### STATE BOARD OF TECHNICAL EDUCATION, JHARKHAND

# TEACHING AND EXAMINATION SCHEME FOR POST S.S.C. DIPLOMA COURSES

COURSE NAME : DIPLOMA IN COMPUTER ENGINEERING / COMPUTER TECHNOLOGY / INFORMATION TECHNOLOGY.

COURSE CODE : CO/CM/IF/CD

### **DURATION OF COURSE : SIX SEMESTERS**

#### WITH EFFECT FROM 2011-12 DURATION : 16 WEEKS

YEAR / SEMESTER : THIRD SEMESTER FULL TIME / PART TIME : FULL TIME

SR.	SUBJECT TITLE	Abbrevi	SUBJECT	TE So	ACHII CHEM	NG E		EX	AMINA	TION SO	CHEME	& MA	XIMUM	I MARK	XS	
NO.		at ion	CODE	тц			PAPER	Т	Н	P	R	0	R	T	W	SW
				111	10	IN	HRS	Max	Min	Max	Min	Max	Min	Max	Min	(16003)
1.	Applied Mathematics	AMT	12062	03			03	100	40							
2.	Object Oriented Programming	OOP	12063	04		04	03	100	40	50#	20			25@	10	
3.	Digital Techniques	DTE	12064	03		02	03	100	40					25@	10	50
4.	Relational Data Base Management Systems	RDB	12065	04		04	03	100	40			25#	10	25@	10	
5.	Visual Basic	VBA	12066			04				50@	20					
6.	Professional Practices-III	PPR	12067			05								50@	20	
			TOTAL	14		19		400		100		25		125		50

Student Contact Hours Per Week: 33 Hrs.

### THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH.

Total Marks : 700

(a) Internal Assessment, # External Assessment, No Theory Examination.

Abbreviations: TH-Theory, TU- Tutorial, PR-Practical, OR-Oral, TW- Termwork, SW- Sessional Work.

- Conduct two class tests each of 25 marks for each theory subject. Sum of the total test marks of all subjects is to be converted out of 50 marks as sessional work (SW).
- > Progressive evaluation is to be done by subject teacher as per the prevailing curriculum implementation and assessment norms.
- Code number for TH, PR, OR, TW are to be given as suffix 1, 4, 8, 9 respectively to the subject code.

Course Name : Computer Engineering Group Course Code : CO/CM/IF/CD Semester : Third Subject Title : Applied Mathematics Subject Code : 12062

### Teaching and examination scheme:

Teaching Scheme					Examinati	on Scheme		
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03			03	100				100

NOTE:

- > Two tests each of 25 marks to be conducted as per the schedule given by SBTE.
- Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)

#### **Rationale:**

The study of mathematics is necessary to develop in the student the skills essential for new technological development. This subject introduces some applications of engineering, through which the student can understand the link of Mathematics with engineering principles.

#### **Objective:**

The Student will be able to:

- 1. Acquire knowledge of Mathematical term, concept, principals, and different methods.
- 2. Develop ability to apply Mathematical methods to solve technical
- 3. Solve problems, execute management plans with precision.
- 4. Acquire sufficient Mathematical techniques necessary for daily and practical problems.
- 5. Understand relation between Mathematics and applications in engineering.

#### w.e.f Academic Year 2011-12

# Learning Structure:

Application	Calculate Area, volume of irregular shapes.	Area, Apply Laws of voltage lar and current.		Development of logical concept of computer programming.		ution of Ferential ation by ative thods.	Able to do Data networking, digital signal processing, compiler construction.
			Î				
Procedure	To explain different methods of finding integration, definite integration and its properties.	To explain different methods of solving differential equation of first order an first degree.	To e LaG New forw back met num diffe & ir	explain Frange's, /ton's vard & ward hods, herical erentiation htegration	L	To explain Rung- Kutta's second and forth order methods for solving differential equation.	To explain algebra of sets, Venn- diagram, De-Morgan's laws.
Concept	Integration of standard functions. Rules of integration. Integration by parts, partial fractions.	Order, degree of differential equation. Solution of D. E. , formation of D. E.	Differer table. Interpol formula Formula numeric differen and inte	nce ation e. ae for cal tiation gration.	Iter met solv diff equ ord deg kut	ative thods for ving ferential action of first er and first gree. Runge- ta	Subsets, operation on sets, Venn diagram, De-Morgan's law, principle of inclusion and exclusion.
r							
Facts	First order differentiation. Definition of integration as anti-derivative.	Integration. Definition of differential equation	Tabula inform Differe operato	r ation. ence or, shift or.	Ordi diffe equa orde degr	inary prential ation of first r and first ree.	Well defined objects. Definition of set.

