

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 Braches 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.

**COMPUTER SCIENCE
&
ENGINEERING**

EFFECTIVE FROM - 2012-13 & ONWARDS

FACULTY OF ENGINEERING AND TECHNOLOGY
structure [Second year Computer Science & Engineering]

Sub Code	SEMESTER-III	Contact Hrs / Week				Examination Scheme						
	Subject	L	T	P	Total	CT	TH	TA	PR	Total	Credits	Duration of Theory Exam
BSH201	Engineering Mathematics - III	3	1	--	4	20	80	--	--	100	4	3 Hrs
CSE202	Discrete Mathematics	3	1	--	4	20	80	--	--	100	4	3 Hrs
CSE203	Digital Electronics & Microprocessor 8086	3	1	--	4	20	80	--	--	100	4	3 Hrs
CSE204	C C++ Programming	3	1	--	4	20	80	--	--	100	4	3 Hrs
CSE205	Object Oriented Programming in Java	3	1	--	4	20	80	--	--	100	4	3 Hrs
CSE206	Computer Organization	2	-	--	2	10	40	--	--	50	2	2 Hrs
CSE221	Lab-I Digital Electronics & Microprocessor 8086	--	-	2	2	--	--	25	25	50	1	
CSE222	Lab-II C C++ Programming	--	-	2	2	--	--	25	25	50	1	
CSE223	Lab-III Object Oriented Programming in Java	--	-	2	2	--	--	25	25	50	1	
CSE224	Lab-IV Computer Laboratory-I	--	-	2	2	--	--	50	--	50	1	
BSH225	Lab-V Development of Skills - II	--	-	2	2	--	--	50	--	50	1	
	Total	17	5	10	32	110	440	175	75	800	27	
Sub Code	SEMESTER-IV	Contact Hrs / Week				Examination Scheme						
	Subject	L	T	P	Total	CT	TH	TA	PR	Total	Credits	Duration of Theory Exam
BSH251	Engineering Mathematics-IV	3	1	--	4	20	80	--	--	100	4	3 Hrs
CSE252	Data Structure	3	1	--	4	20	80	--	--	100	4	3 Hrs
CSE253	Programming inVB.NET	3	1	--	4	20	80	--	--	100	4	3 Hrs
CSE254	Computer Hardware	3	1	--	4	20	80	--	--	100	4	3 Hrs
CSE255	Computer Network	3	1	--	4	20	80	--	--	100	4	3 Hrs
CSE256	Software Engineering	2	--	--	2	10	40	--	--	50	2	2 Hrs
CSE271	Lab-VI Data Structure	--	--	2	2	--	--	25	25	50	1	
CSE272	Lab-VII Programming inVB.NET	--	--	2	2	--	--	25	25	50	1	
CSE273	Lab-VIII Computer Network	--	--	2	2	--	--	25	25	50	1	
CSE274	Lab-IX Computer Laboratory-II	--	--	2	2	--	--	50	--	50	1	
CSE275	Lab-X Development of Skills - III	--	--	2	2	--	--	50	--	50	1	
	Total	17	5	10	32	110	440	175	75	800	27	
	Grand Total of III & IV	34	10	20	64	220	880	350	150	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

Uthman

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Computer Science & 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 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 Tutorials: Additional Practice Problems on each type of Application (12+3 Hrs)
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. Tutorial: Additional Practice Problems on Irrotational and solenoid fields. (7+3 Hrs)
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. Tutorial: Additional Practice Problems on coefficient of variation, Moments (3+2 Hrs)
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. Tutorial: Additional Practice Problems on Solution of Linear Differential Equation, Simultaneous differential equation. (13+2 Hrs)

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. Tutorials: Additional Practice Problems Fourier sine and cosine transform. (7+3 Hrs)
Unit-VI	:	Probability: Introduction, Probability Distribution: Binomial Distribution, Poisson Distribution, Normal Distribution Tutorials: Additional Practice Problems on each type of Distribution (3+2 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

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. (Computer Science and Engineering) Semester- III	
Code No: CSE202 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits:04	Title: Discrete Mathematics Class Test: 20 Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 80
Objectives	: 1. To learn formal logic, proofs, sets, relations and functions. 2. To use formal logic proofs and logical reasoning to solve problems. 3. To relate the ideas of mathematical induction to recursion and recursively defined structures. 4. To learn graphs related algorithms. 5. To apply these concepts to various areas of computer science.
Unit-I	: Logic and Proofs :Propositions, Conditional Propositions, Logical Connectivity, Prepositional calculus, Universal and Existential Quantifiers, Proof Techniques, Mathematical Induction Set Theory - Set, Combination of sets, Finite and Infinite sets, Un-countably infinite sets, Principle of inclusion, exclusion. Tutorial: Determine the number of integers between 1 and 250 that are divisible by any of the integers 2, 3, 5 and 7. (10Hrs)
Unit-II	: Combinatorics and Probability : Permutations and Combinations: rule of sum and product, Permutations, Combinations, Algorithms for generation of Permutations and Combinations. Discrete Probability, Conditional Probability, Information and Mutual Information, Binomial Coefficients and Combinatorial Identities. Tutorial: There were 3 different machines M1,M2 and M3 for producing a large batch of similar manufactured Items let 20% of the items were produce by M1,30% by M2and 50% by M3. Suppose 1% of the item Produce by M1 are defective ,2% of the item produce by machine M2 are defective and 3% of the item produce by machine M3 are defective. Suppose 1 item is selected at random from the entire batch and it is found to be defective. What is the probability that this item was produce by machine M3. (10Hrs)
Unit-III	: Relations : Definitions, Properties of Binary Relations, Equivalence Relations and partitions, Partial ordering relations and lattices, Chains and Anti chains. Functions :Definitions, domain, Range, One-to-One and OnTo, Inverse and Composition, Pigeonhole Principle, Discrete Numeric functions and Generating functions, Job scheduling Problem. Tutorial: 1. Suppose $f(x)=2x+1$ and $g(x)=x^2$, then combine the functions. 2. Plot the following analog signals over the values of t given (t real) <p style="margin-left: 40px;">a. $x=t^3, t \leq 0$</p> <p style="margin-left: 40px;">b. $y = \begin{cases} 0, & t \leq 3 \\ t-3, & 3 < t \leq 5 \\ 2, & t > 5 \end{cases}$</p> <p style="margin-left: 40px;">c. $z = \frac{1}{t^2} \quad t > 0$ (10 Hrs)</p>
Unit-IV	: Recurrence Relations : Recurrence Relation, Linear Recurrence Relations With constant Coefficients, Homogeneous Solutions, Total solutions, solutions by the method of generating functions. Tutorial : Find a recurrence relation and give initial conditions for the number of bit strings of length n that do not contain the pattern 11. (10Hrs)

Unit-V	: Graphs :Basic terminology, multi graphs and weighted graphs, paths and circuits, shortest path in weighted graph, Hamiltonian and Eulerian paths and circuits, factors of a graph, planer graph and Traveling salesman problem. Tutorial : Prove that a simple graph with n vertices and k components cannot have more than $\frac{(n-k)(n-k+1)}{2}$ edges. (10 Hrs)
Unit-VI	: Trees and Cut-Sets : Trees, Rooted Trees, Path length in rooted trees, prefix code, Binary search trees, Spanning trees and cut-sets, Minimum spanning trees, Kruskal's algorithm, Prim's algorithm. Tutorial : Consider the problem of connecting 19 lamps to a single electric outlet by using extension chords each of which has four outlets. (10 Hrs)
Reference Books:	: 1. "Elements of Discrete Mathematics" ,BY C.L LIU, Tata McGrawHill publication. 2. "Discrete Mathematics", BY R. Johnsonbaugh ,Pearson Education publication. 3. "Discrete Mathematics with Graph Theory" ,BY E. Goodaire, M. Parmenter, Pearson Education. 4. Elements of Discrete Mathematics", BY C.L LIU, D.P. Mohapatra, Tata McGrawHill publication . 5. "Mathematics for Electrical Engineering and Computing",BY Mary Attenborough ,TLFebook.

