24 (25)

शासकीय कमला राजा कन्या स्नातकोत्तर स्वशासी महाविद्यालय, ग्वालियर (मध्य प्रदेश)

आनो भद्राः क्रतवो यन्तु विश्वतः

कम्प्यूटर साइंस विषय के अध्ययनमंडल
द्वारा अनुमोदित कम्प्यूटर साइंस विषय के स्नातक एवं स्नातकोत्तर डिप्लोमा पाठ्यक्रम
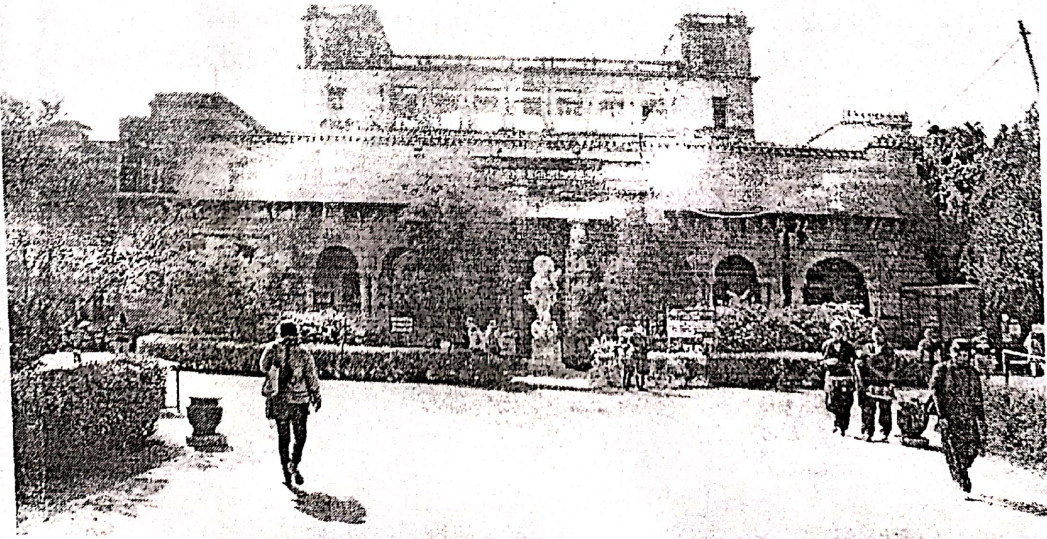
अनुमोदन अकादमिक सत्र

2018—2019

प्रस्तुतकर्ता

स्नातकोत्तर अध्ययन केन्द्र

कम्प्यूटर साइंस विभाग

प्राप्तकर्ता

अकादमिक प्रकोष्ठ

ग्वालियर, दिनांक 18 अगस्त, 2018

कम्प्यूटर साइंस विभाग

अध्ययन मंडल की बैठक का कार्यवाही विवरण

नवीन सत्र 2018–19 हेतु *कम्प्यूटर साइंस* विषय से सम्बंधित

अध्ययन मण्डल की बैठक आज दिनांक 18 अगस्त, 2018 को प्रातः 11:00 बजे *Comp. Sc.* विभाग में आयोजित की गई, जिसमें निम्नानुसार उपस्थिति रही –

1. डॉ. श्री. जी. आई.   18/8/18
2. डॉ. Samta Jain   18/8/18
3. डॉ. Ashok Shrivastav   18/8/18
4. डॉ. Kapil Sharma   18-8-18
5. डॉ. Jitendra S. Kushwah   18/8/18
6. डॉ. Deepak K. Mishra   18/8/18
7. डॉ. Jaya Bhadauria   18/8/18
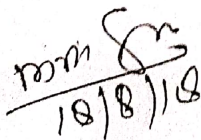8. डॉ. Bhavana Sharma   18/8/18
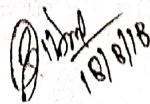9. डॉ.
10. डॉ.
11. डॉ.
12. डॉ.