# **Contents:** Theory

Chapter	Name of the Topic	Hours	Marks
01	<ul> <li>Integration</li> <li>1.1 Definition of integration as anti-derivative. Integration of standard function.</li> <li>1.2 Rules of integration (Integrals of sum, difference, scalar multiplication).</li> <li>1.3 Methods of Integration. <ol> <li>1.3.1 Integration by substitution</li> <li>1.3.2 Integration of rational functions.</li> <li>1.3.3 Integration by partial fractions.</li> <li>1.3.4 Integration by trigonometric transformation.</li> <li>1.3.5 Integration by parts.</li> </ol> </li> </ul>	10	16
	<ul> <li>1.4 Definite Integration.</li> <li>1.4.1 Definition of definite integral.</li> <li>1.4.2 Properties of definite integral with simple problems.</li> </ul>	04	08
	<ul> <li>1.5 Applications of definite integrals.</li> <li>1.5.1 Area under the curve.</li> <li>1.5.2 Area between two curves.</li> </ul>	02	04
02	<ul> <li>Differential Equation</li> <li>2.1 Definition of differential equation, order and degree of differential equation. Formation of differential equation for function containing single constant.</li> <li>2.2 Solution of differential equations of first order and first degree such as variable separable type, reducible to Variable separable, Homogeneous, Non-homogeneous, Exact, Linear and Bernoulli's equations.</li> </ul>	08	18
	<ul> <li>2.3 Applications of Differential equations.</li> <li>2.3.1 Laws of voltage and current related to EC, RC LRC Circuits.,</li> </ul>	02	04
03	<ul> <li>Interpolation</li> <li>3.1 Interpolation</li> <li>3.1.1 Introduction, Lagrange's interpolation formula.</li> <li>3.1.2 Difference operator, relation between them. Difference Table.</li> <li>3.1.3 Newton's forward and backward difference interpolation formulae.</li> <li>3.1.4 Concept of extrapolation.</li> </ul>	08	16

04	Numerical Differentiation & Integration.4.1Newton's forward and backward difference formulae for $ay d^2 y$ $ay dy d^2 y$	06	14
	4.2 Numerical integration Trapezoidal rule and Simpson's 1/3 rd rule.		
05	Numerical Solution Of Ordinary Differential Equation5.1Introduction.5.2Runge Kutta's 2 <sup>nd</sup> and 4 <sup>th</sup> order methods.	04	08
06	Discrete Mathematics6.1Relational algebra.6.2Sets, subsets (Venn diagram)Operation on sets, De-Morgan's laws.Principal of inclusion and exclusion with simple problems.	04	12
	Total	48	100

## Learning Resources: Books:

Sr.	Authors	Title	Publications
No.			
01	C. D. Dashnanda	Mathematics for a late shair	Pune Vidyarthi Griha
01	S. P. Desnpande	Mathematics for polytechnic	Prakashan
02	Robert T. Smith	Calculus: single variable	Tata McGraw Hill
03	Murray R Spiegel	Advanced Mathematics for Engineers and Scientist	McGraw Hill
04	F. Ayres	Schaum outline of differential and integral calculus	Tata McGraw Hill
05	Frank Ayres	Differential Equation: SI Metric	Schaum Outline series.
06	B. S. Grewal	Higher Engineering Mathematics	Khanna Publication,
07	S. S. Sastry	Introductory Methods of Numerical analysis	Prentice Hall Of India
08	Chapra	Numerical methods for Engg. 4 <sup>th</sup> ed.	Tata McGraw Hill
09	M. K. Jain & others	Numerical methods for scientific & engineering computations	Wiley Eastern
10	Colman, Busby and Ross	Discrete Mathematical structure	Prentice Hall of India

Course Name : Computer Engineering Group Course Code : CO/CM/IF/CD Semester : Third Subject Title : Object Oriented Programming Subject Code : 12063

### **Teaching and Examination Scheme:**

Tea	ching Sch	eme			Examinati	on Scheme		
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
04		04	03	100	50#		25@	175

NOTE:

> Two tests each of 25 marks to be conducted as per the schedule given by SBTE.

### > Total of tests marks for all theory subjects are to be converted out of 50 and

### to be entered in mark sheet under the head Sessional Work. (SW)

### **Rationale:**

Object oriented programming has become the preferred approach for most software projects. Object oriented programming offers a new and powerful way to cope with complexity. Object oriented programming concepts are useful for constructing complex physical systems such as car, airplanes etc.

Instead of viewing the program as a series of steps to be carried out ,it views as a group of objects that have certain properties and can take appropriate actions. Among the Object oriented programming languages available  $C^{++}$  is most widely used language.

Different programs based on Inheritance, polymorphism, encapsulation, overriding requires knowledge of C++. This subject acts as a base for languages JAVA, VC++ & UML.