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. (Computer Science and Engineering) Semester- III	
Course code: CSE203 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits:04	Title: Digital electronics and Microprocessor8086 Class Test: 20 Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 80
Objectives	: 1. To understand the relationship between combinational logic and Boolean algebra . 2.Be able to design and minimize combinational logic. 3. To understand basics of microprocessor. 4.To understand its operation and interrupt of 8086. 5. To understand assembly language programming using TASM. 6. To learn different Types of controller of 8086.
Unit-I	: Number system and Logic Gates and Boolean algebra -Binary number system, binary arithmetic (Addition, subtraction, multiplication, division) ,Concept of code, Weighted and Non-weighted code ,Gary code, ASCII. Basic Logic Gates, Universal gates and their truth tables, Implementation of Boolean equation with Gates, De - Morgan's theorem. Tutorial: Implementation of Boolean equation with Gates. (10 Hrs)
Unit-II	: Combinational Circuit Design - MinTerm and max term, representation of logical function, minimization using K- Map (Upto 4 variables), Don't care condition, Quinn Mcclusky method for minimization. Binary half and full adders and subtractors, Decoders and multiplexers , BCD to seven segment decoder, Binary to gray and gray to binary conversion, Concept and types of flip flops with their working. Tutorial: Examples of minimization using K-Map and Quinn Mcclusky method for minimization. (10 Hrs)
Unit-III	: Introduction To Microprocessor: What is a microprocessor?, Evolution of microprocessor family, Architecture of 8085, Features of 8085,Need of 8086 Microprocessor, Architecture of 8086,Signal descriptions of 8086, Physical Memory Organization, IO Addressing Capabilities, Minimum mode 8086 system, maximum Mode 8086 system Tutorial: Difference between 8085 and 8086 microprocessor. (10 Hrs)
Unit-IV	: The Art of Assembly Language Programming with 8086/8088: Machine language Instruction Formats, Addressing Modes of 8086, Instruction set of 8086/8088, Assembler Directives and operators. Machine level programs, Machine coding the programs, Programming with an Assembler, assembly language programs, STACK Structure of 8086 8088, Interrupts & Service routines, Mask able & Non Mask able Interrupts. Tutorial: Various Assembly language programs. (10 Hrs)
Unit-V	: Basic Peripherals & their Interfacing with 8086/8088 : Semiconductor Memory classifications, Memory Interfacing, Dynamic RAM Interfacing, PIO 8255, Modes of operation of 8255, Interfacing Analog to Digital Converters, Interfacing Digital to Analog Converters with 8086. Tutorial: Interfacing of ADC and DAC with 8086. (10 Hrs)
Unit-VI	: Special Purpose Programmable Peripheral Devices & their Interfacing: Programmable Interval Timer 8253, Programmable Interrupt Controller 8259A, The Keyboard/Display Controller 8279, Programmable Communication Interface 8251 USART.DMA Controller 8257, DMA Transfer & Operations. Tutorial: To study peripherals and their interfacing with 8086 . (10 Hrs)

Reference Books:	:	<ol style="list-style-type: none">1. Modern Digital Electronics ,BY R.P.Jain ,TMH publication.2. The X86 PC: Assembly Language, Design, and Interfacing, 5/e, BY Mazidi ,Pearson.3. Digital Logic and Computer Design ,BY Mano ,Pearson.4. Advance Microprocessors & Peripherals , BY Kishor Bhurchandi and Ray ,Tata MC Garw Hill.5. Microprocessor and Interfacing BY Douglas Hall ,Tata MC Garw Hill.6. Microprocessor Systems: The 8086/8088 family BY Sivarama ,Springer.
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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) (Computer Science and Engineering) Semester- III	
Code No: CSE204 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits:04	
Title: CC++ Programming Class Test: 20 Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 80	
Objectives	1. Learn the C and C++ programming in detail. 2. Facilitate the students to use C and C++ as a language of expression of logic. 3. Provide extensive hands on for C and C++.
Unit-I	Standard Library Functions in C and C++: <stdio.h> :printf(), scanf(), fopen(), fclose(), gets(), puts(), <conio.h>: getch(), putch(), cgets(), <string.h>: strcat(), strcmp(), strcpy(), strlen(), <maths.h>: abs(),pow(),sqrt(),<graphics.h>: arc(), line(), rectangle(), circle(), <ctype.h>: isdigit(), isalpha(), islower(), isspace(), tolower(), <stdlib.h>: atof(), atoi(), strtol(), <time.h> : time(), difftime(), setdate(), getdate(),C++ standard Library files: <iostream>, <fstream>, <array>, <numeric>, <list>, <queue> (10 hrs)
Unit-II	Pointers: Pointer operators, pointer expressions, initializing pointers, pointer arithmetic, pointers and function arguments, pointers to function, pointer and arrays, array of pointers, pointers to pointers, pointers and strings, Pointer to structure, Pointers within structure, Introduction of Static and Dynamic memory allocation, The process of Dynamic memory allocation, DMA functions malloc(), calloc(), free(), realloc() functions. Tutorial: C Program for pointer arithmetic. C program for pointer to structure. (10 hrs)
Unit-III	Files: File structure, File types, Streams, File system basics, The file pointer, file operations: Opening a file, Closing a file, Writing a character, Reading a character, Using fopen(), getc(), putc(), and fclose(), Using feof().String I/O in files; record I/O in files, text and binary files.Working with string: fputs() and fgets(), Standard streams in C, Flushing a stream, Using fread() and fwrite(), Direct access file, fseek() and random access I/O, fprintf() and fscanf(), getting file name as Command line arguments. Tutorial : C program to list files in directory C program for merging two files. (10 hrs)
Unit-IV	Graphics in C: Text mode graphics functions: window(), cputs(), clrscr(), gotoxy(), putch() functions.Graphics mode graphics functions: initgraph(), closegraph(), circle(), line(), bar(), rectangle(),setcolor(), setbkcolor(), settextstyle(), setpalette(), floodfill(). Animated graphics: delay(), sound(), nosound(). Tutorial: C program to create drawings using basic graphics functions. C Program for animation of any object. (10hrs)
Unit-V	Introduction TO C++: What is object oriented programming? Characteristics of object-oriented languages, difference between C and C++, Directives, Type bool. The setw manipulator, Type conversions, Classes and objects, specifying the class, Constructors and destructors, object as function arguments, Arrays as class Member Data, Arrays of object. Tutorial: Compare C and C++ features. Program for constructor overloading. Program for array as class data member. (10hrs)
Unit-VI	Virtual Function, Operator overloading and Inheritance : Virtual Function, friend function, Static function, Overloading unary and binary operators, Concept of inheritance, Derived class and base class, Derived class constructors, member function, class hierarchies and abstract base class, public and private inheritance, access specifies, types of inheritance, Multiple inheritance. Tutorial: Program for static function. Program for abstract class. (10hrs)