अध्ययनमंडल की बैठक की.कार्यवाही निम्नानुसार रही –
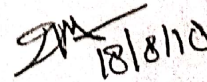
1. Comp. Science——विषय के स्नातक स्तर के प्रथम एवं द्वितीय वर्ष का पाठ्यक्रम अंक योजना सहित सत्र 2018–2019 हेतु अध्ययनमंडल द्वारा मान्य किया जाता है ।

2. Computer Science विषय के स्नातक स्तर के पंचम एवं षष्ठ सेमेस्टर के पाठ्यक्रम अंक योजना सहित सत्र 2018–2019 हेतु अध्ययनमंडल द्वारा मान्य किया जाता है ।

3. Computer Science विषय की सत्र 2018–2019 में होने वाली परीक्षाओं हेतु संलग्न परीक्षकों की सूची को अध्ययनमंडल द्वारा मान्य किया जाता है ।

4. विभाग में सत्र 2018–2019 में यदि कोई शोध संगोष्ठी / कार्यशाला / अधिवेशन / अध्ययन भ्रमण आदि के आयोजन का प्रस्ताव है तो उसका विवरण एवं अनुमोदन———————
————————————————————————
————————————————————————

5. यदि अन्य कोई विषय हो तो उसका विवरण एवं अनुमोदन ।
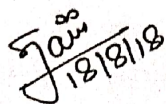
हस्ताक्षर अध्ययन मंडल अध्यक्ष एवं समस्त सदस्य
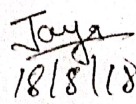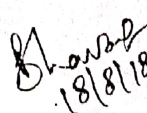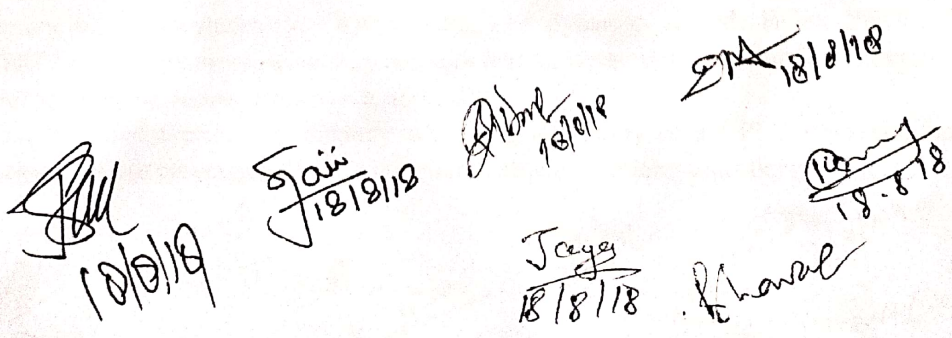
Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.
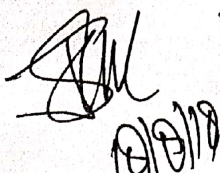## Session 2018 -19

Class B.Sc. (Computer Science)

I year				Theory	Total	Practical	Grand Total
	Three Months	Six Months	Total				
Fundamentals of Computers	10	10	20	40	80	50	150
Programming in C				40			
II Year							
Object Oriented Programming concept using C++	10	10	20	40	80	50	150
Data Structure				40			
III Year							
Data base Management System	10	10	20	40	80	50	150
Operating System Concept				40			
Grand Total							450

Remark: (i) Each theory paper will contain five objective type question of 1 mark and

(ii) Five short answer types question of 2 marks and

(iii) Five long answer type question of 5 marks, with internal choice in (ii) and (iii)

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.

Session 2018 -19

B.Sc. First Year Computer Science
Paper I : FUNDAMENTALS OF COMPUTERS

Min. Marks : 14

Max. Marks : 40

Unit-1

Block diagram of computer: input unit, output unit, CPU, memory unit, generations of computers, types of computers: desktop, laptop, palmtop and workstations & super computers, All t types of input and output devices. Hardware, software and firmware.
Windows: features of windows- desktop, start menu, control panel, my computer, windows explorer, accessories. Managing multiple windows, arranging icons on the desktop, creating and managing folders, managing files and drives, logging off and shutting down windows.

Unit-2

Word: What is word processing, creating documents in MS-Word, formatting features of MS-Word, standard toolbar, drawing toolbar, tables and other features. Mail-merge, insertion of files, pictures, clipboard, graphs, print formatting page numbering and printing documents.

Excel- Introduction to workbook and worksheet. Entering information in a worksheet- numbers, formula, etc., saving a workbook, editing cells, using commands and functions, moving and copying, inserting and deleting rows and columns, creating charts, Page setup: margins, adding headers & footers before Printing, print preview of worksheet, removing grid lines from printout, printing the title rows.

