>David Frey</td> <td>BPB Sybex Publications</td> </tr> <tr> <td>2</td> <td>Mastering AutoCAD 2012 and AutoCAD LT 2012</td> <td>George Omura</td> <td>Wiley Publishing, Inc</td> </tr> <tr> <td>3</td> <td>Mastering Auto desk 3D max Design 2011</td> <td>Mark Gerhard & Jeffery M. Harper</td> <td>Wiley Publishing, Inc</td> </tr> </tbody> </table>	Sr. No.	Title	Author	Publication	1	AutoCAD	David Frey	BPB Sybex Publications	2	Mastering AutoCAD 2012 and AutoCAD LT 2012	George Omura	Wiley Publishing, Inc	3	Mastering Auto desk 3D max Design 2011	Mark Gerhard & Jeffery M. Harper	Wiley Publishing, Inc
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2	Mastering AutoCAD 2012 and AutoCAD LT 2012	George Omura	Wiley Publishing, Inc														
3	Mastering Auto desk 3D max Design 2011	Mark Gerhard & Jeffery M. Harper	Wiley Publishing, Inc														

	4	AutoCAD Help menu users guide	
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Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering & Technology)
Syllabus of S. Y. B. Tech. (Civil Engineering) Semester- IV

Code No.: BSH225
Teaching Scheme:
Practical: 02 Hour/ week
Credits:01

Title: Lab V: Development of skill II
Teachers Assessment :50 marks

Course Objectives	: Students should adequately equip to face the highly competitive and very demanding corporate world of today. Soft skills encompass personal, social, communication, and self-management behaviors. They cover a wide spectrum of abilities and traits: being self-aware, trustworthiness, conscientiousness, adaptability, critical thinking, attitude, initiative, empathy, confidence, integrity, self-control, organizational awareness.
Unit-I	Soft skills and Functional English. Basic of soft skills Dimensions of soft skills, Misconception of soft skills. The changing business environment and its impact on soft skills. Presentation: Preparation, delivery, etc. Interview technique, Group Discussion and Debate 5 hrs
Unit-II	Nonverbal Communication. And Corporate etiquettes. Body Language and its different aspects, Voice dynamics and voice modulation, Professional Appearance, Clothing etiquettes and Corporate dressing. Dining table etiquettes, etc. 06 hrs
Unit-III	Business Correspondence Official Drafting: Letter writing, Inquiry Request, Complain, Sales, Follow-up, etc. Office documents like circulars, notices, minutes, agenda and memos. Report Writings: Types of reports. Data Interpretation: Comprehension of data, Analyses and Interpretations of data 06 hrs
Unit-IV	E-communication Email communication and Email etiquettes, Video Conferencing, and other e-communication 04 hrs
Unit-V	Team work and team building The elements of teamwork. The changing nature of team. The basics of team intelligence, Diversity awareness, Gender issues, what is an effective team? Essential building blocks of essential team. 04hrs
Unit-VI	Problem-Solving and self confidence Collaborative problem-solving, Benefits of collaboration, Effective Conflict Communication, Conflict resolution styles, Defusing conflict, Evaluating the conflict, How to build confidence. How confident are you? Thinking like a confident person. 5Hrs

List of Reference Books	<ol style="list-style-type: none">1. Gopaldaswamy Ramesh, Mahadevan Ramesh, "The Ace of soft skills" Pearson publications.2. Jerry Weissman, "Presenting to Win", Prentice Hall publications.3. William Sanborn Pfeiffer, T.V.S. Padmaja, "Technical communication" Pearson publications.4. "Presentation Skills for Managers" McGraw Hills brief case books.5. Personality Development and soft skills, Oxford University Press6. Technical Report Writing Today: Daniel G. Riordan, Steven E. Pauley7. Technical Writing: B. N. Basu8. David Lawrence Preston, "355 steps of self confidence", Published by How To Books Ltd.
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The term work shall be done on the ten assignments based on the topics mentioned above. And oral examination would be conducted internally on the syllabus mentioned.

The assessment of term work shall be done on the basis of the following.