Reference Books:	:	<ol style="list-style-type: none">1. "C++ Programming", BY E.Balguruswami, Tata Macgraw Hill.2. "Let us C" Yashavant Kanetkar ,BPB Publication.3. "Understaning C,a practical apporch." ,BY G.S.Baluja & G.K.Baluja, Dhanpat Rai & Co.
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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. (Computer Science and Engineering) Semester- III	
Code No: CSE205 Teaching Scheme: 04Hrs/week Theory: 03Hrs/week Tutorial: 01Hr/week Credits: 04	Title: Object Oriented Programming in Java Class Test: 20 Theory Examination (Duration): 03 Hrs Theory Examination (Marks): 80
Objectives	: 1) To understand the concepts of Object oriented Programming. 2) To write simple applications using Java. 3) To develop programming skills and to solve engineering related problems using Java.
Unit-I	: Introduction to Java , Why Java is platform independent? What is new in jdk1.7? Introduction to Net Beans and its various facilities. Path setting of java, Introduction to java.lang package. Writing a simple program in java, data types, variables Literals, operators, Programming constructs, Instance variables and class variables, methods, passing arguments to methods, Use of this keyword, Access specifiers, constructor and finalizer. Tutorial: study of java language package and its classes and methods. (10 Hrs)
Unit-II	: Arrays and Strings: Declaring array variables, creating array of objects, multi -dimensional arrays, Strings, casting and converting String Buffer methods. Inheritance: Introduction to inheritance, Forms of inheritance, overriding, usage of super, overriding constructors ,dynamic method dispatch, Final and abstract classes, abstract methods and classes, concept of factory methods. Tutorial: 1. Program illustrating factory methods. 2. Program on abstract classes. (10 Hrs)
Unit-III	: Exception handling -Exception handling fundamentals, Exception -types, try catch and finally, throw, throws, finally, java's built-in exceptions and creation of user-defined exceptions. Packages: Definition, Class path variable, creation of a Package, importing packages Tutorial: 1. Program on exception handling. 2. Program on Packages. (10 Hrs)
Unit-IV	: Multithreading -Definition of a Thread, States of a Thread, Common Thread methods ,creation of a Thread, Creation of multiple threads, Thread priorities, Synchronization. Files and I/O streams -File operations, Methods in streams, Types of I/O streams - FileInputStream, FileOutputStream, Buffering and Concatenation , Random access files, Reader and writer classes. Tutorial: 1. Program on Thread priorities. 2. Program on Random access files. (10 Hrs)
Unit-V	: Applets -Definition, Differences between applets and applications, Steps to create an applet, passing parameters to an applet, Applet methods, graphics color and font class ,images and animation, Handling of events, mouse events, keyboard events, user interface components like containers, button ,checkbox, choice, label, list, scroll pane ,text field, Layout managers flow layout, grid layout, border layout, Frames and Menu. Tutorial: 1. Program on mouse event handling. 2. Program on passing parameters to an applet. (10 Hrs)
Unit-VI	: Introduction to JDBC - Java and JDBC, JDBC vs. ODBC, JDBC Driver models-Two tier and Three tier model, The java.SQL package, Steps for using JDBC,Data base connectivity for Microsoft access and oracle. Tutorial: Program using JDBC. (10 Hrs)
Reference Books:	: 1. "Java 2 : Complete Reference", BY Herbert Schildt ,Tata McGraw-Hill. 2. "Java : How to program", BY H.M.Deitel, P.J.Deitel PHI. 3. "Programming with JAVA", BY E.Balguruswami, Tata Macgraw Hill.

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. (Computer Science and Engineering) Semester- III	
Code No: CSE206 Teaching Scheme: 02Hrs/week Theory: 02Hrs/week Tutorial: – Credits:02	Title: Computer Organization Class Test: 10 Theory Examination (Duration): 02 Hrs Theory Examination (Marks): 40
Objectives	: To understand the internal organization of computers.
Unit-I	: Computer Arithmetic- Two's complement representation, Booth's algorithm, Floating point number representation. (5 hrs)
Unit-II	: Processor Basics – Processor organization, Operation, Pentium 4 Processor. (5 hrs)
Unit-III	: Control Unit Design - Basic elements, Function, Model, CPU with internal design, RISC Vs CISC, Microprogrammed Control Unit, Hardwired control Unit. (5 hrs)
Unit-IV	: Memory Organization- Cache Memory, Types, Background, Levels of Cache, Cache Hit, Cache Miss, Replacement Algorithms. (5 hrs)
Unit-V	: Pipelining- Introduction, Performance, Data Hazards, Stalling, Data Dependency. (5 hrs)
Unit-VI	: Advanced Processors- Intel Core2 Duo, Features, Internal Architecture. (5 hrs)
Reference Books:	: <ol style="list-style-type: none"> 1. "Computer Architecture & Organization", BY Subrata Ghoshal . 2. "Computer Architecture and organization ", BY John P. Hayes ,McGraw Hill. 3. "Computer Organization ", BY Hamachaer and Zaky ,McGraw Hill . 4. "Computer Organization and Design ", BY P.Pal Choudhari, PHI.

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 40 marks Paper:

1. Minimum eight questions.
2. Four 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 six marks each. The Question no.1 and 6 should be of objective nature.
4. Two questions of 7 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. (Computer Science and Engineering) Semester- III	
Code No.: CSE221 Teaching Scheme: (02) Hours per week Practical: 02 Hours per week Credits: 01	Title: Lab I: Digital electronics and microprocessor 8086 TA : 25 marks Practical : 25 marks Total Examination (Marks): 50
Course Objectives	: 1. To Study basic gates. 2. To understand assembly language programming using TASM. 3. To understand assembly language programming using Simulator of 8086.
List of Practicals (Minimum ten experiments to be performed)	: 1. Implementation of Boolean expression using AND/OR/NOT logic and NAND logic. 2. Realization of Half adder and Full adder using gates. 3. Realization of Half subtractor and Full subtractor using gates. 4. Study of Architecture and register organization of 8086. 5. Write Assembly language program to print the string in 8086 using TASM. 6. Write Assembly language program for 8 bit addition and 16 bit addition in 8086. 7. Write Assembly language program for 8 bit addition and 16 bit subtraction in 8086. 8. Write Assembly language program for 16 bit multiplication and 16 bit division in 8086. 9. Write Assembly language program for finding the largest number from given array using TASM. 10. Study of simulator of 8086 ie.emu8086 and Write Assembly language Program for finding the factorial of given number using simulator emu 8086. 11. Write Assembly language Program for reversing string using simulator emu 8086.
List of Reference Books	: 1. "Modern Digital Electronics",BY R.P.Jain, TMH. 2. "Advance Microprocessors & Peripherals",BY Kishor Bhurchandi and Ray, Tata MC Garw Hill. 3. "Microprocessor and Interfacing",BY Douglas Hall ,Tata MC Garw Hill

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. (Computer Science and engineering) Semester- III	
Code No: CSE222 Teaching Scheme:(02) Hours per week Practical: 02 Hours per week Credits:01	Title: Lab II: C C++ Programming TA :25 marks Practical :25 marks Total Examination (Marks):50
Course Objectives	: 1. Learn the C and C++ programming in detail. 2. Facilitate the students to use C and C++ as a language of expression of logic. 3. Provide extensive hands on for C and C++.
List of Practicals (Minimum ten experiments to be performed)	: 1. C Program to generate stack and queue using pointers. 2. C Program for dynamic memory allocation functions: malloc(), calloc(), and free(). 3. C program for creating, opening, closing, reading and writing a file and program to list files in directory. 4. C Program to create car using basic graphics functions. 5. Program to demonstrate how an object can be made an argument of a function. 6. Program to show how to declare and use an array of an object. 7. Program for Constructors and Destructors in C++. 8. Program for Unary and binary operator overloading. 9. Program for friend function. 10. Program for simple, multiple, multilevel&hybrid inheritance.
List of Reference Books	: 1. "C++ Programming", BY E.Balguruswami, Tata Macgraw Hill. 2. "Let us C" Yashavant Kanetkar ,BPB Publication. 3. "Understaning C,a practical apporch." ,BY G.S.Baluja & G.K.Baluja, Dhanpat Rai & Co.