Unit-3

Number system: Decimal, binary, octal, hexadecimal, conversions from one base to another base. Codes: ASCII code, EBCDIC code, Gray code. Boolean algebra, de-morgan's theorem, binary arithmetic:- addition, subtraction, multiplication & division, unsigned binary numbers, signed magnitude numbers, 1's complement & 2's complement arithmetic. Boolean function & truth tables, SOP, POS form, minterms/maxterms, simplification of logic circuits using boolean algebra and karnaugh amps, logic gates: AND,OR,NOT,NAND,NOR,X-OR and X-NOR gates, their symbols and truth tables circuit desin adder/subtractor circuit.

Unit-4

Memory cell,primarymemory: RAM, static and dynamic RAM, ROm, PROM, EPROM, EEPROM, cache memory, secondary memory and its types, virtual memory accessing methods: serial and random access, Data bus & address bus.
Word length of a computer, memory addressing capability of a CPU, processing speed of a computer, micro processing, single chip microcomputers (microcontrollers).

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.

Session 2018 -19

Unit-5

General architecture of a CPU, instruction format, and data transfer instructions, data manipulation instruction and program control instructions. Types of CPU organization: accumulator based machine , stack based machine and general-purpose register based machine, addressing modes, data transfer scheme   (i) programmed data transfer: synchronous asynchronous and interrupt driven data transfer (ii) Direct memory access data transfer: Cycle stealing block transfer and burst mode of data transfer.

Text Book

1. Digital logic and Computer Design by Malvino leach
2. Computer System Architecture by M Morris Mano
3. PC software for Windows by R.K. Taxali
4. Fundamentals of computers by P.K. sinha
5. Compute Organization and Architecture by stallings.
6. Computers fundamentals and Architecture by B.Ram

Suggested list of practical in MS-Word & Excel:

1. Create a banner of college using MS-word
2. Design a greeting card Word ART
3. Create your biodata and use page borders and shading in MS-Word
4. Create a document, insert header,footer, page title, page number using MS-Word.
5. Implement Mail-merge
6. Insert table in MS-Word document
7. Create a marksheet using MS-Excel
8. Creating and printing of types of graph in Excel
9. Built-in functions in Excel
10. Create Faculty Time table

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.
Session 2018 -19

B.Sc. First Year Computer Science
Paper II : PROGRAMMING IN 'C'

Max. Marks : 40   Min. Marks : 14

Unit-1

Classification of programming language: procedural languages, problem oriented languages, non-procedural languages. Structured programming . Problem solving using computer : problem definition and analysis, problem design , coding, compilation and testing, documentation, implementation and maintenance.

Unit-2

Introduction to C language: constants, variables, keywords, data types, operators, expressions, operator precedence and associativity. Structure of C program: variable declaration, declaration of variable as constant.

Unit-3

Managing input/output operator: formatted and unformatted. Control statements: branching jumping & looping, scope rules, storage classes.

Unit-4

Arrays (one and two dimensional). Functions: user defined functions: user defined function, standard function, categories in functions, passing arguments to a function, recursion. Pointers: operators, declaration, pointer to arithmetic, array of pointers. Structures: accessing, initializing, array of structures.

Unit-5

File handling in C: opening and closing a data file, inserting data to data file. Graphic programming introduction, functions, stylish lines, drawing and filling images, palettes and colours, justifying text, bit of animation.

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.
Session 2018 -19

Text Books-

Hoe to solve it by Computers by R.G. Dromy, PHI
Let us C by Yashwant Kanetkar
ANSI C by E. Balagurusamy
Programming in C by S.S. Bhatia
Reference Books-
How to design Programs-An introduction to programming and computing – Felleisen, et,al,PHI
publication Introduction to Algorithms by Cormen, PHI
Programming in C: Denis Richie

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.
Session 2018 -19

B.Sc. First Year Computer Science

Suggested list of Programs for Practical

1. Write a program to print digits of entered number in reverse order.
2. Write a program to sum of two matrices.
3. Write a program to print subtraction of two matrices.
4. Write a program to multiplication of two matrices.
5. Write a program to demonstrate concept of structure.
6. Write a program for finding the root of a Quadratic Equation.
7. Write a program for marksheet.
8. Write a program for finding the sum of given matrices of order mxn
9. Write a program for finding the multiplication of given matrices of order mXn
10. Write a program to generate even/odd series from 1 to 100.
11. Write a program to find area of a circle, rectangle,square using case.
12. Write a program to check whether a given number is even or odd.
13. Write a program whether a given number is prime or not.
14. Write a program for call by value and call by reference.
15. Write a recursive program to calculate factorial of a given number.
16. Write a program to generate a series

    $1+1/1!+2/2!+3/3!+\ldots\ldots\ldots+n/n!$

17. Write a program to create a pyramid structure

```
*
**
***
****
```

18.Write a program to create a pyramid structure.