- Continuous assessment
- Performing the experiments in the laboratory
- Oral examination conducted on the syllabus and term work mentioned above.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester- IV	
Code No.: BSH251 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits: 04	Title: Engineering Mathematics -IV Class Test: 20 Marks Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 30
Objectives	: The contents aims to develop the knowledge of the student in the direction of solving the practical problem in the engineering and technology related to Function of complex variable, transforms, Numerical Methods, Vectors.
Unit-I	: Function of complex variable : Introduction , Analytic function ,Cauchy-Riemann equation in Cartesian and polar coordinates ,Harmonic function, orthogonal system , Integration in complex plane: Line integral, Contour integral, Cauchy's integral theorem , Cauchy's integral formula, Extension of Cauchy's theorem on multiply connected region Taylor's and Laurent's series(without proof), Singularities, Residues, Cauchy's residue theorem. (12+3 Hrs) Tutorials: Additional Practice Problems on Singularities, Residues, Cauchy's residue theorem.
Unit-II	: Application of Complex Variable: Evaluation of real integrals: Integration along unit circle and along the upper half semi circle, Conformal Transformation, Bilinear transformation. (3+2 Hrs) Tutorials: Additional Practice Problems on Bilinear transformation and Integration.
Unit-III	: Vector Integration: Line integral, Surface integral, Gauss divergent theorem, Stoke's theorem, Green's theorem, Curvilinear coordinates: Cylindrical and Spherical polar coordinates. (7+3 Hrs) Tutorials: Additional Practice Problems Gauss divergent theorem, Stoke's theorem, Green's theorem.
Unit-IV	: Application of partial differential equation : Solution of partial differential equation by method of separation variable Application to i. Vibration of a string (The wave equation), ii. One dimensional heat flow (The diffusion equation) iii. Two dimensional heat flow.(The Laplace equation) (8+2 Hrs) Tutorials: Additional Practice Problems on Wave, Heat and Laplace equation
Unit-V	: Z- transform : Definition, Z-transform of elementary function , properties of Z-transform , Inverse Z-transform :Partial fraction method, inversion integral method(Residue method),Solution of Difference equation by using Z-transform. (6+2 Hrs) Tutorials: Additional Practice Problems on Solution of Difference equation by using Z-transform
Unit-VI	: Numerical Method: Solution of algebraic and transcendental equation, Newton Raphson method, Lagrange's interpolation, Solution of linear simultaneous equation; by Gauss elimination method, The Gauss-seidal method, Solution of ordinary differential equations: Taylor series method, Fourth order Runge-Kutta method. (9+3 Hrs) Tutorials: Additional Practice Problems on Solution of ordinary differential equations: Taylor series method, Fourth order Runge-Kutta method.

Reference Books:	:	<ol style="list-style-type: none"> 1. A Text Book of Applied Mathematics Volume-II –by P.N. Wartikar and J.N.Wartikar. 2. A Text Book Of Applied Mathematics Volume-III-by P.N. Wartikar and J.N.Wartikar. 3. Advanced Engineering Mathematics-by H.K.Dass. 4. Higher Engineering Mathematics- by Khanna Publishers. 5. Higher Engineering Mathematics- by B.V.Ramana.
Additional Reference Books	:	<ol style="list-style-type: none"> 1. Solution to Higher Engineering Mathematics Volume –III -by C.P.Gandhi

Section A: Includes Unit I, II and III; **Section B:** Includes Unit IV, V and VI.

Pattern of Question Paper:

The six/four units in the syllabus shall be divided in two equal parts i.e. 3 units respectively. Question paper shall be set having two sections A and B. Section A questions shall be set on first part and Section B questions on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Minimum ten questions
2. Five questions in each section
3. Question no 1 from section A and Question no 6 from section B be made compulsory and should cover complete syllabus of the respective section and should be set for ten marks each. The Question no.1 and 6 should be of objective nature.
4. Two questions of 15 marks each from remaining questions from each section A and B be asked to solve.