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. (Computer Science and engineering) Semester- III	
Code No: CSE223 Teaching Scheme:(02) Hours per week Practical: 02 Hours per week Credits:01	Title: Lab III : Object oriented programming in JAVA TA:25 marks Practical :25 marks Total Examination (Marks):50
Course Objectives	: 1) To understand the concepts of Object oriented Programming. 2) To write simple applications using Java. 3) To develop programming skills and to solve engineering related problems using java.
List of Practicals	: 1. Program in java for passing arguments to methods. 2. Program in java for the implementation of stack using parameterized constructor. 3. Program in java using inheritance for banking. 4. Program in java for function overloading to find the area of different shapes. 5. Program in java for user defined exception. 6. Program in java using package. 7. Program in java for multithreading. 8. Program in java to i) check the status of a file ii) count the number of words and lines in a file iii) to copy the file from source to destination. 9. Program in java for creating an applet. 10. Program in java for JDBC.
List of Reference Books	: 1. "Java 2 : Complete Reference", BY Herbert Schildt ,Tata McGraw-Hill. 2. "Java : How to program", BY H.M.Deitel, P.J.Deitel PHI. 3. "Programming with JAVA", BY E.Balguruswami, Tata Macgraw Hill.

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- 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. (Computer Science and Engineering) Semester- III	
Code No: CSE224	
Teaching Scheme:(02) Hours per week	
Practical: 02 Hours per week	
Credits:01	
Title: Lab IV: Computer Laboratory- I	
TA:50 marks	
Total Examination (Marks):50	
Course Objectives	1. To be conversant with basics of static web designing. 2. To understand the concepts of HTML, XML, scripting, . 3. To understand how web sites are created. 4. To develop skills in static web design.
Unit-I	Web Design & Understanding HTML: Evolution of Web, Importance of Web presence, Web Terminology, New Web Technologies, Static Vs Dynamic sites, Specifications, Browser Support, Tools for Web Design, Hosting & Domain Names, Basic Site Structure, User Accessibility, Media elements. Introduction to HTML: document type, Rules of HTML, Core elements, headings, Comment, lists, horizontal rules, text level elements.
Unit-II	Hyperlink & Images, Basic layout & tables: Linking Documents: URL/FTP/HTTP/file, Anchor attributes. Semantic linking. Managing images in HTML: Image tag, Image maps. Formatting HTML documents: Logical styles (source code, text enhancements, variables) Physical Styles (Bold, Italic, underlined text, colors & background, fonts. Tables in HTML: Tags- border thickness, cell spacing, and table size.
Unit-III	Frames, Cascading Style Sheet: Frames: Frames layouts. Creating forms, Form controls, form control selection, option processing. Style sheets: Basics, creating style sheet rules, properties of font, text, list, color & background, box, display etc.
Unit-IV	Javascript: Introduction to server side scripting: overview of client/server programming on the webs JavaScript: javascript terminology, Introduction to JavaScript Variables & Data types.
Unit-V	Control statements & event: Conditional Statements & Loops embedding javascript, linking javascript, script events, alerts, functions.
Unit-VI	XML: Beyond HTML: basic XML, displaying XML, XML syntax and semantics: Namespaces and Whitespaces, Using CSS with XML. Data Islands, DTDs to XML schemas, XML-application language, XHTML.
List of Practicals (Minimum ten experiments to be performed)	1. Introduction to web design: web page ,web design ,process of web publishing. 2 Create an HTML Documents, and establish adequate formatting for presentation purposes.(Font, color, physical style). Screen control attributes (WIDTH, HEIGHT, ALIGN). 3 Establish and maintain link to available resources. Import, insert and modify images. 4 Insert and manipulate tables and frames. Multimedia: Inserting audio files, video files. 5. Manager forms (Create forms, control selection ,call programs) . 6 Style sheets: Basics, creating style sheet rules, properties of font, text, list, Color & background, box, display etc. HTML layout using CSS. 7 Create and Publish a free domain. 8 Scripting: JavaScript- JavaScript terminology, embedding JavaScript, script events. 9 XML: Beyond HTML: basic XML, displaying XML. XML-application language. 10. Syntax & web page design using XHTML
List of Reference Books	1. "The complete reference: HTML" BY Thomas Powell, Tata McGrawHill publication 2. "Using HTML 4,XML and JAVA 1.2 "BY Eric Ladd,Jim O'Donnel, Prentice Hall of India-Que.1999

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- 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. (Computer Science and engineering) Semester- III	
Code No.: BSH225 Teaching Scheme:(02) Hours per week Practical: 02 Hours per week Credits:01	Title: Lab V: Development Of Skills- II Termwork :50 marks Practical :-- Total Examination (Marks): 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, Dinning 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: Compréhension 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 Press 6. Technical Report Writing Today: Daniel G. Riordan, Steven E. Pauley 7. Technical Writing: B. N. Basu 8. David Lawrence Preston, "365 steps of self confidence", Published by How To Books Ltd,