### **Objectives:**

The Student will be able to:

- Write programs using objects & classes.
- Develop programs to create and destroy the objects
- Use existing operators for different meanings.
- Using reusability concept.
- Implement pointers for arrays, strings & object.
- Describe polymorphism, concepts, it's types, virtual function & write program for same.
- Apply formatted & unformatted console I/O operation & perform file related activities using C++ streams.

#### w.e.f Academic Year 2011-12

### Learning Structure:



### **Contents:** Theory

Chapter	Name of the Topic	Hours	Marks
01	Concept of Object Oriented Programming.	06	08
	History & features: It's need & requirement, procedure oriented		
	programming versus object oriented programming, basic concepts		
	object oriented programming, object oriented languages.		
	<b>Beginning with C++</b> : Concepts & structure of C++ programming,		
	concepts of structure.		
02	Objects & classes	12	18
	Specifying a class, Defining member functions, Access specifiers		
	(public, private) Arrays within a class, Creating objects, memory		
	allocation for objects, static data & member function, Arrays of		
	objects, objects as function argument.		
03	Constructors and Destructors.	10	14
	Concept of Constructor, Types of constructors (Default,		
	Parameterized, copy,), OverloadedConstructors (Multiple		
	Constructor), Constructor with default argument, Destructors.		
	Function overloading, Operator overloading (overloading unary &		
	binary operators), rules for overloading operators.		
04	Inheritance	08	16
	Concepts of inheritance, Derived classes, Member declaration		
	(Protected), Types of inheritance (Single, multilevel, multiple,		
	hierarchical, Hybrid inheritance), Virtual base classes, Abstract		
	classes, Constructors in derived classes, Member classes.		
05	Pointers in C++	12	14
	Concepts of pointer (Pointer declaration, pointer operator, address		
	operator, pointer expressions, and pointer arithmetic), Pointers &		
	functions (Call by value, call by reference, pointer to functions,		
	passing function to another function), Pointers in arrays (Searching,		
	insertion & deletion), Pointers to string (Searching, finding length,		
	comparison, concatenation, reverse), Pointers & objects (Pointers to		
	objects, this pointer, and pointer to derived classes).		
06	Polymorphism	06	14
	Concepts of polymorphism, types of polymorphism, function		
	Overloading & function overriding, Virtual function, Static &		
	dynamic binding.	10	1.6
07	Basic function of I/O system basics & File Processing	10	16
	Stream classes, using formatted & unformatted functions, using		
	manipulator to format I/O, Basics of file system, opening & closing		
	a file, reading & writing character from a file (get(), put(), getline(),		
	write()), Command line arguments.	~ .	4.6.5
1	Total	64	100

#### Practical:

Skills to be developed: Intellectual skills:

- Use of programming language constructs in program implementation.
- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem

- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
  - Problem definition Analysis Design of logic Coding Testing Maintenance (Modifications, error corrections, making changes etc.)

Motor skills:

• Proper handling of Computer System.

### List of Practical:

Sr. No.	Title of Experiment	No of practical
1.	Programs to input & output data (Simple programs).	01
2.	Programs to create object of class	01
3.	Programs to create arrays of objects	02
4.	Program to access static member variables	01
5.	Programs using object as function arguments using friend function.	01
6.	Programs to define Class using constructor & destructor.(Default constructor, Multiple constructor, Copy constructor, Overloaded constructor)	01
7.	Program using constructor with default argument	01
8.	Program to overload unary & binary operator	02
9.	Single inheritance & multilevel using protected member	02
10.	Multiple inheritance & virtual base class	02
11.	Program for pointers to arrays of integer	02
12.	Program for pointers to strings	02
13.	Program for pointers to objects	02
14.	Program for this pointer.	01
15.	Program for (virtual functions) runtime polymorphism	01
16.	Programs for overload function	01
17.	Format output using manipulators & own manipulator.	02
18.	Program for file processing	02

### Learning Recourses:

### 1. Books:

Sr.No.	Author	Title	Publisher
01	Schilt	C++ The complete reference	Tata McGraw Hill
02	Balgurusamy	Object oriented programming with C++	Tata McGraw Hill
03	Lafore Robert	Object oriented programming in Turbo C++.	Galgotia
04	Kanetkar	Let's C++	BPB

### 2. Website for mini projects:

- <u>www.sourcecodesworld.com</u>
- <u>www.softeam.com</u>
- <u>www.cplus.about.com</u>/od/beginnerctutorial

# 3. Magazines:

Express computers. C / C++ journal

Demo lectures with power point presentations using LCD projector should be arranged to develop programming concepts of students.

Course Name : Computer Engineering Group Course Code : CO/CM/IF/CD Semester : Third Subject Title : Digital Techniques Subject Code : 12064

#### **Teaching and Examination Scheme:**

Tea	ching Sch	eme			Examinat	tion Scheme	•	
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
03		02	03	100			25@	125

NOTE:

> Two tests each of 25 marks to be conducted as per the schedule given by SBTE.

# Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)

#### Rationale:

In the present era, applications of digital circuits are prevalent in consumer products right from calculators, digital diaries, digital watches, computers, mobile phones, to industrial products. So the digital technique has been introduced as a core technology subject in Computer Engineering curriculum. It will enable the students to assemble, design, test and troubleshoot logical circuits such as ALU, MUX, DEMUX, A/D and D/A converters. It deals with topics ranging from logic gates, to combinational and sequential logic circuits and memories. It lays a foundation for the knowledge of microprocessors and computers.

#### **Objectives**:

The student will be able to

- 1. Design simple logic circuits.
- 2. Assemble logic circuits.
- 3. Test the logic circuits.
- 4. Observe outputs of logic circuits.
- 5. Troubleshoot digital circuits.

### Learning structure:



# **Contents: Theory**

Chapter	Contents	Hours	Marks
	Introduction To Digital Techniques		
	1.1 Digital circuit.		
	1.2 Digital signal.		
	1.3 Use of digital circuit and digital signal.		
	1.4 Advantages and Disadvantages of Digital circuits.		
	1.5 Generation of digital signal		
	1.6 Introduction to digital ICs, Characteristics of digital ICs		
1	1.7 Logic families comparison of TTL, CMOS and ECL logic	08	16
	Families (No circuits) (To be covered in Practical)		
	1.8 Number System - Introduction to Binary, Octal, Decimal,		
	Hexadecimal number system		
	1.9 Conversion of number systems		
	1.10 1's complement and 2's complement		
	1.11 Binary arithmetic (addition, subtraction).		
	1.12 BCD code, BCD arithmetic (addition, subtraction).		
	Logic Gates And Boolean Algebra		
	2.1 Logical symbol, logical expression and truth table of AND,		
	OR, NOT, NAND, NOR, EX-OR and EX-NOR gates.		
	2.2 Universal gates – NAND and NOR gates		
	2.3 Logical circuits of basic gates using universal gates		
2	2.4 Gates using more than two inputs.	06	14
	2.5 TTL and CMOS logic gate ICs and their pin configurations.		
	(To be covered in Practical)		
	2.6 Basic laws of Boolean algebra, Duality theorem.		
	2.7 De Morgan's theorems.		
	Combinational Logic Design / Circuits		
	3.1 Simplification of Boolean expression using Boolean algebra		
	3.2 Construction of logical circuits forms Boolean expressions		
	3.3 Boolean expressions using Sum of products and product of		
	sums forms		
	3.4 K-map representation of logical functions		
	3.5 Minimization of logical expressions using K-man (2, 3, 4		
	variables).		
	3.6 Standardization of SOP & POS equations		
	3.7 Concept of Adders / Subtractors.		
	3.8 Truth table, K-map, Simplified logical expression and logical		
3	circuit using basic gates and universal gates of : (a) Half adder	12	24
	and full adder. (b) Half subtractor and full subtractor.		
	3.9 Block diagram, Truth table, Logical expression and logic		
	diagram of Multiplexers (4:1 and 8:1), Multiplexer IC.		
	3.10 Block diagram and Truth table of Demultiplexer (1:4; 1:8;		
	1:16), Demultiplexer IC.		
	3.11 Block diagram and Truth table of Encoders, Priority Encoders		
	ICs and Decoder.		
	3.12 Block diagram, Truth table, working principle, Applications,		
	pin functions of Decimal to BCD Encoder (IC 74147) and		
	BCD to 7-segment Decoder.		
	Block diagram and function table of Parity generator (IC 74180),		

	Digital comparator IC (7485); Block diagram and pin functions of	f		
	ALU 74181			
	Flin Flons And Sequential Logic Design			
	4 1 One-bit memory cell clock signal			
	4.2 Symbol and Logic diagram using NAND gates working a	nd		
	truth table of R S flip-flop.	114		
	4.3 Symbol and Logic diagram using NAND gates, working, t	ruth		
	table and timing diagram of Clocked R S flip flop.			
	4.4 Triggering: edge triggering and level triggering			
	4.5 Symbol and Logic diagram using NAND gates, working, t	ruth		
	table and timing diagram of J-K flip flop.			
	4.6 Block diagram and truth table of Master slave J-K flip flop	<b>)</b> .		
	4.7 Symbol, working and truth table of D- flip flop and T-flip	flop.		
4	4.8 Applications of flip flops		12	24
	4.9 Concept, Modulus, Working, truth table, timing diagram of	of a		
	counter.			
	4.10 Asynchronous counter (3 bit, 4 bit);			
	4.11 Design of mod N-counter: working, truth table and timing			
	diagram			
	4.12 3-bit Synchronous counter: working, truth table and timing	3		
	diagram	1.0		
	4.13 Block diagram, working, Iruth Table and waveforms of S	bhiπ		
	register: SISO, SIPO, PISO, PIPO (4-oit) and Universal SI	nin		
	A 14 Applications of Counters and Registers			
	4.14 Applications of Counters and Registers.			
	5.1 Classification of memories			
5	5.2 RAM ROM PROM EPROM E <sup>2</sup> PROM		04	08
	5.3 Circuit diagram using CMOS transistors and working of St	atic	01	00
	and dynamic RAM			
	A-D And D-A Converters			
	6.1 Circuit diagram and working of R-2R Ladder DAC and			
	Weighted resistor DAC.			
	6.2 DAC specifications		06	14
0	6.3 Block diagram and working of Ramp ADC, Dual slope Al	DC	00	14
	and Successive approximation ADC.			
	6.4 ADC specification			
	6.5 Advantages and Disadvantages of various methods.			
		Total	48	100