Dr.Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-IV	
Code No.: CED 252 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits: 04	Title: Surveying - II Class Test: 20 Marks Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 80
Objectives	: A knowledge of surveying trains ability of engineers to visualize, think logically and pursue the engineer approach and therefore desirable as an integral part of engineering education and training, irrespective of the branch specialization.
Unit-I	: Curves Basic definitions, different types and their characteristic, geometry, setting out, field problem on circular curve, transition curve, combined curve and vertical curve. (15Hrs)
Unit-II	: Trigonometrical leveling Trigonometric leveling, error and mistakes in leveling, error propagation. (10Hrs)
Unit-III	: Modern surveying Equipment Modern surveying electronic equipments: Digital theodolites, EDM, Total station, Principle and working applications, laser in surveying, Nautical extent (3 Hrs)
Unit-IV	: Photogrammetry Photogrammetry terms; applications, types of photographs, perspective geometry of near vertical and tilted photographs, height and tilt distortions, flight planning, stereoscopy, base lining, floating marks, parallax equation and stereo measurement for height determination, analogue analytical and digital method, photogrammetric instruments. (10 Hrs)
Unit-V	: Remote sensing Introduction- remote sensing system- data acquisition and processing, applications, multi concept in remote sensing, physical basis of remote sensing – Electro- magnetic radiation (EMR) – nature, nomenclature and radiation laws, interaction in atmosphere – nature, its effects in various wave length regions, atmospheric window, Interaction at ground surface – soil and rocks, vegetation, water, etc. Geometric basis of interaction, platforms and sensors – Terrestrial, Aerial and space platforms,, orbital characteristic of space platform, sun- and geo- synchronous, sensor system - radiometers, optomechanical and space boom sensor, Resolution – spectral, spatial, radiometric and temporal, data products from various air and space borne sensor – aerial photographs, LIDAR, Landsat, SPOT, IRS, ERS, IKONOS, etc. image interpretation- element of interpretation, manual and digital interpretation, field verification. (17 Hrs)
Unit-VI	: Geographical information system Components of GIS – Data acquisition, spatial and attribute data, pre- processing, storage and management, Data structure raster and vector data, GIS analysis functions, error and corrections, data presentation and generation of thematic maps, application. (5 Hrs)
Reference Books:	: <ol style="list-style-type: none"> 1. A Text Book Of Applied Mathematics Volume-III BY P.N. Wartikar J.N.Wartikar, Pune Vidyaryhi Griha Prakashan, Ninth edition. 2. Advanced Engineering Mathematics BY H.K.Dass, S.Chand and Co.Ltd, Eighteenth edition. 3. Higher Engineering Mathematics BY Dr.B.S.Grewal, Khanna Publishers, 46th edition. 4. Higher Engineering Mathematics BY B.V.Ramana, Tata McGraw-Hi.I Publishing Co.Ltd., First edition. 5. Solution to Higher Engineering Mathematics Volume –III BY C.P.Gandhi

Section A-Unit 1,2,3

Section B-Unit 4,5,6

Pattern of Question Paper:-

The six/four units in syllabus shall be divide in two equal parts i.e.3 units respectively. Question paper shall be set having two sections A & B. Section A question shall be on first part & section question on second part. Question paper should cover entire syllabus.

For 80 marks paper:-

1. Minimum ten questions.
2. Five question in each section.
3. Question no1 from section A & Question no 6 from section B made compulsory & should cover complete syllabus of the respective section& should be set for ten marks each. The question no.1 & 6 should be of objective nature.
4. Two question of 15 marks from each remaining question, from each section A & B asked to solve.