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

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- 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. (Computer Science and 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 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 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. Tutorials: Additional Practice Problems on Singularities, Residues, Cauchy's residue theorem. (12+3 Hrs)
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. Tutorials: Additional Practice Problems on Bilinear transformation and Integration (3+2 Hrs)
Unit-III	: Vector Integration: Line integral, Surface integral, Gauss divergent theorem, Stoke's theorem, Green's theorem, Curvilinear coordinates: Cylindrical and Spherical polar coordinates. Tutorials: Additional Practice Problems Gauss divergent theorem, Stoke's theorem, Green's theorem. (7+3 Hrs)
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) Tutorials: Additional Practice Problems on Wave, Heat and Laplace equation. (8+2 Hrs)
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. Tutorials: Additional Practice Problems on Solution of Difference equation by using Z-transform (6+2 Hrs)
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 Guass-seidal method, Solution of ordinary differential equations: Taylor series method, Fourth order Runge-Kutta method. Tutorials: Additional Practice Problems on Solution of ordinary differential equations: Taylor series method, Fourth order Runge-Kutta method. (9+3 Hrs)
Reference Books:	: 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	: 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. (Computer Science and Engineering) Semester- IV	
Code No: CSE252 Teaching Scheme: 4 hrs/week Theory : 3 hrs/week Tutorial : 1 hr/week Credits : 4	Title: Data Structure Class Test : 20 Marks Theory Examination (Duration) : 3 Hrs Theory Examination (Marks): 80 Marks
Objectives	: 1. To learn concept of Data structures and its application. 2. To learn different data structures like stack, queue, linked list etc. 3. To learn graphs, trees and related algorithms. 4. To learn different sorting and searching techniques. 5. To apply these concepts to various areas of computer science.
Unit-I	: Introduction to Data Structure: What is Data Structure?, Information and meaning, data types, ADT, pointers, arrays, multidimensional arrays, Structure and Unions in C and its implementation, Dynamic memory allocation . Tutorial: 1. Write a program to add two complex numbers using structure. 2. Write a Program to demonstrate malloc function by accepting n integers and display the sum of those integers. (10Hrs)
Unit-II	: Stacks and Queues: Definitions, Concepts, Operations on stack and queues, stacks and queues using arrays, Applications of stack and queue-recursion, Infix, prefix and postfix Expression. Tutorial: 1. Program for implementing Stack and queue using structure. 2. Examples on converting infix to prefix and evaluation of postfix. (10 Hrs)
Unit-III	: Linear Data Structures and their linked representation: Definition concept, Operation on linear linked list, circular linked list and doubly linked list such as insertion, deletion, insertion in order, searching, updation. Application of linked list such as polynomial manipulation, Comparison of singly linked list, circular linked list and doubly linked list, Header and trailers, Linked implementation of stacks and Queues. Tutorial: 1. Write a function to insert an element x at a given position. 2. Write a function to insert an element 'y' after 'x' which is already in linked list. (10 Hrs)
Unit-IV	: Trees: Definition, Basic terminology, operations on binary trees, Linked storage representation of binary trees, Binary search tree, Basic operation on binary trees such as creating, searching, modifying an element, inserting an element, delete an element, destroying tree, Tree traversals: inorder, preorder, post order, Tree applications for expression evaluation, sparse matrix, Threaded binary tree and its significance, Comparison of binary search tree with linear linked list . Tutorial: Program based on various operations on tree and sparse matrix. (10Hrs)
Unit-V	: Graphs : Definition, Basic terminology, matrix and linked representation of graph, Graph traversal: Depth first search (DFS), Breadth First Search (BFS), shortest path in weighted graph, Spanning trees-methods for finding spanning tree: Kruskal's and Prims method. Tutorial: 1. Program for finding adjacent nodes of a given node. 2. Examples of finding spanning tree for graphs. (10 Hrs)
Unit-VI	: Sorting and Searching Techniques: Different sorting techniques, bubble sort, merge sort, Quick Sort, heap sort, shell sort, radix sort and comparison between different sorting techniques, Searching: Sequential Search, Binary Search, Height Balanced tree, 2-3 tree, multiway search tree, B-Tree, B+ -tree, Hashing-Hashing techniques, collision in hashing and collision resolution techniques such as probing and rehashing & chaining.

		Tutorial: 1. Program for sequential search 2. Examples of hashing.	(10 Hrs)
Reference Books:	:	1. "Data Structures in C", BY Tanenbaum, PHI. 2. "Data structures and program Design", BY Robert L.Kurse, PHI. 3. "Fundamentals of Data Structure in Pascal", BY Horwitz and sahani, Computer Science Press. 4. "C and Data Structures", BY Balguruswami, TMH. 5. "Programming and Data Structures", BY Kamthane, Pearson.	

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.

<p style="text-align: center;">Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Computer Science and Engineering) Semester- IV</p>	
<p>Code No: CSE253 Teaching Scheme: 4 hrs/week Theory: 3 hrs/week Tutorial: 1 hr/week Credits: 4</p>	
<p style="text-align: right;">Title: Programming in Vb.Net Class Test: 20 marks. Theory Examination (Duration): 3 Hrs. Theory Examination (Marks): 80 Marks.</p>	
Objectives	: To cover Visual Basic.NET tips, examples, and how-tos on everything from programming to managing the development of Visual Basic applications, and provides in-depth material on the new object-oriented features of Visual Basic .NET.
Unit-I	: <p>Introduction to VB.NET: The .NET Framework and Common Language Runtime, NET Framework class library introduction, .NET Architecture, The Just-In-Time Compiler</p> <p>VB.NET Development Environment: The Visual Basic .NET IDE: The Menu, The Toolbars, Toolbox, Code Editors, and Forms. Windows in Visual Studio IDE: Properties Window, Solution Explorer, Class View, Server Explorer, Code Window, Dynamic Help Window, Component Trays, Command Windows.</p> <p>Tutorial: Creating Your First Application in Visual Basic .NET:</p> <ul style="list-style-type: none"> • Begin a Visual Basic .NET application that is based on the Windows Application template. • Use the standard toolbar, programming tools, and programming windows in the development environment to work with applications. • Create a simple application in Visual Basic .NET. <p style="text-align: right;">(10 Hrs)</p>
Unit-II	: <p>Language Features of VB.NET: Object Oriented Concepts, Classes & Objects, Creating Methods, Overloading Methods, Overriding Methods, Namespace, Collections, Multithreading, Constructors, Destructors, Inheritance, Interfaces, Polymorphism, Properties, methods and events, Access modifiers: Public, Private, Protected, Friend.</p> <p>Tutorial: Using Variables and Arrays: Describe the various data types they can use to declare variables.</p> <ul style="list-style-type: none"> • Name, declare, initialize, and use variables and constants. • Declare variables with different levels of scope. • Store data in arrays. <p style="text-align: right;">(10 Hrs)</p>
Unit-III	: <p>Windows Applications in VB.NET: All about Windows MDI Forms, Text Boxes, Rich Text Boxes, Buttons, Check Boxes, Radio Buttons, List Boxes, Combo Boxes, Picture Boxes, Check List Boxes, Timers, Scroll Bars, Splitters, Image List, Tree Views, List Views, Status Bar and Progress Bar.</p> <p>Tutorial: Working with Forms and Controls:</p> <ul style="list-style-type: none"> • Working with Windows Forms. • Working with Controls. • Styling Your Code. • Create and manage multiple forms in a simple application. • Interact with a user by using the MessageBox() function. <p style="text-align: right;">(10 Hrs)</p>
Unit-IV	: <p>Writing Software & Controlling the Flow: Variables, Comments, Data Types, Strings, Handling Time & Dates, Boolean, Arrays. The If, Else, If- Else Statement, Comparison Operators, AND/OR Operators, String Comparison, Select CASE, Loops: For---Next Loop, For each---Next Loop, Do Loop, Do---Until Loop, Do ---While Loop, Nested Loop, While Loop, Procedures, Error Handling, Operators.</p> <p>Tutorial: Decision Structures and Loops:</p> <ul style="list-style-type: none"> • Use If...Then structures to evaluate whether a condition is true or false and direct the program flow accordingly. • Use Select Case structures to execute one of several statements. • Use For...Next structures to execute statements a set number of times. • Uses do...Loop structures to execute statements until a specific condition is met or while a specific condition is true. <p style="text-align: right;">(10 Hrs)</p>

