DEPARTMENT OF COMPUTER SCIENCE

COURSE CURRICULUM & MARKING SCHEME

B.Sc. PART – II & III
COMPUTER SCIENCE

SESSION : 2022-23

ESTD: 1958

GOVT. V.Y.T. PG AUTONOMOUS COLLEGE,
DURG, 491001 (C.G.)

(Former Name – Govt. Arts & Science College, Durg)
NAAC Accredited Grade A+, College with CPE - Phase III (UGC), STAR COLLEGE (DBT)
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B.Sc. (Computer Science)

DEPARTMENT OF COMPUTER SCIENCE
GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG

Approved syllabus for B.Sc. Computer Science by the members of Board of Studies for the Session 2022-23

The syllabus with the paper combinations is as under

B.Sc.-II:

Paper I: COMPUTER HARDWARE	**Paper II: COMPUTER SOFTWARE**
Paper III: COMPUTER PRACTICAL	

B.Sc.-III:

Paper I: COMPUTER HARDWARE	**Paper II: COMPUTER SOFTWARE**
Paper III: COMPUTER PRACTICAL	

The syllabus for B.Sc. Computer Science is hereby approved for the session 2022-23.

Name and Signatures

V.C. Nominee	**Departmental members**
Subject Expert ..... (D.P.Rao)	**1. HOD- Mr. Durgesh Kumar Kotangle**.....
Subject Expert.....	**2. Mr. Dileep Kumar Sahu**.....
Alumni(member).....	**3. Mrs. Latika Tamrakar**..... 25/07/22
Prof. from other Dept. of Sc. Faculty	
Specialist from Industry	

Syllabus and Marking Scheme for B.Sc.-II YEAR
Session 2022-23

PAPER NO.	SUBJECT CODE	TITLE OF THE PAPER	MARKS ALLOTTED IN THEORY	
			Max	Min
I	BCS-201	Computer Hardware	50	17
II	BCS-202	Computer Software	50	17
III	BCS-203	Lab course/ Practical	50	17
		Total	150	

01	Theory papers	-	100
02	Practical	-	50
	Total Marks	-	150

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Alumni(member).....	3. Mrs. Latika Tamrakar.....
Prof. from other Dept. of Sc. Faculty	
Specialist from Industry	

GOVT. V.Y.T. P.G. AUTONOMOUS COLLEGE DURG
SYLLABUS FOR: (2022-23)
B.Sc. -II (Computer Science)
Subject Code: 201, Paper-I
COMPUTER HARDWARE

Max Marks: 50 **Min Marks : 17**

Course Objective:

1. To introduce the overall organization of the microcomputer.
2. To introduce the common peripheral devices used in computer.
3. To introduction the hardware computer components, use of microprocessor and function of various chips used in microcomputer.

Course Outcomes:

1. Understand the classification and organization on computer.
2. Understand the CPU organization and various addressing modes and instruction formats
3. Understand the Understand Memory hierarchy and working process of memory devices
4. Understand the working of Input output devices
5. Understand the system software and programming techniques.

N.B: Since the computer organization study is very vast & complicated, so that study is restricted to only the description and understanding part, fence the paper setter is requested to keep this important factor in mind.

UNIT-I CLASSIFICATION AND ORGANISATION OF COMPUTER:

Digital and Analog computers and its evolution, major components of digital computer, Memory addressing capability of CPU, word length processing of speed of computers, Microprocessor single chip microprocessor Singh chip microcomputers, large and small computer, users interface Hardware software, multi programming multi user system, Dumb smart and intelligent terminals computer network and multiprocessing, LAN parallel processing, Flinn's classification of computer, Computer flow and data flow computers.

UNIT-II CENTRAL PROCESSING UNIT:

CPU organization, ALU controls unit requester .introduction for INTEL8085, Instruction word size, various addressing mode interrupts and exception, some special control signal and I/O devices instruction cycle fetch and execute operation, time diagram data flow.

UNIT-III MEMORY OF COMPUTERS:

Main memory secondary memory, Backup memory, cache, memory, real and virtual memory semiconductor memory, memory controller and magnetic memory; RAM: Disks, optical disks Magnetic bubble memory: DASD, destruction and nondestructive readout./ program of data memory and MMU.