1

12

123

1234

19. Write a program to create a pyramid structure

1

22

333

4444

20.Write a program to reverse a string.

21. Write a program to find whether a given string is PALINDROME or not.

22. Write a program to input 10 numbers add it and find it's average.

23.Write a program to generate series

$1+1/2!+1/3!+\ldots\ldots\ldots\ldots+1/n!$

24. WAP to print table of any number.

25. WAP to print Fibonacci series.

26. WAP to find length of string without using function.

27. WAP to perform all arithmetic operations using case statement.

28. WAP to check entered number is Armstrong or not.

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.

Session 2018 -19

B.Sc. Second Year Computer Science
Paper I : Object Oriented Programming Concept Using C++

Max. Marks : 40   Min. Marks : 14

UNIT I

Introduction to C++: programming paradigms, key concepts of object-oriented programming, advantages of Oop's. Input and output in C++: pre-defined streams, unformatted console I/O operations, formatted console I/O operations.

UNIT-II

C++ declarations: parts of C++ program, types of tokens, keywords, identifiers, data types, constants, operators, precedence of operators, referencing and dereferencing operators, scope access operator. Control structures: decision making statements, looping statement.

UNIT-III

Functions: main(), parts of function, passing arguments: value, address, reference, inline functions, function overloading: principles, precautions, library functions. Classes and objects: declaring classes and objects, accessing class members, keyword: public, private, protected, defining member functions: member function inside the class, member function outside the class, static member variables and functions, friend function, friend classes, overloading member functions.

UNIT-IV

Constructors and Destructors: characteristics, applications, constructors with arguments, overloading constructors, types of constructors. Operator overloading: overloading unary operator, binary operator. Inheritance: access specifiers: public inheritance, private inheritance, protected data with private inheritance, Types of inheritances: single, multiple, hierarchical, multilevel, hybrid, multipath, virtual base class.

UNIT-V

Pointers & arrays: pointer declaration, pointer to class & object, Array: declarations & initialization, arrays of classes. Polymorphism: Static(Early) binding, Dynamic (Late) Binding, virtual function, pure virtual function.

Text books:
Object-Oriented Programming with ANSI & Turbo C++ by Ashok N. Kamthane.
Object Oriented Programming in C++ by E. Balagurusamy

Reference Books:
C++ The complete Reference by Herbert Schildt, TMH publication.
Object Oriented Programming in C++ by Robert Lafore.

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.
Session 2018 -19

B.Sc. Second Year Computer Science
Paper II : Data Structure

Max. Marks : 40

Min. Marks : 14

UNIT-I

Concept of data structure and analysis of algorithm, abstract data structure, introduction to stack and primitive operations on stack, stack as an abstract data type, stack application: infix, prefix, postfix and recursion, introduction to queues, primitive operation on queues, circular queue, dequeue , priority queue and applications of queue.

UNIT-II

Introduction to linked list, basic operations on linked list, stacks and queues using linked list, doubly linked list, circular linked list, applications of linked list.

UNIT-III

Trees-basic terminology ,binary trees, tree representations as array and linked list, basic operations on binary tree, traversal of binary trees:- inorder, preorder, postorder. Applications of binary tree, threaded binary tree, AVL tree, binary tree representations of trees.

UNIT-IV

Sequential search, binary search, insertion sort, selection sort, quick sort, bubble sort, heap sort, comparison of sorting methods.

UNIT-V

Hash Table, Collision resolution technique, Introduction to graphs, Definition, Terminology, Directed, Undirected and Weighted Graph, Representation of Graph, Graph Traversal-Depth first, Breadth first search, Spanning tree, Minimum Spanning tree, Shortest path algorithm.