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering & Technology) Syllabus of S. Y. B. Tech. (Computer Science and Engineering) Semester- IV	
Code No: CSE254 Teaching Scheme: 4 hrs/week Theory : 3 hrs/week Tutorial : 1 hr/week Credits : 4	
Title: Computer Hardware Class Test : 20 Marks Theory Examination (Duration) : 3Hrs Theory Examination (Marks) : 80 Marks	
Objectives	: The number of mobile computers/laptops is increasing day by day due to more penetration of PC's in the market. This need more service engineers to understand and solve the problem in laptops and also wireless network maintenance. This course prepares the student for servicing and maintenance of laptops, wireless LANs and advanced networking devices.
Unit-I	: I. Introduction to Portable Mobile Computers, Laptops, Palmtops. Types and classes of portable computers: - Laptops, Notebooks, Palmtops, and Personal Digital Assistants. Portable System models and configurations from different manufacturers: - IBM, DEL, Compaq, Toshiba, Fujitsu, Acer, Compact Version Operating Systems and applications for portable Computers: - Windows CE, Linux, Apple Macintosh, Mini browsers and WML. Portable system Processors:- Mobile Pentium, Mobile Celeron Processors, AMD Mobile Athlon-4 and Mobile Duron. Mobile processor packaging and compact Motherboards. Tutorial Visit the Websites (Compaq.com, IBM.com) and get the configurations of various models of portable computer, laptops and notebooks. (10 Hrs)
Unit-II	: Compact devices used in Portable Mobile Computers. Compact Hard Drives, Floppy Drives, CD ROMs, DVD, CD Writers used in Mobile computers. Keyboards and Pointing Devices: - Inbuilt and External keyboards, Compact multimedia keyboards, Track Point, Touchpad's, Wireless mouse. PCMCIA Cards:- PCMCIA Ethernet LAN card, PCMCIA Wireless Card. Type -I, Type -II Type -III types of cards, and their slots. Infrared ports, Docking Stations. Tutorial 1. A customer has lost the driver CD of an IBM ThinkPad series Laptop. Download all the drivers and Burn a CD for this system. 2. Install a PCMCIA WLAN card on a laptop & establish a connection with wireless access point in the vicinity. (10 Hrs)
Unit-III	: Specialized output devices used in Portable Mobile Computers and Preventive maintenance for Portable Mobile Computers Display used in portable computers:- Dual Scan(passive Matrix) Displays. Active Matrix, Flat- Panel LCD Displays, Active TFT Displays, Colour and Monochrome Displays. Power Supply constraints, Battery charging, Handling and Storage, Cleaning of Displays, Running diagnostic software tools, Handling Plug-in /Plug-out Hardware. Tutorial Get the details (voltage, Current, chemistry, Charging Current) of a given laptop battery. (10 Hrs)
Unit-IV	: Portable Mobile Computers in wireless LANS Wireless Standards: - IEEE 802.11(a/b/g), 802.16 (Wi-max) Bluetooth RF Data Communication. Notional Ad Hoc Network Fundamental, 802.11b Wireless LAN Topology, 802.11b Wireless LAN Ad Hoc Topology, Key Characteristics of 802.11 Wireless LANS, Typical Range of 802.11 WLAN, Access Point Bridging, A WLAN Architecture, Typical Bluetooth Network—A Scatter-net, Bluetooth Ad Hoc Topology, Bluetooth Operating Range, Key Characteristics of Bluetooth Technology, Device Classes of Power Management.

Unit-V	:	<p>Data Access With ADO.NET: Introduction to database, Connections, Data adapters & Data Sets, Data Reader, Accessing Data with Server Explorer, Creating New Data Connection, Adding Multiple Table to Dataset</p> <p>Binding Controls to Data Bases: Binding Text Boxes, Buttons, Check Boxes, Radio Buttons, Combo Boxes, List Boxes, Checked List Boxes, Data Grids</p> <p>Tutorial: Use ADO.NET with a Windows Forms application to create, read, update, and delete records in Access and SQL Server databases.</p> <p style="text-align: right;">(10 Hrs)</p>
Unit-VI	:	<p>Crystal Report: Connection to Database, Table, Queries, Building Report, Modifying Report, Formatting Fields and Object, Header, Footer, Details, Group Header, Group footer, Summary, Working with formula fields, Parameter fields, Group, Special fields, Working with Multiple Tables, SQL in Crystal Report, Report Templates.</p> <p>Tutorial: Deploying an Application:</p> <ul style="list-style-type: none"> • Describe how to deploy applications by using Visual Studio .NET. • Create and customize a Setup program for a Windows-based application. <p style="text-align: right;">(10 Hrs)</p>
Reference Books	:	<ol style="list-style-type: none"> 1. "Visual Basic .NET Black Book ",BY Steven Holzner Dreamtech Press 2. "Visual Basic .NET The Complete Reference "BY Jeffrey R. Shapiro TMH 3. "Programming Microsoft Visual Basic.NET "BY Francesco Balena Microsoft Press 4. "Beginning VB.NET" BY Blair, Crossland, Reynolds, SPD 5. "Mastering Crystal Report" BPB Publication 6. "Crystal Report" – The Complete Reference Tata McGraw Hill

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

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		<p>Tutorial:</p> <p>1. A customer wants to communicate between some model of a Nokia mobile phone, and a Laptop. Download a suitable driver, and communicate using infrared ports on two systems.</p> <p>2. Prepare a case study of IEEE 802.11 (a/b/g) standard. (10 Hrs)</p>
Unit-V	:	<p>Security in wireless LANS. Wireless</p> <p>Security Threats, Authenticity No repudiation, Accountability, Wireless Security of 802.11b in Typical Network, Taxonomy of 802.11 Authentication Techniques, Shared-key Authentication Message Flow, WEP Privacy Using RC4 Algorithm, Taxonomy of Security Attacks, Typical Use of VPN for Secure Internet Communications From Site-to-Site, VPN Security in Addition to WEP, Bluetooth Air-Interface Security</p> <p>Taxonomy of Bluetooth Security Modes, Bluetooth Key Generation from PIN, Bluetooth Authentication, Bluetooth Encryption Procedure, Man-in-the-Middle Attack Scenarios, Key Problems with Existing 802.11 Wireless LAN Security, Wireless LAN Security Checklist, Key Problems with Existing (Native) Bluetooth Security, Bluetooth Security Checklist, Wireless Handheld Device Security.</p> <p>Tutorial: Write a case study of various wireless security threats. How VPN is used secure internet connection (10 Hrs)</p>
Unit-VI	:	<p>Advanced Networking Components like Routers, Switches etc.</p> <p>Routers, how it works, Routing Protocol, Routing Table, Routing & Removable Access Services. Switch, Matrix Switch, Code Operated Switches, Post Contention Scanning Switches, Ethernet switch, ATM Switch.</p> <p>Tutorials</p> <ol style="list-style-type: none"> 1. Configure a Laptop running Windows 2000 Server to temporarily take the charge of a Domain controller of the given LAN. 2. Connect the WIC card on a Laptop to WAN interface of your LAN router. 3. Configure a Router using a Laptop at a remote location. 4. Examine various ports of the following series CISCO router (2500, 2600, 4500, 12000). Use net resources in case Routers are not available. <p>Connect a terminal to the console port of a router. Using Microsoft Hyper terminal program, show the power UP configuration of a Router. Explain Power UP sequence of a Router (10 Hrs)</p>

Reference Books:	: Text books
	<ol style="list-style-type: none"> 1. Upgrading and Repairing Laptop Computers, BY Scott Mueller (Author) ,Published by Que (October 2003) ISBN 0789728001 2. Laptop Security Short & Simple, BY Gregory Donte' Evans Publishers: LIGATT Corp ISBN: 5551284220 3. Network Security Architectures, <u>Sean Convery</u> Published by Pearson Higher Education (April 2004) ISBN 158705115X 4. Router Basics Patrick Spielman 5. <u>Introduction to Cisco Router Configuration</u> Laura Chappell 6. Cisco® Router Troubleshooting Handbook Peter Rybaczyk 7. <u>Wireless and Mobile Network Architectures</u> Yi-Bing Lin <p>Reference Books:</p> <ol style="list-style-type: none"> 1. Linux for Your Laptop Bill Ball 2. Troubleshooting, Maintaining & Repairing PCs Stephen J. Bigelow 3. The Complete Laptop Computer Guide: How to Choose and Get the Most Out of Your Portable.