<p style="text-align: center;">Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-IV</p>	
<p>Code No.: CED253 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits:04</p>	<p>Title: Fluid Mechanics -II Class Test: 20 Marks Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 80</p>
Objectives	: The objective of this part of the subject is to widen the horizon of the subject already learnt as a basic course in the first part of it. It is also intended that the student learns the applications of the subject in form of various hydraulic machines.
Unit-I	: Viscous Flow: Relation between shear stress and pressure gradient, steady laminar flow through circular pipes, Hagen Poissuille's equation, Laminar flow through inclined pipes. <p style="text-align: right;">(4Hrs)</p>
Unit-II	: Turbulent flow & Flow through Pipes a) Characteristics of flow, instantaneous velocity, temporal mean velocity, scale of turbulence and intensity of turbulence, Prandtl's mixing length theory, velocity distribution in turbulent flow. b) Flow through pipes: energy losses in pipe flow(major losses and minor losses), Darcy Weisbach Equation, variation of friction factor for laminar flow and for turbulent flow, smooth and rough, Nikuradse's experiments on artificially roughened pipes, friction factor for commercial pipes, Moody's diagram, explicit equation for friction factor. flow through pipes such as simple, compound, series parallel, branched pipes, siphon, dupits equations <p style="text-align: right;">(13Hrs)</p>
Unit-III	: Flow through open channels: Classification of channels, Steady and unsteady flow in open channels, uniform and nonuniform flows, laminar and turbulent flows, gradually and rapidly varied flows, Velocity distribution in open channels. Geometric shapes of channel sections and their expressions, economic channel sections, basic equations of fluid flow i.e. continuity equation, momentum equation, Bernoulli's equation applied to channel flow, Chezy's and Manning's equations, specific energy diagrams, alternate depths, Froude number, specific force, critical flow. Non uniform flow in channels, gradually varied flow,(GVF),slope profiles, computation of GVF by direct step method, measurement of flow in channels, standing wave flume, venturiflume, rapidly varied flow, hydraulic jump, energy dissipation. <p style="text-align: right;">(13Hrs)</p>
Unit-IV	: Impact of jets Dynamics of force, momentum, impulse momentum equation, jet force on stationary and moving vanes, jet propulsion, forces on reduced bends, Turbines Classification of turbines, impulse and reaction turbines, components and their functions, efficiency and characteristics of turbines, specific speed unit speed, unit power, unit discharge, selection criterion for turbines, cavitation, draft tube, runaway speed, surge tank, <p style="text-align: right;">(13Hrs)</p>

Unit-V	<p>a) Centrifugal Pumps Components, types, construction, principle of working, efficiencies, characteristic and specific speed under various operation conditions, priming of pumps, self priming, cavitations, multistage centrifugal pumps</p> <p>b) Reciprocating Pumps: Types, working principle, indicator diagram, work done, effect of acceleration and frictional resistance, slip separation in suction and delivery pipes, air vessel and its function, multi cylinder pumps.</p> <p style="text-align: right;">(13Hrs)</p>				
Unit-VI	<p>Hydraulic Machines: Hydraulic ram, hydraulic accumulator, hydraulic crane, hydraulic intensifier, press jack fit,</p> <p style="text-align: right;">(4 Hrs)</p>				
Reference Books:	Sr.No.	Title	Author	Publication	Edition
	1	Hydraulics and Fluid Mechanics	Mod. & Seth	Standard Book House	14 th
	2	Fluid Mechanics and Hydraulic Machines	R.K.Bansal	Laxmi Publications	4 th
	3	Fluid Mechanics and Hydraulic Machines	S. Ramamurthiam	Dhanpatrai Publications	8 th
	4	Fluid Mechanics	V.L. Streeter & E.B. Wylie	TMH	3 rd
	5	Flow through open channel	Subramanyam		

Section A-Unit I, II, III
Section B-Unit IV, V, VI

Pattern of Question Paper:-

The six/four units in syllabus shall be divide in two equal parts i.e.3 units respectively. Question paper shall be set having two sections A & B. Section A question shall be on first part & section question on second part. Question paper should cover entire syllabus.

For 80 marks paper:-

1. Minimum ten questions.
2. Five question in each section.
3. Question no1 from section A & Question no 6 from section B made compulsory & should cover complete syllabus of the respective section & should be set for ten marks each. The question no.1 & 6 should be of objective nature.
4. Two question of 15 marks from each remaining question, from each section A & B asked to solve.

<p style="text-align: center;">Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-IV</p>	
<p>Code No.: CED254 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits:04</p> <p style="text-align: right;">Title: Building Planning & Design Class Test: 20 Marks Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 80</p>	
Objectives	: After this course of the syllabus, the student should be able to design various buildings functionally and he should also be able to transfer the ideas in his mind onto the paper through the universal language of engineers i. e. drawing.
Unit-I	: Role of various agencies involved in Construction industry such as owner, Architect, Structural Engineer and contractor, Building byelaws of municipal council and corporation Principles of planning- orientation, aspect, prospect, Grouping, functional requirement of different units roominess flexibility space utilization, Planning of living area, Sleeping area, Service area, and circulation <p style="text-align: right;">(12Hrs)</p>
Unit-II	: Classical & Temporary Indian Architecture:- Introduction, terms used in Architecture. Architectural Composition: Unity, mass composition, scale, functional treatment <p style="text-align: right;">(07Hrs)</p>
Unit-III	: Line plans, Working drawing and submission plan to sanctioning authorities, Checklist for planning a building project, Site plan, Utilities and services, legal documents, budget restrictions <p style="text-align: right;">(12Hrs)</p>
Unit-IV	: Functional Design of buildings based on the various requirements for residential & public buildings such as Educational, Industrial Offices, Hospitals, Banks, Libraries, Hostels, Markets, Post office, Railway stations, Central bus stand, Airports, Apartments etc. fixing, wall papering and glazing work <p style="text-align: right;">(16 Hrs)</p>
Unit-V	: Perspective Drawing- Concept, general principles of perspective drawing, one point & two point perspective for buildings. <p style="text-align: right;">(10 Hrs)</p>
Unit-VI	: Introduction to landscaping & Interior decorations <p style="text-align: right;">(10 Hrs)</p>