Text Books-

Data Structure: By Lipschultz (Schaums Outline Series)
Data Structures through C (A Practical Approach) by G.S. Baluja
Data Structure: By Trembley & Sorrenson
Reference Books-
Fundamental of Data Structure By S.Sawhney& E. Horowitz

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.
Session 2018 -19

Suggested list of Programs for practical

1. Write a program to find the factorial of a given no using recursion.
2. Write a program for bubble sorting.
3. Write a program for linear search.
4. Write a program for binary search.
5. Write a program for selection sorting,
6. Write a program for quick sorting.
7. Write a program for insertion sorting.
8. Write a program to print Fibonacci series using recursion.
9. Write a program to perform insertion and deletion operation in the stack.
10. Write a program to perform insertion and deletion operation in the queue using static implementation.
11. Write a program to perform insertion and deletion operation in queue using dynamic implementation.
12. Write a program to insert a node at the beginning in singly linked list.
13. Write a program to insert a node at the middle in singly linked list.
14. Write a program to insert a node at the last in singly linked list.
15. Write a program to delete a node from the beginning in singly linked list.
16. Write a program to delete a node from the middle in the singly linked list.
17. Write a program to delete a node from the last in the singly linked list.
18. Write a program to traverse all the nodes in singly linked list.
19. Write a program to insert a node in the beginning in the circular linked list.
20. Write a program to insert a node at the last circular linked list.
21. Write a program to perform all the insertion operations in the singly linked list using switch case.
22. Write a program to perform all the deletion operations in the singly linked list using switch case.
23. Write a program to count the number of nodes in binary tree.
24. Write a program to evaluate postfix operation.
25. Write a program to convert infix operation to postfix operation.

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.
B.Sc. Session 2018-19

Computer Science
(as one subject in B.Sc.)

Paper No.	Paper code and Title	Marks
III Semester		
Paper	301 Date Structure and Operating System	85 Ext +15 CCE =100
Practical	302 Computer Lab program in C related to date structures	50
IV Semester		
Paper	401 object Oriented Programming in C++ and Computer Organization	85 Ext +15 CCE =100
Practical	402 Computer Lab program in C++	50
V Semester		
Paper	501 Introduction to Internet And Visual Basic	85 Ext +15 CCE =100
Practical	502 Practical related to Visual Basic	50
VI Semester		
Paper	601 Software Engineering And Web Designing	85 Ext +15 CCE =100
Practical	602 Practical related to Internet & HTML	50

18/8/18

18/8/18

Jaya Bhavani

1

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.
B.Sc. Session 2018-19

B.Sc. III Semester   Nov-Dec-2018
DA TA STRUCTURE AND OPERATING SYSTEM(301)

Unit -I

Concept of data Structures, Data type, Primitive versus, Non-Primitive type, Sorting (selection sort , bubble sort, quick sort) , Searching : Binary search, linear search.

Unit -II

Array, Introduction To stack, operation on stack, Stacks application: Infix, Postfix and recursion. Queues: Introduction to queues, operations on the queues, Circular queue, priority queue, Applications of queue. Linear and circular link list. General & binary tree .

Unit -III

Operating System: Introduction, Types, Operating System Services , Process concept , Process Scheduling, Operation on processes, Inter Process Communication, CPU scheduling , basic concepts scheduling criteria, Scheduling Algorithms , Multiple –Processor scheduling, Real time scheduling.

Unit –IV

Process Synchronization: The critical- section problem, semaphores, Deadlock: system model , deadlock characterization, methods for handling deadlocks, deadlock prevention, deadlock avoidance, deadlock detection , recovery from deadlock,

Unit -V

Memory management: Background, logical versus Physical address space, swapping, contiguous allocation, paging, segmentation, virtual memory, page replacement algorithms, thrashing.

Books Recommended :-

1. Operating System Concepts- A. Silberzchaz & P.B. Galvin, Addison - Wesley Publishing Company.

2. Data Structure -Schaum Outline Series.

2

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.
B.Sc. Session 2018-19

B.Sc. IV Semester   April-May-2019
OBJECT ORIENTED PROGRAMMING IN C++ AND COMPUTER ORGANIZATION(401)

Unit –I

Introduction to C++, Basics of C++; character set, key words, data types, variables, identifiers, literals,. Operators, expressions simple I/O statements & programs, control structures. OOPs Concepts. Arrays, structure, Pointers, functions classes and objects -class declaration.

Unit -II

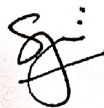Constructors, destructors, Assigning objects, passing objects as function arguments, returning objects from functions, array of objects. static data member, static member functions. Function overloading, overloading constructor function, copy constructors

Unit -III

Operator overloading of binary, unary operators, Relational and logical operators, Friend function, Operator overloading using friend functions Inheritance single, multiple , multilevel inheritance, Virtual base classes, virtual functions & pure virtual functions.