UNIT-IV I/O DEVICES:

I/O devices of micro controller, processor, I/O devices, printer , plotter, other output devices,I/O port serial data scheme, micro controller,signal processor ,I/O processor I/O processor arithmetic processor.

UNIT-VSYSTEM SOFTWARE AND PROGRAMMING TECHNIQUE:

ML,AL,HLL, Stack subroutine debugging of program macro, micro programming, program design, software development, flowchart multi programming ,multiuser, multitasking protection ,operating system and utility program, application package.

RECOMMENDED BOOKS:

1. COMPUTER FUNDAMENTAL &ARCHITECTURE -BY B.RAM
2. COMPUTER TODAY -BY. DONEH.SANDERS
3. COMPUTER FUNDAMENTAL -BY RAJA RAMAN.
4. IBM PC_XT CLONE -BYGOVINDARAJALU

Name and Signatures

V.C. Nominee	**Departmental members**
Subject Expert ..... (C.D.P.Rao)	**1. HOD- Mr. Durgesh Kumar Kotangle**.....
Subject Expert.....	**2. Mr. Dileep Kumar Sahu**.....
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GOVT.V.Y.T.P.G.AUTO.COLLEGE, DURG
SYLLABUS FOR: (2022-23)
B.Sc. - II (Computer Science)
Subject Code: 202, Paper – II
COMPUTER SOFTWARE

Max Marks: 50 **Min Marks : 17**

Course Objective:

1. To introduce the internet & web related technology & learn the intricacies of web page designing using HTML. To introduce the object oriented programming concept using C++ programming features. To introduce the problem solving methodology using the C++ programming features.
2. To the Web Language, HTML & Problem Solving through the concept of object oriented programming.

Course Outcomes:

1. Analyze a web page and identify its elements and attributes.
2. Create web pages using HTML and Cascading Styles
3. Gain some practical experience of C++.
4. Apply the facilities offered by C++ for Object-Oriented Programming.
5. Design program using multiple inheritance and pointers in C++.

NOTE: Examiners are requested to set unit wise questions papers.

UNIT – I HTML BASICS & WEB SITE DESIGN PRINCIPALS:

Concept of a web site, web standards, what is HTML?, HTML editor, explanation of the structure of the homepage, element in HTML documents, HTML tags, basic HTML tags, comments tag in HTML, viewing the source of the web page, how to download the web page source?, XHTML, CSS, Extensible Markup Language (XML), Extensible Style sheet Language (XSL), some tips for designing web pages, HTML Document Structure. HTML document structure: head section, illustration of document structure, <BASE> element, <ISINDEX> element, <LINK> element, META, <TITLE> element, <SCRIPT> element, practical applications, HTML document structure- body section:- body element and its attributes: Background; Background color; Text ; Link; Active Link(ALINK); visited link(VLINK); Left margin; top margin; organization of elements in BODY of the document; Text Block Elements; Text Emphasis Elements ; special elements- Hypertext Anchors, character level elements: character reference ,text block elements:HR(horizontal line); HN(Heading);P(Paragraph);Listaddress;BLOCKQUOTE;TABLE;DIVHTML 3.2and up;PRE(Per formatted ;FROM) Line break(BR) and image (IMG), lists, ADDRESS element BLOCKQUOTE ; element, TABLE element, COMMENTS in HTML, CHARACTER emphasis Modes, Logical & Physical style, Netscape, Microsoft and advances Standard Elements List, FONT, BASEFONT and CENTER.

UNIT – II IMAGE, INTERNAL AND EXTERNAL LINKING BETWEEN:

Insertion of image using the element IMG (Attributes: SRC (Source), WIDTH, HEIGHT, ALT(alternative), ALIGN), IMG(In – Line Images) Element and Attributes; Illustrations of IMG Alignment, Image as Hypertext Anchors, Internal and External Linking between web pages hypertext anchors, HREF in anchors, Links to a particular place in a document, NAME attribute in anchor, Targeting NAME, TITLE attribute, Practical IT Application Designing web pages links with each other, Designing Frames in HTML. Practical Examples.

UNIT – III INTRODUCTION TO OOP:

Advantages of OOP, the Object Oriented approach, characteristics of object oriented languages- object classes, inheritance, reusability, polymorphism and C++.Function: Function Declaration, Calling, Function, Function Defines, Passing to function, passing constant, passing value, Reference Argument, returning by reference. Inline function, Function overloading, default arguments in function.