Reference Books:	Sr.No.	Title	Author	Publication	Edition.
	1	Planning & Designing of buildings	Y.S.Sane	PVG Prakashan, Pune	3 rd
	2	Principles of Perspective Drawing	M.G. Shaha & C.M. Kale	TMH	6 th
	3	Handbook on functional requirements of buildings (SP: 41)	BIS	BIS	2 nd
	4	A text book on perspective sciography	Shankar Mulik	Allied Publishers	1 st

Section A-Unit I, II, III
Section B-Unit IV, V, VI

Pattern of Question Paper:-

The six/four units in syllabus shall be divide in two equal parts i.e.3 units respectively. Question paper shall be set having two sections A & B. Section A question shall be on first part & section question on second part. Question paper should cover entire syllabus.

For 80 marks paper:-

1. Minimum ten questions.
2. Five question in each section.
3. Question no1 from section A & Question no 6 from section B made compulsory & should cover complete syllabus of the respective section& should be set for ten marks each. The question no.1 & 6 should be of objective nature.
4. Two question of 15 marks from each remaining question, from each section A & B asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering & Technology)
Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-IV

Code No.: CED255
Teaching Scheme: 04Hrs/week
Theory: 03Hrs/week
Tutorial: 01Hr/week
Credits:04

Title: Theory of Structure-I
Class Test: 20 Marks
Theory Examination (Duration): 03 Hrs
Theory Examination (Marks): 30

Objectives	: At the end of this course, the student should be able to analyze se given set of structure and loading and should arrive at most likely values of loads/ stresses to be carried out by the individual structural component.																				
Unit-I	: Deflection of statically determinate structure-Castigiano's theorem, Deflection of beams & frames by strain energy, Deflection of pin jointed trusses, effect of temperature change willot diagram. (08 Hrs)																				
Unit-II	: Fixed Beams-Analytical & moment area methods, Beams with different moment of inertia, effect of sinking of support Continuous Beams-Clapeyrons theorem of three moments beams with different moment of inertia, effect of sinking of support. (16 Hrs)																				
Unit-III	: Influence lines for statically determinate structure- Influence lines for reaction, Bending moment & Shearing force for cantilevers & simple and compound beams, Influence lines for forces in member of statically determinate trusses, criteria for maximum bending moments & maximum shearing force for simple determinate beams (06Hrs)																				
Unit-IV	: Column & Struts- axially loaded compression members short & long column, different end conditions, Euler's theory & Rankine theory, IS code formula. Limitations of Euler's long column subjected to economic & lateral loads (08 Hrs)																				
Unit-V	: Three Hinged suspension Bridges: Simple suspension cable, anchor cable, suspension cable with three hinged stiffening girder, Temperature stresses in the cables. Influence lines for shear force & bending moment at a given section of stiffening girder. (14 Hrs)																				
Unit-VI	: Connections: Strength & Design for Riveted & welded connections, a)welded connections: Advantages & disadvantages, Types of welded joints, centric welded connections b)Riveted joints/connections: Types of riveted joints, centric riveted connections, Strength & Design for Riveted (08 Hrs)																				
Reference Books:	<table border="1"> <thead> <tr> <th>Sr.No.</th> <th>Title</th> <th>Author</th> <th>Publication</th> <th>Edition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Analysis of structure (Vol. I & II)</td> <td>Vazani & M.M.Ratwani</td> <td>Standard Publisher</td> <td>4th</td> </tr> <tr> <td>2</td> <td>Theory Of Structures</td> <td>S.Ramamrutham</td> <td>Dhanapatrai & sons</td> <td>10th</td> </tr> <tr> <td>3</td> <td>Theory Of Structures</td> <td>Timoshenko & young</td> <td>PHI</td> <td>2nd</td> </tr> </tbody> </table>	Sr.No.	Title	Author	Publication	Edition	1	Analysis of structure (Vol. I & II)	Vazani & M.M.Ratwani	Standard Publisher	4 th	2	Theory Of Structures	S.Ramamrutham	Dhanapatrai & sons	10 th	3	Theory Of Structures	Timoshenko & young	PHI	2 nd
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Pattern of Question Paper:-