### Practical:

Skills to be developed:

Intellectual Skills:

- 1. Interpret the results
- 2. Verify the tables

# List of Practical: (Any TEN) including MINI PROJECT

1) Study of Digital IC datasheets and noting down the characteristics for TTL & CMOS logic families.

- 2) Verification of truth table of logic gates.
- 3) Verification of De Morgan's theorem.
- 4) Construction of Half adder and Full adder.
- 5) Implementation of Combinational Circuit using Multiplexer.
- 6) Construction of 7-segment decoder driver.
- 7) Verification of truth table of Flip flops.
- 8) Universal Shift Register
- 9) Decade counter using IC 7490.
- 10) Design of 3-bit Synchronous counter.
- 11) A to D Converter.
- 12) Study of data sheets related to digital ICs like \_\_\_\_\_.
- 13) A MINI PROJECT (Design, Assemble, Test and Troubleshoot) integrating minimum two digital ICs.

Learning Resources:

#### Books:

Sr. No.	Author	Title	Publisher	
01	R.P. Jain	Modern Digital Electronics	Tata McGraw Hill	
02	Malvino Leach	Digital Principles	Tata McGraw Hill	
03	Tokheim Digital Electronics		Tata McGraw Hill	
04	S.P. Bali	2000 solved problems in Digital Electronics – Sigma series	Tata McGraw Hill	

Course Name : Computer Engineering Group Course Code : CO/CM/IF/CD Semester : Third Subject Title : Relational Database Management Systems Subject Code : 12065

#### **Teaching and Examination Scheme:**

Teaching Scheme					Examinati	on Scheme		
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
04		04	03	100		25#	25@	150

NOTE:

### Two tests each of 25 marks to be conducted as per the schedule given by SBTE.

# Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)

#### **Rationale:**

The primary resource that fuels knowledge power is the database. Organizations are employing mechanisms to effectively manage and utilize the data stored in the databases. Relational Database management system has been developed to harness the information stored in the database.

The database management system is a collection of programs that enables to store, modify and extract information from a database. After learning this subject, the students will be able to understand the designing of RDBMS and can use any RDBMS package as a backend for developing database applications.

**Objectives:** The student will be able to:

- 1) Understand the concept of Database system and Client Server Architecture
- 2) Understand and develop the concepts of Data Modeling, Security and Integrity.
- 3) Understand and execute different SQL queries and PL / SQL programs.
- 4) Normalize the database using normal forms.
- 5) Understand the concept of query processing and Transaction processing.