Unit -IV

Fixed-point and Floating point representation, Concept of Boolean algebra, Logic Gates, Karnaugh Map, Don't care condition. Flip-Flops, registers. Counters: Ripple counter, Decade counter, Ring counter

Unit -V

Decoder, Encoder, Multiplexer, De-multiplexer, Concept of RISC & CISC. Microcomputers: Ideal & Actual Microcomputers, Memory Systems for Microcomputers, Evolution of Microcomputer, Special Purpose & General purpose Software Microcomputers..

Text Books:

1. Fundamental of computers – By V. Rajaraman (Pill publications)

2. Computer Fundamental- By B. ram

(2) Programming with C++ by Balaguru Swamy.

3

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.
B.Sc. Session 2018-19

B.Sc. V Semester Nov-Dec-2018

Introduction to Internet And Visual Basic (501)

Unit I

The Internet: Basic Concept, Basic Requirements of hardware & software for using the, Internet, IP Addresses and Domain Name System, Web Browsers, Search Engines. Web Pages and Web sites, FTP, Telnet, Multimedia.

Unit II

E-mail, Netscape Messenger, Newsgroups: Use and Advantages, Chatting, Videoconferencing. Security Issues on the Internet, Password Schemes, cryptography, Public and Private Key Encryption, Viruses, Firewall. URL, Intranet, Extranet, WWW, Hypermedia.

UNIT III

A profile of VB - Menus, Tool bar Buttons, Tool box, Form, Project, controls, Properties window, Program window. Programming Essentials: General Procedures, Sub Procedures and function-designing. Calling & passing controls as arguments, Constant & variable:- Declaration, Scope and types.

UNIT IV-
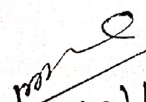
Flow of control - decisions - if statement, Else if clause, Select case structure, Nested decisions. Loops :- Do loops, For loops, While loop. Arrays, Declaring arrays, Multi-dimensional structures, Array of Structure, Control Arrays.

UNIT V –

Input & Output Procedures - Defining a Menu, Input Techniques - Validating & Formatting the Input, Moving the focus. output techniques -Calculation & Display. Common dialog control, MDI form, OLE controls, Data base connections.

Text Book and References:
1. How to do Everything with the Internet: Dennis Jones
2. visual Basic complete reference – Tata Mcgraw Hill

4

Govt. Kamla Raja Girls Post Graduate (Autonomous) College, Gwalior, M.P.
B.Sc. Session 2018-19

B.Sc. VI Semester April-May-2019
Software Engineering And Web Designing(601)

UNIT I

The evolving role of SW, Software Characteristics, Applications, Myths. Layered Technology, Project Management Concepts. Software Process and Project Metrics Software Project Planning. Risk Analysis and Management. User Interface Design. Software Testing Techniques, Object-Oriented Software Engineering: Object-Oriented Concepts and Principles

UNIT II

Advanced Topics in Software Engineering: Formal Methods. Clallam Software Engineering. Component-Based Software Engineering, Client/Server Software Engineering, Web Engineering, Reengineering, Computer-Aided Software Engineering, The Road Ahead.

Unit -III

Getting Started: What is the Internet, The importance of the Internet, What is the Worldwide Web, What are Links or URLS, What is a web browser, Internet services. Designing you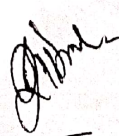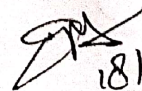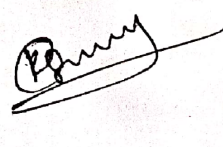r web site: objective of the web site, Navigation and links within the site, Checklist for designing Creating a Web Page with HTML, Tables in HTML; Frames: What are frames, frame attributes and linking, Complex frame sets, Inline frames, Image Maps.

Unit IV

Creating a web page with HTML-Linking: Linking HTML pages, Linking to URLs. Creating a web page with HTML- Text formatting: Text formatting, Adding Images and background to HTML pages. , What is JAVA,, Creating Marquee Adding applets to web page. Java Script and dynamic HTML-.Java script, Structure of Java script, Basic commands of Java script, what is DHTML, DHTML in Netscape navigator, and DHTML in Internet explorer.

Unit –V

Cascading style sheets: Defining style with HTML tags, Features of style sheets. Web Server-Locating a web server,keeping your file organized Using Directories, Moving file to web server, Commercial internet service, Going Live-Testing and maintenance of the web site, Cross Browser testing and verifying links, registering and Indexing web site. site indexing using META Tags.

Text Book:

1.Software Engineering by Pankaj Jalote.