The six/four units in syllabus shall be divide in two equal parts i.e.3 units respectively. Question paper shall be set having two sections A & B. Section A question shall be on first part & section question on second part. Question paper should cover entire syllabus.

For 80 marks paper:-

1. Minimum ten questions.
2. Five question in each section.
3. Question no1 from section A & Question no 6 from section B made compulsory & should cover complete syllabus of the respective section& should be set for ten marks each. The question no.1 & 6 should be of objective nature.
4. Two question of 15 marks from each remaining question, from each section A & B asked to solve.

<p style="text-align: center;">Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-IV</p>	
<p>Code No.: CED256 Teaching Scheme: Theory: 02 Hrs/week Credits: 02</p>	<p>Title: Concrete Technology II Class Test: 10 Marks Theory Examination (Duration): 02 Hrs Theory Examination (Marks): 40</p>
Objectives	: After this course of the syllabus, the student should be able to design various grades of concrete, advanced types of concrete as well as they should be aware of the different techniques of testing procedure of concrete specially tests like nondestructive tests.
Unit-I	: Use of admixture and chemicals in Concrete: General, classification of admixtures, plasticizers, super plasticizers, retarders, accelerators, damp proofing and water proofing admixtures, workability admixtures, grouting, corrosion inhibiting admixtures and colouring admixtures. <p style="text-align: right;">(05 Hrs)</p>
Unit-II	: Special Concrete: Light-Weight concrete, Light-Weight aggregate concrete, aerated concrete, No-fines concrete, high density concrete, types of fibres, factors affecting properties of FRC, workability and compaction of concrete, applications, glass fibre reinforced concrete <p style="text-align: right;">(05 Hrs)</p>
Unit-III	: Durability: General, necessity, strength and durability relationship, volume changes in concrete, permeability, mass concrete, concrete subjected to high temperature, freezing and thawing, moisture movements, chemical resistance of concrete against sulphate attack, alkali aggregate reaction, acid attack, deterioration of concrete by abrasion and erosion, use of high strength concrete and high performance concrete for durability, use of silica fumes, fly ash and metakaolins <p style="text-align: right;">(05 Hrs)</p>
Unit-IV	: Non Destructive Testing : Various non destructive tests on hardened concrete and their principles, Rebound Hammer Test, Ultrasonic pulse velocity test, Radioactive method, Nuclear method, Magnetic and Electrical Methods, Dynamic Young's Modulus. <p style="text-align: right;">(05 Hrs)</p>
Unit-V	: Concrete Mix Design: Concept of mix design, variables in proportioning, various methods of proportioning statistical quality control, mean strength, variance, SD, coefficient of variation, relation between average and design strength. <p style="text-align: right;">(02 Hrs)</p>
Unit-VI	: Different methods – ACI, Road Note No. 4, IRC:44, IS Code, Trial and Error method <p style="text-align: right;">(08Hrs)</p>

Reference Books:	Sr.No.	Title	Author	Publication	Edition
	1	Concrete Technology	M. S. Shetty	S. Chand	2006
	2	Concrete Technology	M.L. Gambhir	Tata-Mc Graw Hill Book, Inc	2 nd
	4	Properties of Concrete	A. M. Neville	Pearson Education Asia	5 th
	5	Design of Concrete Mixes	Krishna Raju	CBS Publication	4 th
	6	All IS Codes practices related to Cement and Concrete	IS Codes	IS Codes	Latest

Section A-Unit I, II, III

Section B-Unit IV, V, VI

Pattern of Question Paper:-

The six/four units in syllabus shall be divide in two equal parts i.e.3 units respectively. Question paper shall be set having two sections A & B. Section A question shall be on first part & section question on second part. Question paper should cover entire syllabus.