### Learning Structure:



# **Contents : Theory**

Chapter	Name of the Topic	Hours	Marks
01	Database System Concept & Data Modeling	12	20
	<ul> <li>1.1 Basic concepts, Disadvantages of file processing system, Advantages of a DBMS over file processing system, Data Abstraction, Database Languages, Instance and Schema, Data Independence-Logical and Physical data Independence.</li> <li>1.2 Database Users, Functions of Database Administrator Components of a DBMS and overall structure of a DBMS- Query Processor and Storage Manager.</li> <li>1.3 Data Models: <ul> <li>Network Model</li> </ul> </li> </ul>		
	<ul> <li>Hierarchical Model</li> <li>E-R Model-Entity Sets, Mapping Cardinalities.</li> <li>Comparison of all models</li> <li>1.4 Introduction to Client Server Architecture.</li> </ul>		
02	Relational Data Model and Security and Integrity Specification	10	16
	<ul> <li>2.1 Relational Wodel: Basic concepts, attributes and domains, Keys concept: Candidate and primary Key, Integrity constraints: Domain, Entity Integrity constraints, Referntial constraints and On delete Cascade.</li> <li>2.2 Security and Authorization, Data Control language</li> <li>2.3 Query Languages: <ul> <li>Relational Algebra</li> <li>Relational Calculus-Domain and Tuple Calculus.</li> </ul> </li> <li>2.4 Creating Views and all options of views.</li> </ul>		
03	SQL and PL-SQL	18	24
	<ul> <li>3.1 Introduction to SQL queries,</li> <li>Creating, Inserting, Updating and deleting tables (DDL), DML Statements.</li> <li>Using constraints.</li> <li>Renaming attributes, logical, relational,Set operators, In and NOT In ,Is NULL and Is NOT NULL, Aggregate functions, group by and having clause ,string functions ,date and time functions, Nested sub queries, Join concepts-Equi Join,Self Join,Non Equi Join,Outer joins.</li> <li>3.2 PL/SQL Introduction, PL/SQL block structure, variables, SQL statements in PL/SQL, PL/SQL control Structures</li> <li>3.3 Cursors, Triggers, Functions</li> </ul>		
04	Relational Database Design, Storage and File systems.	12	20
	<ul> <li>4.1 Purpose of Normalization, Data redundancy and updating anomalies, Functional Dependencies and Decomposition, Process of Normalization using 1NF, 2NF, 3NF, multivalued dependencies and BCNF.</li> <li>4.2 E. D. Madal dataile Transformation for the last interval of the la</li></ul>		
1	4.2 E-K Model details- I ypes of attributes , Kole Indicator. Weak		

		Total	64	100
		Deathour Detection Scheme & recovery scheme		
		Deadlock Detection Scheme & recovery scheme		
	5.4	Deadlock nanoning, wait for graph		
	54	Deadlock handling Wait for graph		
		Validation based		
	•	Time-Stamp based		
	•	2 phase locking		
		Protocols:		
	5.3	Lock based protocols: share & exclusive mode.		
		Recoverability Transaction Definition in SOL		
	5.2	Execution Concurrent Execution Serializability		
	52	Concept of transaction States of transactions Serial		
	5.1	Equivalence Expressions		
	51	General strategies for query processing Laws of	12	20
05	Query	Processing and Transaction Processing	12	2.0
		Indexing Multilevel Indexing and Hashing		
		Secondary Indices Dense and Sparse Index Sequential		
	т.5	files Basic concent of Indexing Order Indices Primary and		
	43	File Organization Organization of records in		
		and Strong entity sets. Specialisation and Generalisation		

### Practical:

Skills to be developed:

Intellectual skills:

- 1. Develop the fields of data base
- 2. Decide proper specifications
- 3. Query Processing and transaction processing

#### Motor skills:

- 1. Prepare appropriate data tables
- 2. Sequential writing of steps

### List of Practical:

- 1) Creating & Executing DDL in SQL.
- 2) Creating & Executing Integrity constraints in SQL.
- 3) Creating & Executing DML in SQL.
- 4) Executing relational, logical and mathematical set operators using SQL.
- 5) Executing group functions
- 6) Executing string operators & string functions.
- 7) Executing Date & Time functions.
- 8) Executing Data Conversion functions.

- 9) Executing DCL in SQL.
- 10) Executing Sequences and synonyms in SQL.
- 11) Execute 50 SQL queries (operators, functions, clauses, join concepts)
- 12) Program for declaring and using variables and constant using PL/SQL.
- 13) Program using if then else in PL/SQL
- 14) Program using for loop & while loop in PL/SQL.
- 15) Program using nested loop in Pl/SQL.

### Learning Resources:

#### Books:

Sr .No.	Author	Title	Publisher
01	Korth	Database System Concepts	Sudarshan
02	2006 ISRD Group	Introduction to Database Management Systems	Tata McGrawHill.
03	Bipin Desai	An Introduction to Database System	Galgotia Publication
04	C.J Date	An Introduction to Database System	
05	Allen	Introduction to Relational Databases and SQL programming	Tata McgrawHill

Course Name: Computer Engineering GroupCourse Code: CM/CO/IF/CDSemester: ThirdSubject Title: Visual BasicSubject Code: 12066

**Teaching and Examination Scheme:** 

Teaching Scheme					Examinati	on Scheme		
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
		04*			50@			

\* 2 sessions of 2 hours per week each.

#### NOTE:

As the world turns to graphical user interfaces, computer programming languages are also changing to accommodate the shift.

Visual Basic is graphical user interface programming language which has excellent tools for understanding programming language concepts.

Multimedia techniques deal with Flash and 3D Max which are basic tools for audio, video presentations.

In this subject with equal weightage to Visual Basic and Multimedia techniques, students will be able to learn graphical user interface programming and multimedia presentations.

#### **Rationale:**

This subject helps to understand the principles and techniques involved in developing applications with Visual Basic. The course content is designed to understand & implement the Event Driven Architecture of Visual Programming. The student would be able to identify and use the different categories of controls, learn working with forms and different data access techniques, establish a data base connection and identify the categories of ActiveX controls and creating them.