2. WEB PUBLISHIN by Monica D'Souza & Jude D'Souza

5

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Min. Passing Marks : 40

Max. Marks : 100
Subject to aggregate of 50% in total Examination.

PGDCA scheme

I Semester Nov-Dec-2018

		EXT	INT	PRAC	TOTAL
		100	50		150
PGDCA101	Computer Fundamentals	100	50		150
PGDCA102	Application Software Packages	100	50		150
PGDCA103	Programming in 'C'	100	50		150
PGDCA104	Computer organization & Architecture	100	50		150
PGDCA105	System Analysis & Design	100	50		150
PGDCA106	Programming lab on102,103,104			50	50
		500	250	50	800

II Semester April-May-2019

		EXT	INT	PRAC	TOTAL
		100	50		150
PGDCA201	Visual Basic	100	50		150
PGDCA202	Object Oriented Programming	100	50		150
PGDCA203	Concept of DBMS through FoxPro	100	50		150
PGDCA204	Introduction to Internet Technologies.	100	50		150
PGDCA205	Introduction to Linux			100	100
PGDCA206	Minor Project based on 201 & 203			50	50
PGDCA207	Programming Lab on 202 & 205				
		500	250	150	900

Note -: In PGDCA 205 a group of max. 2 students will be allowed to carry out the project jointly.

1/13

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Max. Marks : 100

Min. Passing Marks : 40

Subject to aggregate of 50% in total Examination.

First Semester Nov-Dec-2018

Paper - I

PGDCA 101 :   Computer Fundamentals

UNIT 1 - Computer system concepts, Computer system characteristics, Capabilities and limitations, Types of computers-Analog, Digital, Hybrid, General, Special Purpose, Micro, Mini, Mainframe, Super, Basic components of a computer system - Control unit, ALU, Input/Output functions and characteristics, memory - RAM, ROM, EPROM, PROM and other types of memory. Data representation and codes, Decimal, Binary ,Octal and Hexadecimal System and inter conversion ,BCD numbers and ASCII codes.

UNIT 2-Computer hardware, Input devices- Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Output devices- Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard - VGA, SVGA, XGA etc, Printers - Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers, Memory devices, RAM, ROM, Winchester drive, Mass storage devices, CD-ROM, Flash memory and their characteristics and uses.

UNIT 3-System software - Assemblers, Translators, Interpreters, Compilers, Operating Systems - Functions, Types- Batch, Single, Multiprogramming , Languages : High level languages, Procedural and Object Oriented languages. Application Software – Word Processing, Spreadsheet, Presentation Graphics, Data Base Management Software.

UNIT 4-Computer applications , Office automation, Industrial applications, CAD/CAM, Library information system , Digital image processing, Multimedia applications, Space research,

UNIT 5-Computer networking: Goals and applications, LAN, MAN ,WAN Computer communication.: Communication modes : simplex, half duplex, full duplex. Types of Network - LAN, WAN, MAN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN -Media, Bridges, HUB, Routers, Repeater and Gateways, communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Modem - Working and characteristics, Types of Connections - Dialup, Leased Lines, ISDN, Use of Communication in daily life.

Reference:

1.Introduction to Computers : C. Xavier 2nd Edition, New Age International
2.Fundamentals of Computers : V. Rajaraman 2nd Edition Prentice Hall of India
3.IT Today : S Jaiswal Galgotia Publication
4. *Computers Today: S.K.Basandra, Galgotia Publications.*
5. *Fundamentals of Information technology:Alexis Leon & Mathews Leon,Vikas Publishing House, New Delhi*

2/13

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Min. Passing Marks : 40

Max. Marks : 100
Subject to aggregate of 50% in total Examination.

First Semester Nov-Dec-2018

Paper - II

PGDCA-102
Application Software Packages

UNIT – 1

MS Windows: Introduction to M.S. Windows; Features of Windows; Various versions of Windows & its use; Working with Windows; My Computer & Recycle bin ; Desktop, Icons and Windows Explorer; Screen description & working styles of Windows; Dialog Boxes & Toolbars; Working with Files & Folders; Shortcuts & Autostarts; Accessories and Windows Settings using Control Panel; Start button & Program lists; Installing new Hardware & Software.