For 40 marks paper:-

1. Minimum Eight questions.
2. Four question in each section.
3. Question no 1 from section A & Question no 5 from section B made compulsory & should cover complete syllabus of the respective section & should be set for six marks each. The question no. 1 & 5 should be of objective nature.
4. Two question of 07 marks each from remaining question, from each section A & B asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering & Technology)
Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-IV

Code No.: CED 271
Teaching Scheme:
Practical/Term Work: 2Hrs/week
Credit: 01

Title: Lab VI Surveying- II
Teachers Assessment: 25 Marks
Practical/Oral Examination: 25 Marks.

Objectives	: The objective of this subject is student should be able to various types of surveys related to civil Engineering.				
List of Experiments	: <ol style="list-style-type: none"> 1. Study of one second theodolite. 2. Measurement of horizontal and vertical angle by one second theodolite. 3. Satellite station and reduction centre. 4. Study of nautical sextant. Electronic distance meter. 				
Projects	: Minimum three <ol style="list-style-type: none"> 1. Setting out of building. 2. Setting out simple curve by offset: long chord method. 3. Setting out simple curve by offset: from chord produced. 4. Setting out simple curve by offset: from Rankine's method. 				
Reference Books:	Sr. No.	Title	Author	Publication	Edition
	1	Surveying vol. II	S.K. Duggal	Tata McGraw Hill	3 rd
	2	Surveying vol. II	Dr. B.C. Punmia	Laxmi	5 th
	3	Surveying vol. II	Kulkarni, Kanetkar	PVG Pune	17 th
	4	Plane Surveying	David Clark	Tata McGraw Hill	5 th
	5	Surveying	Norman Thomas	Tata McGraw Hill	2 nd

The assessment of term work shall be done on the basis of the following:

- Continuous Assessment
- Performing the experiment given in Laboratory

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty Of Engineering & Technology)
Syllabus of S.Y. B.Tech.(Civil Engineering) Semester IV

Code No: CED 272
Teaching Scheme:

Title: Lab VII Fluid Mechanics II
Teachers Assessment: 25 Marks
Practical/oral examination: 25 marks

Practical / Term work: 2Hrs / week
Credit: 01

Objective	:	This set of experiments acquainted losses in conduit flow & open channel flow. They will be able to predict the results of open channel flow & hydraulic machines.				
List of Experiments	:	1. Determination of Chezy's and Manning's constants 2. Determination of co-efficient of discharge for venturi-flume /standing wave flume 3. Determination of pipe friction factor. 4. Determination of minor losses. 5. Study of hydraulic jump. 6. Impact of Jet. 7. Trial on turbine. 8. Trial on centrifugal pump. 9. Trial on reciprocating pump. 10. Study of hydraulic ram.				
References book	:	Sr.No.	Title	Author	Publication	Edition
		1	Lab. Work in Hydraulic engineering	G.L. Asawa	New Age International	1st reprint 2011
		2	Fluid Mechanics	A.K. Upadhyay	S.K. Katar ya & sons	1st

The assessment of term work shall be done on the basis of the following:

- Continuous Assessment

Performing the experiment given in Laboratory

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering & Technology)
Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-IV

Code No.: CED273

Teaching Scheme:

Practical / Term work: 2Hrs / week

Credits:01

Title: Lab VIII Building Planning & design

Teachers Assessment: 25 Marks

Practical/Oral Examination: 25 Marks

Objectives	: The objective of this subject is student should be able to draw various types of sheets related to building planning & designing phase.				
List of Experiments	: <ol style="list-style-type: none"> 1. Line plans of one room, two room tenements, apartment house & bungalows with 5 to 7 rooms 2. Measured Drawing(Including site visit) 3. Data Drawing for residential building 4. Details of data drawing 5. Working drawing for one public building 6. Perspective drawing of a building 7. To prepare submission plan of residential project using Auto-CAD 2-D & 3-D application (Including Elevation, location plan, site plan, sections, line plans, and details required for submission of plan to govt. body.) 				
Site Visit	: Minimum one site visit required to draw measured drawing.				
Reference Books:	Sr.No:	Title	Author	Publication	Edition
	1	Planning & Designing of buildings	Y.S.Sane	PVG Prakashan, Pune	3 rd
	2	Principles of Perspective Drawing	M.G. Shaha & C.M. Kale	TMH	6 th