#### **Objectives:**

The Student will be able to:

- 1. Use GUI tools of Visual Basic Programming.
- 2. Use basic and advance VB controls.
- 3. Interface back-end and front-end.
- 4. Generate report using Data Report and Crystal Reports.
- 5. Build Visual Basic applications.

### Learning Structure:



# **Contents: Theory**

Chapter	Contents
	Introduction to Visual Basic Environment
	• Concept of VB program
	<ul> <li>Class object property methods events</li> </ul>
01	<ul> <li>Environment of VB</li> </ul>
	Concept of project forms etc.
	<ul> <li>Managing with menus.</li> </ul>
	<ul> <li>Drag and Drop operation.</li> </ul>
	<ul> <li>Validating and processing user inputs.</li> </ul>
	Introduction to Visual Basic
	Dete terrer Veriente
	• Data types, variants.
	• Variables, Constants.
	<ul> <li>Arrays – REDIVI statement, Array related functions.</li> <li>Collection procedure functions</li> </ul>
	<ul> <li>Collection, procedure, functions.</li> <li>Argument passing and return values.</li> </ul>
	<ul> <li>Argument passing and return values.</li> <li>Input hox and message box</li> </ul>
	Control flow statement
	Loon statement
02	<ul> <li>Nested control structure</li> </ul>
	Fixit statement
	<ul> <li>Operators – arithmetic logical relational string</li> </ul>
	<ul> <li>Functions – String Maths Date and Time.</li> </ul>
	<ul> <li>Date and time formats</li> </ul>
	<ul> <li>Design form to demonstrate</li> </ul>
	Control loops (do for while)
	<ul> <li>Control statements (if-then, if-then-else, Selection option)</li> </ul>
	• Using text box, Command button, Label, options, combo box, input and
	message box.
	Controls and Events
	Scroll bar.
	• Slider
	• Container – picture box, frame.
03	• Image.
	• File system controls – drive, file, directory list box.
	• Timer control.
	OLE control.
	• Basic controls like – line, shape, circle, Pset, RGB, Paint picture, load picture.
	Module, Class Module MDI, Menu Editor And Graphics
	• Concept of module, class module, MDI, DLL's and how to use them.
	Creating own menu using menu editor, popup m
04	• Advanced controls: Common dialog box, Tree view, List view, rich text box
	control, windows common controls, status bar, tab control, image list, MS
	chart.
	• Concept of class module, module MDI, DLL and how to use
	them Using RTF control

	Database, Report Generator					
	<ul> <li>Concept of database, record, record set, connection DSN and DSN less connection</li> <li>Data bound controls – text hox, combo hox, list hox, DB grid</li> </ul>					
	<ul> <li>Data bound controls – text box, combo box, list box, DD grid</li> <li>DB combo MS flay grid</li> </ul>					
05	<ul> <li>Visual Data Manager</li> </ul>					
	<ul> <li>Programming with ADO DAO RDO</li> </ul>					
	<ul> <li>Object connection record set parameter cursor types</li> </ul>					
	<ul> <li>lock types,</li> </ul>					
	<ul> <li>Creating report using Data Report.</li> </ul>					
	<ul> <li>Creating report using Crystal reports.</li> </ul>					
	Introduction to Active X Controls					
	• The user control object- initialize Event, Terminate event, Init properties Event, Paint/Resize Event, Observing the Events in the Data controls,					
06	• Exploring the Properties of Active X controls- Debugging the Properties, extend Properties, Ambient Properties, creating Designed time only properties, creating a Clock control Events in Active X control					
	<ul> <li>Using the active X control interface wizard- Adding the wizard to visual basic</li> </ul>					
	<ul> <li>Property pages- using the property page wizard, creating property pages</li> </ul>					
	without the wizard.					
	• Creating a simple active x control					
	File Handling in VB					
	• File commands					
	• file handling functions					
	• Sequential files					
	Reading information from a file					
	Adding to an existing file					
07	General sequential files					
	• Sending special characters to sequential files.					
	• Making changes inside a sequential file					
	<ul> <li>I he rich text box control &amp; file handling</li> <li>Dendem access files</li> </ul>					
	<ul> <li>Kandom access files</li> <li>Headers and indexes for random access files</li> </ul>					
	<ul> <li>Binary files</li> </ul>					
	Binary files handling					

### Practical:

Skills to be developed:

Intellectual skills:

1) Design various types of forms

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- 2) Use image control and scroll bar
- 3) Selection of windows for different operations