UNIT – IV OBJECTIVE CLASSES AND INHERITACE:

Object and classes, using the class, class constructor, class destructor, object as function argument, copy constructor, structure and classes, array as class member, static class data, static member function, friend function, friend class, operator overloading. Type of inheritance, base class, derives class. Access Specifier: Protected. Function overloading, member function, string, Template function.

UNIT – V POINTERS AND VIRTUAL FUNCTION:

Pointer & and operator pointer variables, pointer to pointer, void pointer, pointer and array, pointer and function, pointer and string, memory management, new and delete, pointer to object, this pointer, virtual function: virtual function, virtual member function, accesses with pointer, pure virtual function.
File and stream: C++ streams, C++ manipulators, stream class, string I/O, char I/O, object I/O, I/O with multiple object, Disk I/O.

RECOMMENDED BOOKS:

1. INTRODUCTION TO HTML - KAMLESHAGRAWALA, O.P. VYAS, PRATEEK. A.AGRAWALA (KITABMAHAL PUBLICATION)
2. LET US C++ -Y.KANETKAR B.P.B. PUBLICATION
3. PROGRAMMING IN C++ - E. BALAGURUSWAMI.
4. MASTERING IN C++ - VENUGOPAL.
5.OBJECT ORIENTED PROGRAMMING IN C++ - LAFORE R, GALGOTIA PUBLICATION.

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GOVT. V.Y.T. P.G. AUTONOMOUS COLLEGE DURG
SYLLABUS FOR: (2022-23)
B.Sc. –II(Computer Science)
Subject Code: BCS-203
PRATICAL WORK

1. The practical exercises should be done to understand the HTML and C++Programming language.
2. The sufficient practical work should be done for understanding the topics.
3. All practical work should be prepared in forms of printouts & to be evaluated, while practical examination.

DIRECTIVES FOR STUDENTS, FACULTY AND EXAMINERS

1. There shall be three sections (Section A, B, and C) in each theory paper.
2. Section A shall contain very short answer type questions (One or two line answer) or objective type questions (fill in the blank). **(not multiple choice questions)**
3. Section B shall contain short answer type questions with the limit of 150 words
4. Section C shall contain long answer/ descriptive type questions. The students are required to answer precisely and the answer should not exceed the limit of 350 words.
5. The students are required to study the content mentioned in the curriculum exhaustively.

EVALUATION PATTERN

- **Theory 50 marks**
- **Practical 50 marks**

Question Type	MM 50 (Marks X No. of Q.)
A (Very short Ans.)	1X10 = 10
B (Short Ans.)	3X5 = 15
C (Long Ans.)	5X5 = 25

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Prof. from other Dept. of Sc. Faculty ……	
Specialist from Industry ……	

Corrigendum for UG Classes

1. **Section –A (very short answer question)**

   There shall be 8/9/10 objective type questions (No multiple choice). All questions are compulsory ; at least one from each unit.

2. **Section B, Section C**

   There shall be 10 questions, two questions from each unit.

   The candidate has to attempt one question from each unit.

Name and Signatures

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Specialist from Industry ……	

Syllabus and Marking Scheme for B.Sc. - III YEAR
Session 2022-23

PAPER NO.	SUBJECT CODE	TITLE OF THE PAPER	MARKS ALLOTTED IN THEORY	
			Max	Min
I	BCS-301	Computer Hardware	50	17
II	BCS-302	Computer Software	50	17
III	BCS-303	Lab course/ Practical	50	17
		Total	150	

01	Theory papers	-	100
02	Practical	-	50
	Total Marks	-	150

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GOVT.V.Y.T.PG.AUTO COLLEGE, DURG (C.G)
SYLLABUS FOR: (2022-23)
B.SC.III (Computer Science)
Subject Code: BCS-301, Paper-I
COMPUTER HARDWARE

Max Marks: 50 **Min Marks: 17**

Course Objective:

1. To introduce the overall organization of the microcomputers and operating systems.
2. To introduce the interaction of common devices used with computers with operating software, excluding the Assembly languages, with special reference to DOS/WINDOWS.
3. To introduce the working of hardware components, Micro-Processor and various chips used in micro-computers by operating system, without the use of electronic circuitry.
4. To introduce the use of operating systems architecture with IBM-PC & clones, excluding Assembly language, with forms an important part of hardware.