The assessment of term work shall be done on the basis of the following:

- Continuous Assessment
- Performing the experiment given in Laboratory

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering & Technology)
Syllabus of S. Y. B. Tech. (Civil Engineering) Semester-IV

Code No.: CED274

Title: Lab IX Concrete Technology

Teaching Scheme:

Teachers Assessment: 50 Marks

Practical/Term work: 2 Hrs/week

Credits:01

Objectives	Objective of this Lab is to make the students aware of various properties of concrete and its constituent materials as well as to have knowledge of good concrete making techniques, the student should be able to design various grades of concrete as well as they should be aware of the different techniques of testing procedure of concrete specially tests like nondestructive tests.			
List of Experiments	Part A <ol style="list-style-type: none"> 1. Fineness Test on cement 2. Consistency test on cement 3. Initial & Final setting time test on cement 4. Compressive strength test on cement 5. Fineness Modulus of fine aggregate 6. Bulking of sand 7. Fineness Modulus of coarse aggregate 8. Slump test on concrete 9. Compaction Factor test on concrete 10. Vee-Bee test on concrete 11. Flow table test 12. Compression test on concrete cubes Part B <ol style="list-style-type: none"> 1. Rebound Hammer Test 2. Ultrasonic Pulse Velocity Test 3. Electrical Resistivity of Concrete 4. Split Tensile Test 5. Flexural Strength Test 6. Pull out Test 7. Permeability Test 8. Mix Design by any one method 9. Determination of Dynamic Young's Modulus 			
Site Visit	Min one site visit to study concreting operations			
References Book	Sr. No.	Title	Author	Publication Edition
	1.	Concrete Technology	M. S. Shetty	S. Chand 2006
	2.	Concrete Technology	M. L. Gambhir	Tata-Mc Graw Hill Book, Inc 2 nd
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	4.	Design of Concrete Mixes	Krishna Raju	CBS Publication 4 th
	5.	All IS Codes practices related to Cement and Concrete	IS Codes	IS Codes Latest

The assessment of term work shall be done on the basis of the following:

- Continuous Assessment
- Performing the experiment given in Laboratory

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. Civil Semester-IV	
Code No: CED275 Teaching Scheme: Practical / Term Work: 2 Hrs/week Credits: 1	Title: Lab X (Technical report Writing) Teachers Assessment : 50 Marks
Objectives	: The preparation of technical report is very important aspect for student and researcher. This subject is incorporated for the fulfillment of following objectives. <ol style="list-style-type: none"> 1. To study skill of technical writing. 2. To study the structure of technical report and its preparation 3. Study various forms of technical reports
List of Practical's (Minimum ten experiments to be performed)	: <ol style="list-style-type: none"> 1. Concept and significance of technical writing, basic aspects of technical writing. 2. Structural analysis of various forms of published technical reports. 3. Structure of technical report, preparation of cover page, preliminaries 4. Introduction 5. Review of literature & its mock preparation. 6. Material and methods. 7. Results and discussion Presentation of data, tables, illustrations, graphs, mock preparation of tables, illustrations and graphs. 8. Summary and conclusions, preparation of abstract. 9. Bibliography, abbreviations, Common errors, punctuations, language and vocabulary. 10. Mock preparation of investigative and functional technical report. 11. Oral presentation of technical report
List of Reference Books	: <ol style="list-style-type: none"> 1. Technical and Professional writing by Herman A. Estrain. 2. English for Engineering Students by G. V. L. N. Sharma. 3. Reports, Technical Writing and Specification by H. R. Glidden. 4. Technical Writing by Richard W. Smith. 5. Research and Report Writing by S. M. Gatner 6. Writing the Technical Report by J. R. Nelson 7. Effective Technical Writing and Speaking by Barry T. Tuner. 8. Scientific and Technical Report Writing by P.O.Ingle

The assessment of term work shall be done on the basis of the following.

- Continuous assessment
- Performing the experiments in the laboratory
- Oral examination conducted on the syllabus and term work mentioned above