### Motor skills:

1. Develop various types of forms

### List of Practical:

- 1. Study of VB environment with following details :
  - Form and their types.
  - Intrinsic components text box, label, combo, list, heck box, and option button.
  - Design time properties.
  - Different windows and their uses.
- 2. Design forms to perform mathematical operations like addition, subtraction, multiplication and division using:
  - Text box, labels.
    - Options to be selected using option, check box and combo box.
- 3. Design forms to use Date, Time, String, Mathematics functions with help of text box, label, radio button, check box, combo box and command button.
- 4. Using image control and scroll bar, design form to change height, width of image, movement to image. Using picture box and image list, flip the image on click of command button.
- 5. Design explorer using Directory, drive, file list box and common dialog controls.
- 6. Design text editor with menu having copy, cut, paste, select, search, replace the text and load and save the file.
- 7. Design stop watch with faculty of start, stop, reset using timer control, option, label, text box.
- 8. Practical including Data bound controls like DBgrid, DBcombo, Textbox, Combo, List, MS Flex grid and Database control like ADO, DAO, RDO to perform insertion, deletion, updation, display, Search.
- 9. Design MDI form including Menu bar, Toolbar, Status bar.
- 10. Design the interface to perform following operation on the file like create, open, read, write, delete, search.
- 11. Design the Active X control for login form and transport it to browser.
- 12. Design the Active X control to perform database operation with get and let property.
- 13. Design the experiment using RTF box to create file, load, save search and edit the file.
- 14. Integrate all above practical to form mini project including login form and splash form.

### Learning Resources:

#### Books: Sr. No. Author Title Publisher 01 Bradley, Millstaugh Programming in VB6 Tata McGraw Hill Tata McGraw Hill 02 Nel Jerka The complete reference – VB6 BPB 03 **Evangelos Petront Sos** Mastering VB6 Tata McGraw Hill 04 Content Development group VB6 Programming --05 VB6 Black book \_\_\_

Course Name : Computer Engineering Group Course Code : CO/CM/IF/CD Semester : Third Subject Title : Professional Practices-III Subject Code : 12067

#### **Teaching and Examination Scheme:**

Teaching Scheme					Examinati	on Scheme		
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
		05					50@	50

#### **Rationale:**

Most of the diploma holders join industries. Due to globalization and competition in the industrial and service sectors the selection for the job is based on campus interviews or competitive tests.

While selecting candidates a normal practice adopted is to see general confidence, ability to communicate and attitude, in addition to basic technological concepts.

The purpose of introducing professional practices is to provide opportunity to students to undergo activities which will enable them to develop confidence. Industrial visits, expert lectures, seminars on technical topics and group discussion are planned in a semester so that there will be increased participation of students in learning process.

### **Objectives:**

Student will be able to:

- 1. Acquire information from different sources.
- 2. Prepare notes for given topic.
- 3. Present given topic in a seminar.
- 4. Interact with peers to share thoughts.
- 5. Prepare a report on industrial visit, expert lecture.

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#### Learning Structure:



Activity	Name of the Activity	Hours				
	Information Search:					
	Collect information from internet/newspaper/periodicals/magazines etc.					
	Students (Group of 4 to 5 students) have to search /collect information					
	about the topic through.					
01	Students will have to submit a report of about 5 -10 pages.	12				
	i) Advanced Techniques in RDBMS					
	ii) Manufacturers and cost of					
	Computer, Printers					
	iii) Any other suitable topic					
	List of Mini Projects					
	1) Implementing DOS commands using command line arguments e.g.					
	copy ,type, copy con.					
	2) Develop games using classes	20				
02	• Piano game: On pressing the key many types of tunes will be	20				
	produced.					
	3) Hotel reservation. – Using Structure & arrays					
	4) Library management – Using Structure & arrays					
	5) Student data management – Using Structure & arrays					
	Lectures by Professional / Industrial Expert to be organized from of					
	the following areas (any Two)					
	i) .Net Technology					
0.2	ii) spoken English					
03	iii) Personality Development	12				
	iv) Current trends in IT					
	v) How to improve positive thinking					
	vi) Any other suitable topic					
	Seminar :					
	Any one seminar on the topics suggested below:					
	Students (Group of 4 to 5 students) has to search /collect information about					
	the topic through literature survey visits and discussions with					
	experts/concerned persons:					
	Student will have to submit a report of about 5 -10 pages and deliver a					
	seminar for 10 minutes.					
	1 Importance of object oriented Concept in software development					
04	2 Comparison of different object oriented programming languages	19				
	3 Computer Virus	10				
	4 Advanced computer peripherals					
	Specifications					
	• Working principles					
	• Use					
	5.Read a book "I Can Win" by Shiv Khera and present major points					
	b. Any other suitable topic					
	Market Survey:					
05	A group of four students is expected to collect five advertises from news	18				
	papers showing job opportunities for C++. Visit any one industry and find					
	knowledge required of C++ in industry.					
	Total	80				