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. (Computer Science and Engineering) Semester- IV	
Code No.: CSE255 Teaching Scheme: 4 hrs per week Theory : 3 hrs/week Tutorial : 1 hr/week Credits : 4	Title: Computer Network Class Test: 20 Marks Theory Examination (Duration) : 3 Hrs Theory Examination (Marks): 80 Marks
Objectives	: 1. To learn concept of computer network and its application. 2. To study different Types of network. 3. To study the Internet Application.
Unit-I	: Introduction : Concept of network criteria, Physical Structure, Categories of Network, Internetwork, Internet standards, Protocols, Network Model . Tutorial: Basic network skills. (10 Hrs)
Unit-II	: The physical layer: Analog and Digital Signals, Analog and digital data, Bandwidth, Network Throughput and network latency, Transmission modes: Parallel transmission and serial transmission, multiplexing. Tutorial: Practical on physical layer like switch and other network devices. (10 Hrs)
Unit-III	: The Data link layer : Design issue, error detection and correction, point to point protocol, sliding window protocol, HDLC and data link layer in the internet, ALOHA, Channelization. Tutorial: Practical on Data link layer, different types of medium. (10 Hrs)
Unit-IV	: The Medium Access sub layer: The channel allocation problem, multiple access protocol, CSMA, Protocol, collision protocol, IEEE standard like 802.2, 802.3, bridges. Tutorial: Based on switches, router, bridges. (10 Hrs)
Unit-V	: The Network layer and Transport layer: Design issue, IPv4 Address, IPV6 Address, Concept of Internetworking, ICMP, Unicast routing protocol, Multicast routing protocol, data traffic, congestion, DNS. The transport service, the TCP and UDP protocol, IP blocker, Network analyzer tools. Application layer, network security traditional cryptography, secret key algorithm. Tutorial: Based Network equipment and information about network layer. (10 Hrs)
Unit-VI	: Application Layer: TELNET, FTP, HTTP, Network management system, SNMP(simple network management protocol, Security services. Tutorial: Based on telnet and ftp protocols. (10 Hrs)
Reference Books:	: 1. "Data Communication and Networking ,BY Behrouz a Forouzan Tata McGRAW. 2. Computer Network ,BY Tanenbum, PHI 3. Data and Computer Communication ,BY William Stallings, PHI

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. (Computer Science and Engineering) Semester- IV	
Code No: CSE256 Teaching Scheme: 2 Hrs per week Theory : 2 Hrs/week Tutorial : -- Credits: 02	Title : Software Engineering Class Test: 10 Marks Theory Examination (Duration) : 2 Hrs Theory Examination (Marks): 40 Marks.
Objective :	At the end of the course students should understand the overall software development methods, quality management of software and will know details of an object oriented software engineering, testing methods of software. They will be aware of the way in which software reengineering is performed.
Unit-I :	Introduction: Software Crisis, myths process, software engineering layered Technology, software process model, linear sequential model, prototype model, RAD model, evolutionary software process model, formal method model, fourth generation techniques, process technology, and product & process technology. (5 Hrs)
Unit-II :	Analysis Concepts And Principles: Requirement Analysis, Communication Techniques, Analysis Principles, Software prototyping, Specification, Specification Review, Analysis Modeling, Elements of analysis Model, Data modeling, functional modeling and information flow, behavior modeling ,mechanism of structure analysis, data dictionary. (5 Hrs)
Unit-III :	Software project planning: The management Spectrums, people, the problem, the process, the project. Project planning objectives software scopes, resources, software project estimation, decomposition techniques, empirical estimation model. (5 Hrs)
Unit-IV :	Designing Concepts and Principles: software design and software engineering, design process, design principle design concepts, Effective modular design, design model design documentation, design methods, data design Architectural design, Architectural design process, transform mapping transaction mapping, design post processing, Architectural design optimization, interface design, human computer interface design, interface design guidelines,Procedural design. (5 Hrs)
Unit-V :	Risk management, Quality: Risk management, reactive vs. proactive risk strategies, software risk, risk identification and projection, risk mitigation, monitoring and management, the RMMM plan. Quality concepts, quality movement, software quality assurance, software review, formal technical review, statistical quality assurance, software reliability, the SQA plan, ISO9000 Quality standard. (5 Hrs)
Unit-VI :	Software Testing methods: software testing fundamentals ,test case design white box testing, basic path testing, control structure testing, black box testing, testing for specialized environments, software testing strategies, strategic approach to software testing, strategic issues, unit testing, integration testing validation testing, system testing. (5 Hrs)
Reference Books: :	<ol style="list-style-type: none"> 1. "Software Engineering, A practitioners approach" ,BY Roger S. Pressman ,Mc-Graw Hill Publication 2. "Integrated Approach to software engineering" ,BY Pankaj Jalote, Narosha publishing house 1997

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

Pattern of Question Paper:

The six 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 40 marks Paper:

1. Minimum eight questions.
2. Four 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 six marks each. The Question no.1 and 6 should be of objective nature.
4. Two questions of 7 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. (Computer Science and Engineering) Semester- IV	
Code No: CSE271 Teaching Scheme:(02) Hours per week Practical: 02 Hours per week Credits:01	
Title: Lab VI: Data Structure TA :25 marks Practical :25 marks Total Examination (Marks):50	
Course Objectives	: 1. To learn concept of Data structures and its application. 2. To learn different data structures like stack, queue, linked list etc. 3. To learn graphs, trees and related algorithms. 4. To learn different sorting and searching techniques. 5. To apply these concepts to various areas of computer science.
List of Practicals	: 1. Program to implement stack using array. 2. Program to implement queue using array. 3. Program to implement single Linked list and various operations on it. 4. Program to implement doubly linked list and various operations on it. 5. Program to implement Binary tree and various tree traversals. 6. Program for Binary Search tree. 7. Program to create graph and various graph traversal techniques. 8. Program for Bubble sort. 9. Program for Quick sort. 10. Program for Binary search.
List of Reference Books	: 1. "Data Structures in C" ,BY Tanenbaum ,PHI. 2. "Data structures and program Design",BY Robert L.Kurse, PHI. 3. "Fundamentals of Data Structure in Pascal",BY Horwitz and sahani, Computer Science Press. 4. "C and Data Structures",BY Balguruswami,TMH.