Course Outcomes:

1. Understand the Organization of Micro-computers.
2. Explain about system hardware and organizations of personal computers
3. Explain about organization of operating system with system hardware
4. Understand the working process of DOS and their memory management techniques.
5. Understand the organization of hardware by operating system.

UNIT-1: ORGANISATION OF MICRO-PROCESSOR& MICRO-COMPUTER:

1. Introduction & Organization of Micro-computer :

a) Basic components of micro-computer: Basic Block; Prom ram memory, Data memory, I/O Ports , Clock generator, Integration of functional blocks.
b) Inter-connecting Components in a Micro-computer: Necessary functional blocks, bussed architecture for micro-computer, memory addressing; Addressing I/O ports, comparison of I/O mapped and memory mapped I/O.
c) Input/ Output Techniques: Non-CPU devices, Program & interrupt controlled

2. An introduction to the various as:

a) General understanding of different Micro-Processor or CPU: Intel 8088,286,386,486,586 Pentium, P54C, MMX P55C, Motorola 6800 & 88100 series; CYRIX & AMD CPUs.
b) The Registers of CPU Give Example of Processor-8088, Register organization of 8088,scrach pad segment, pointer ,index and Flag, Registers.
c) Memory addressing modes of Processor-8088 : segment offset; Data addressing modes, Addressing for branch instructions.
d) I/O Addressing with p-8088: Memory mapped I/O & I/O mapped I/O.

UNIT -2 SYSTEM HARDWARE ORGANISATIONS OF COMPUTERS:

1. Hardware Organization of the Personal Computer:

a) Block diagram with various parts of PC.
b) The Mother board of general PC: 8088 CPU,ROM&RAM, KEYBOARD & its interface, system timer/counters, Hardware interrupt vectoring, DMA controller& channels, interfacing to audio Speaker, Bus slots & facture cards.
c) The Serial i/o ports.COM-1&COM-2.
d) The parallel port for printer.
e) Expansion slots for RAM.
f) Disk controllers: For floppy, Hard disk, CD-ROM & cassets drives.

2. The Video Display of PCs:

a) Video monitors ,Monochrome & colour.
b) Video display adapters & their video modes. Monochrome & colour graphics adapters.
c) Video control through ANSI-SYS.
d) Video control through ROM-BOIS;INT 10H.
e) Direct video control, monochrome & colour graphics adapters.
f) Installing customized character sets.

UNIT 3ORGANISATION OF OPERATING SYSTEM WITH SYSTEM HARDWARE:

1. The ROM-BIOS services:

a) Introduction TOUNIX, ENIX, SUN, Solaris, DOS& MAC with special REFFERENCE to DOS &windows, itsver. asDOS becomes more popular than others in PCs.
b) The ROM-BIOS Diskette services, INT 13H.
c) The ROM-BIOS serial port services, INT 14H.
d) The ROM-BIOS KEYBOARD SERVICES, INT 16H.
e) The ROM-BIOS printer services, INT 17H.
f) Miscellaneous service provided by the ROM-BIOS: INT 05H,INT 11H,INT 12H,INT 18H,INT 19H,INT 1AH.

2.The Fundamental of Operating System viz.DOS/Windows:

a) The loading of DOS& its basic structure: ROM bootstrap, IO.SYS, DOS,SYS& COMMAND.COM
b) The execution of the programs under DOS:EXE functions, program segment prefix, features of COM&EXE program files.
c) Device handling by DOS, FDD, HDD,CON, keyboard, PRN,AUX,CLOCK &NULL devices , block devices, character devices, driver installation sequence.
d) File structures of DOS.
e) The DOS interrupts: INT 20H-2FH.
f) The DOS functions through INT21H Discuss only the understanding part of various other DOS function to handle hardware software.
g) Installation of windows: important system files in windows.

UNIT 4 ORGANIZATION&HANDLING BY OPERATING SYSTEM:

1. Disk and files under DOS:

a) Logical structure of a disk organization of disk for use, boot record, PAI files, disk or root directory.
b) File organization on a DOS disk: Logical volumes: Sub directories .volume labels.

c) Manipulating files under DOS file attributes, data and time ,file Access, FCB functions.

2. Memory Allocation, program loading and execution:

a) Memory management, under DOS: EXEC loader. memory management &its function,Modifying a program memory allocation.
b) Loading and execution program under DOS: The EXEC function, memory consideration, and parameter blocks. Calling& returning from EXEC.
c) Loading the program overlays through EXEC.

UNIT-5 ORGANIZATION OF HARDWARE BY OPERATING SYSTEM:

1. **interrupt handling through DOS:**
   a. Types of interrupt.
   b. Interrupt vector table in p.c.
   c. Interrupt service routines.
   d. Special interrupt in pc: clock interrupt, the c or I Break interrupt.DOS reserved interrupt INT 28H Patching memory resident routines.

2. **Filters for DOS:**
   a. Filters in operating system.
   b. Redirection of I/O under DOS.
   c. The filters supplied with DOS.
   d. Writing filters to run under DOS.
   e.

3. **Handling of Various Version of Windows O/S:**
   a. Setup installation.
   b. Trouble shooting.
   c. Networking feature.

TEXT BOOK:

1. HARDWARE AND SOFTWARE OF PERSONAL COMPUTERS -BY SANJAY K BOSE.

SUPPORTING BOOKS:

1. DIGITAL SYSTEM FROM GATES TO MICROPROCESSOR -BY SANJAY K BOSE.
2. COMPUTER FUNDAMENTAL,ARCHITECTURE& ORGANIZATION -BY B.RAM.

REFERENCE BOOK:

1. IBM PC-XT AND CLONES: -BY GOVINDRAJALU.
2. MICROPROCESSOR AND INTERFACING: -BY DOUGLAS HALL.
3. INSIGHT THE IBM-PC: -BY PETER NORTON.
4. MICROPROCESSOR SYSTEM: 8086/8088 FAMILY -BY LIU AND GIBSON.
ARCHITECTURE, PROGRAMMING &DESIGN:

Name and Signatures

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GOVT. V.Y.T. P.G. AUTONOMOUS COLLEGE DURG
SYLLABUS FOR: (2022-23)
BSC- III(Computer Science)
Subject Code: BCS-302, Paper-II
COMPUTER SOFTWARE

Max Marks: 50 **Min Marks : 17**

Course Objective:

1. To introduce Data Base Management System concepts.
2. To introduce the Relational Database Management System and Relational Database Design.
3. To introduce the RDBMS software and utility of query language.
4. To introduce basic concept of GUI Programming and database connectivity using Visual Basic

Course Outcomes:

1. Understand The Visual Basic Integrated Development Environment (IDE) and its wealth of development tools.
2. Build effective user interfaces with Visual Basic controls, forms, and other GUI components.
3. Learn the use of the debugging and testing tools available in Visual Studio.
4. Use Database access using Visual Basic's ADO Control and data-aware components like the Data Grid and Data Environment Designer.
5. Use the Packaging and Deployment tool to deliver completed applications to end users.

UNIT-I CONCEPT OF D.B.M.S AND DATA MODELS:

(A) Introduction to DBMS: Purpose of Database system, view of data ,Data Modeling Database languages Transaction Management, Storage Management, Database Administrator and user, Database system structure.
(B) E-R Model: Basic concepts, constraints, keys mapping constant, E-R Diagram, weak and strong Entity sets, E-R Database Schema Reduction of an E-R Schema to table.

UNIT-II RELATIONAL DATABASEMANAGEMENT SYSTEM:

(A) Relational model: Structure of Relational Database, Relational Algebra, Domain Relational Calculus, Extended Relational Algebra Operation, Modification of Database, Views.
(B) Relational Database Design: Pitfalls in Relational Database Designing Decomposition Functional Dependencies, Normalization: 1NF, 2NF, BCNF, 3NF, 4NF, 5NF

UNIT-III INTRODUCTION TO RDBMS SOFTWARE –ORACLE:

(A) Introduction: Introduction to Personal and enterprises Oracle, Data Types Commercial Query Language SQL, SQL *PLUS.
(B) DDL and DML: Creating table, Specifying Integrity Constraint, Modifying Existing Table, Dropping Table, Inserting Deleting and Updating Rows in as Table, Where Clause, Operators ORDER BY GROUP BY GROUP Function, SQL Function, JOIN, Set Operation SQL Sub Queries. Views: what views Create, Drop and Retrieving data from views.