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. (Computer Science and Engineering) Semester- IV	
Code No: CSE272 Teaching Scheme: (02) Hours per week Practical: 02 Hours per week Credits: 01	Title: Lab VII: Programming in VB.Net TA : 25 marks Practical : 25 marks Total Examination (Marks): 50
Course Objectives	: To identify and describe the purpose of various components of the VB integrated development environment (IDE), build and run small applications, understand the basic problem-solving techniques, declare variables and constants using the data types, create GUI applications using standard controls, understand and create multiple document interface (MDI) applications.
List of Practical	: <ol style="list-style-type: none"> 1. Introduction to VB.NET IDE Environment 2. Building windows application for word count & character count 3. Develop an application using Open, Save, font, color Dialog Boxes. 4. Creating Menus. 5. Creating your own Custom Controls. 6. Creating MDI Application. 7. Accessing Data Bases Using Microsoft Access. 8. Data Binding. 9. Implementing Structured Exception Handling. 10. Creating Windows Application Using Date, Timer, Text Boxes, Buttons, Check Boxes, Radio Buttons, List Boxes, Combo Boxes, Picture Boxes, Check List Boxes, Scrollbars <ul style="list-style-type: none"> • Create and manage multiple forms in a simple application. • Create and open a connection to a database. • Create, read, update, and delete records in a database. • Use the Data Form Wizard to create a simple data access application. • Display and modify data extracted from a database.
Reference Books	: <ol style="list-style-type: none"> 1. "Visual Basic .NET Black Book ",BY Steven Holzner Dreamtech Press 2. "Visual Basic .NET The Complete Reference "BY Jeffrey R. Shapiro TMH 3. "Beginning VB.NET" BY Blair, Crossland, Reynolds, SPD

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. (Computer Science and Engineering) Semester- IV Code No.:CSE273 Teaching Scheme:(02) Hours per week Practical: 02 Hours per week Credits:01		Title: Lab VIII: Computer Network TA :25 marks Practical :25 marks Total Examination (Marks):50
Course Objectives	:	1. To learn concept of computer network and its application. 2. To study different Types of network. 3. To study the Internet Application.
List of Practicals	:	1. To study various networking component (switches, Bridge, Router) 2. Implementation of HDLC protocol 3. Implementation of Sliding Window protocol 4. To study Token Bucket protocol 5. To study TCP and UDP protocol using socket programming 6. To study Port scanner concept in Computer networking. 7. Network security protocols 8. Ip address IPv4 IPv6 tcp/ip 9. Tracert trace route Ping Arp Netstat Nbtstat 10. function of TCP UDP protocols
List of Reference Books	:	1. "Data Communication and Networking ,BY Behrouz a Forouzan Tata McGRAW. Fourth Edition 2. "Computer Network ",BY Tanenbum, PHI Second Edition 3. "Data and Computer Communication ",BY William Stallings, PHI Second Edition

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. (Computer Science and engineering) Semester- IV	
Code No.: CSE 274 Teaching Scheme: (02) Hours per week Practical: 02 Hours per week Credits: 01	Title: Lab IX: Computer Laboratory- II TA : 50 marks Practical :-- Total Examination (Marks): 50 marks
Course Objectives	1. To learn concept of PHP (Pre Hypertext Processor) and My-Sql. 2. To learn creation of dynamic web pages using php script. 3. To learn Mysql queries to interact with database. 4. To learn WML (Wireless Markup Language). 5. To learn XAML (Extensible Application Markup Language).
Unit-I	Introduction to PHP : PHP Introduction, PHP Installation, Advantages of PHP, PHP Syntax, Creating Simple HTML and PHP page Common PHP Script Elements : PHP Variables, PHP String, PHP Operators, PHP If...Else, PHP Switch, PHP Arrays, PHP Looping, PHP Functions.
Unit-II	Working With Forms : PHP Forms, PHP \$_GET,PHP \$_POST, Processing Forms ,Form Validation . PHP Advanced: PHP Date, PHP Include, PHP File, PHP Cookies, PHP Sessions.
Unit-III	Object Oriented Programming in PHP: Object oriented programming concepts, Advantages of OOPS,Classes and objects, Accessing Properties and methods, Constructors, Implementing Inheritance.
Unit-IV	PHP Database : MySQL Introduction, MySQL Connect, MySQL Create, MySQL Insert, MySQL Select, MySQL Where, MySQL Order By, MySQL Update, MySQL Delete, Project in PHP and MySQL.
Unit-V	Introduction to WML: wap introduction ,wml Introduction, wml emulators, Declaring A WML Document, Cards and deck ,syntax,wml elements,wml variables.
Unit-VI	Introduction to XAML: Xaml introduction.
List of Practicals (Minimum ten experiments to be performed)	1. Implement web page using HTML? Program using java script. 2. Introduction to PHP Implementation of Arithmetic operation in PHP, if statement 3 Implementation of switch case, \$_Get and \$_Post function. 4. Implementation of looping statement, user defines and invokes function. 5. Implementation of array in PHP and Reading, Writing Files. 6. To Creating a Session and Registering Session Variables & Implementation of Data base connectivity. 7. Introduction to WAP and WML , Create Basic WML Document. 8. Simple WML Document with a Single Card, Formatting text in WML. 9.avigate around other cards in the deck. Specify a Variable with the Setvar Command and a Variable through an Input Element. 10. Programming using XAML
List of Reference Books	1 Teach yourself PHP, Mysql and Apache, BY Julie C Meoni ,Pearson Education. 2. Introduction to open Source and Software Technology ,BY Prof. R .M Autee , Prof. B.S.Sonawane ,Renuka publication. 3. Mastering PHP ,BY Jeremy Aleen&Charles Hornberger ,BPB Publication.

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. (Computer Science and Engineering) Semester- IV	
Code No.: CSE275 Teaching Scheme: 2 Hrs/week Practical: 2 Hrs/week Credits: 1	Title: Lab X : Development of Skills –III TA: 50 Marks Practical :-- Total Examination (Marks): 50 marks
Course Objectives	: The number of mobile computers/laptops is increasing day by day due to more penetration of PC's in the market. This need more service engineers to understand and solve the problem in laptops and also wireless network maintenance. This course prepares the student for servicing and maintenance of laptops, wireless LANs
Assignment-1	Study of various parts of laptop. Basic Input Output System (BIOS),CMOS Setup,Drivers and Device Manager,Motherboard,Central Processing Unit (CPU),Random Access Memory (RAM),Hard Drive,DVD/CD Burners,Liquid Crystal Display (LCD),Laptop Batteries,Universal Serial Bus (USB),Bluetooth
Assignment-2	Laptop Troubleshooting Power Problems.
Assignment-2	Laptop Troubleshooting Battery Problems.
Assignment-4	: Laptop Troubleshooting Laptop Overheating,
Assignment-5	Laptop Troubleshooting Keyboard, Pointer and USB .
Assignment-6	Laptop Troubleshooting Laptop Hard Drives,
Assignment-7	Laptop Troubleshooting Wireless Connectivity,
Assignment-8	Laptop Video Troubleshooting,
Assignment-9	Laptop Troubleshooting Motherboard, CPU and Memory
Assignment-10	Laptop Troubleshooting DVD/CD Playback and Record,
Assignment-11	Laptop Troubleshooting Laptop Sound,Wired Network Troubleshooting
List of Reference Books	: 1. Upgrading and Repairing Laptop Computers, BY Scott Mueller (Author) ,Published by Que (October 2003) ISBN 0789728001 2. Laptop Security Short & Simple, BY Gregory Donte' Evans Publishers: LIGATT Corp ISBN: 5551284220 3. The Complete Laptop Computer Guide: How to Choose and Get the Most Out of Your Portable

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