(C) Security, Management of Roles, changing Password, Granting Roles &Privilege, with drawing privileges.

(D)PL/SQL Block Structure in PL/SQL, Variable and constants, Running PL/SQL in the SQL *PLUS, Database Access with PL/SQL, Exception Handling, Record Data type in PL/SQL, Triggers in PL/SQL.

UNIT-IV G.U.I. PROGRAMMING:

(A) Introduction to Visual Basic: Event Driven Programming, IDE, introduction toobject, controlling object, modules and events, working with forms, MDI from ,working with standard controls.
(B) Overview of variables declaring, scope,arrays, user defined data types, constant,working with procedure: Function ,subroutine, subroutine and property, working with data. Time format, string function .controlling program function: comparison and logical operator, if then statement, select case statement, looping structure, exiting a loop. Error trapping, Error Handling. .
(C)File Organization: saving data to file, sequential and random accessfile the design and coding.

UNIT-V DATA BASE PROGRAMMING IN V.B.:

(A)Introduction :concept of DAO, RDO,ADO ,input validation :field &form level validation ,ADO object model .the Add object hierarchy, the connection object, the command object, record set object, parameter object, field object, record object, stream object error object, parameter object.

(B)Using bound control to present ADO data: Using the ADO data control ,ADO data control properties, binding simple controls : data list ,data combo, data grid data from wizard : single from wizard, grid from ,master /detail from. Programming the ADO data control: Regress method, event, hierarchy coal flex, grid control.

(C)Data Environment &data Report: Creating connection, using command object in the data environment ,Data environment option and operation ,binding From to the data environment ,ADO events in the data report, Print preview, print, export, data report in code : data reports Events, binding data reports directly.

REFERENCE BOOKS:

1. DATA BASE SYSTEM CONCEPT - BY HERY F. KORTH, TATA MC GRAW HILL
2. FUNDAMENTAL OF DATA BASE - NAWATHE&ELMASRI (PEARSON EDUCATION)
3. ORACLE COMPLETE REFERENCE -BY ORACLE RESS.
4. INTRODUCTION TO OOPS &VB - BY V.K.JAIN, VIKAS PUBLISHING HOUSE
5. DATABASE PROGRAMMING VB6 - BY B.P.B PUBLICATION.

GOVT. V.Y.T. P.G. AUTONOMOUS COLLEGE DURG
SYLLABUS FOR: (2022-23)
B.Sc. –II(Computer Science)
Subject Code: BCS-303
PRATICAL WORK

1. Practical on oracle: at least 20 practical covering the PL/SQL Triggers, View.
2. Practical on Visual basic: At least 20 practical on VB that covering basic and data controls components.

DIRECTIVES FOR STUDENTS, FACULTY AND EXAMINERS

1. There shall be three sections (Section A, B, and C) in each theory paper.
2. Section A shall contain very short answer type questions (One or two line answer) or objective type questions (fill in the blank). **(not multiple choice questions)**
3. Section B shall contain short answer type questions with the limit of 150 words
4. Section C shall contain long answer/ descriptive type questions. The students are required to answer precisely and the answer should not exceed the limit of 350 words.
5. The students are required to study the content mentioned in the curriculum exhaustively.

EVALUATION PATTERN

- **Theory 50 marks**
- **Practical 50 marks**

Question Type	MM 50 (Marks X No. of Q.)
A (Very short Ans.)	1X10 = 10
B (Short Ans.)	3X5 = 15
C (Long Ans.)	5X5 = 25

Corrigendum for UG Classes

3. **Section –A (very short answer question)**

   There shall be 8/9/10 objective type questions (No multiple choice). All questions are compulsory; at least one from each unit.

4. **Section B, Section C**

   There shall be 10 questions, two questions from each unit.

   The candidate has to attempt one question from each unit.

Name and Signatures

V.C. Nominee	**Departmental members**
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GOVT. V. Y.T. P. G. AUTO. COLLEGE, DURG
SYLLABUS FOR: (2022-23)
B.Sc. - PART I, II, III
(COMPUTER SCIENCE)

PRACTICAL MARKS DISTRIBUTION

Practical paper

Program 1	**- 15**
Program 2	**- 15**
Internal	**- 10**
Viva	**- 10**
Total	**- 50**

Practical test will consist of 3hrs.

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