UNIT – ll

Basics Of word:
Creating word documents; The word window, Entering Text . Editing Document text; Selecting Text, Copying and Moving Text. Applying Text Enhancements; Applying Fonts and Font Styles in Word, Highlighting Text For Distinctive Look. Aligning and Formating; Aligning Text, Using Identation Options, Setting Line Spacing Options, Using Tabs. Creating Lists, Numbers and Symbols; Numbering and Bullets, Creating Special Characters. Replacing and checking Text ; Creating and Applying Frequently Used Text, Finding and Replacing Text , More about Spelling and Grammar, Using the Thesaurus Command. Getting Into Print ; Using Print Preview, Changing Page Orientation and Paper Size, Aligning Text Vertically, Settting Margins, Printing Options.
Advanced Formatting Techniques in Word : Formatting Pages; Formatting Sections, Creating and Modifying Page Numbers, Creating Headers and Footers, Taking Care of Loose Ends. Working with Columns; Working with Newspaper Columns, Revising Column Structure. Constructing High-Quality Tables; Creating and Revising Tables, Modifying Table Structure, Formatting Tables, Using Tables Calculatingly. Working Smarter with Word; Using Templates. Creating Outlines in Word; Creating an Outline, Modifying an Outline

UNIT- lll

Access Concepts & terms: database tables, relational databases, records, fields, controls & objects, queries & dynasets, forms, report, properties, wizards, macros, Access requirements, starting & quitting access, the access workspace & tool, views. Creating database & tables with & without wizard, field name, data types & properties, adding & deleting fields in fields, renaming fields & their caption, resizing fields, freezing columns, primary key field & indexing fields. Form: Form wizard, saving & modifying forms: Entering & Editing data, Finding, sorting & displaying data , queries & dynasets , creating & using select queries, using wild cards in queries, reformatting dynasets. Reports: Creating reports, previewing reports, printing reports, modifying, saving.

Relational databases – definition, purpose, creation, viewing, deleting. Expressions, Macros.

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Min. Passing Marks : 40

Max. Marks : 100
Subject to aggregate of 50% in total Examination.

UNIT - IV

Creating Excel Worksheets :

Entering and Editing Cell Entries; The excel Application Window, Workbooks and Worksheets, Moving the Cell Pointer, Entering Text and Numbers, Revising Text and Numbers. Working with Numbers; Creating Formulas, Formatting numbers. Changing Worksheet Layout; Adjusting Column Width and Row Height, Inserting and Deleting Rows and Columns, Inserting and Deleting Cells, Moving and Copying Cell Contents, Naming a Worksheets, Selecting Worksheets, Copying and Moving Worksheets, Inserting and Deleting Worksheets, Other Formatting Options; Aligning Text, Border and Color. Printing in Excel; Print Preview, Changing Page Setup, Checking Worksheet Spelling.
Advanced Techniques in Excel: Using Functions and References; Using Functions, Entering Functions, Relative and Absolute Cell References. Naming Ranges; Naming Ranges, Using Names. Creating Easy-to-Understand Charts; Pie Charts, Series Charts, Creating Charts, Moving, Sizing, and Printing Chart Objects Editing and Formatting Charts; Adding a Data Series, Deleting a Data Series, Modifying and Formatting Charts.

UNIT – V

Creating PowerPoint Presentations:
Creating a Basic Presentation, Building Presentations, Modifying Visual Elements, Formatting and Checking Text , Adding Objects, Applying Transitions, Animation Effects and Linking, Preparing handouts, Taking the Show on the Road.

Reference :
1. Microsoft Office 97 : Will Train , Gini Courter, Annette Marquis
   bpb Publication.

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Min. Passing Marks : 40

Max. Marks : 100
Subject to aggregate of 50% in total Examination.

First Semester Nov-Dec-2018

Paper - III
PGDCA 103 : Programming in 'C'

UNIT 1-Programming Fundamentals : Program Concept, Algorithms, Flow Charts - Symbols, Rules for making Flow chart, Types of flowchart, Advantage & Disadvantage, , **techniques of problem solving** : Programming Techniques – Top down, Bottom up, Modular, Structured - Features, Merits & Demerits, Programming Logic- Simple, Branching, Looping, Recursion, Cohesion & Coupling, Programming. Testing & Debugging & their Tools .

UNIT 2-Programming in C including features of 'C', Ctokens, Variables, Expressions, Identifiers, Keywords, Data Types, Constants, Operator and expression Operator: Arithmetic, Logical, Relational, Conditional and Bit wise Operators, Precedence and Associativity of Operators, Type conversion in expression, Basic input/output and library functions Single character input/output i.e. getch(), getchar(). getche(), putchar(),Formatted input output i.e. printf() and scanf().

Branching Constructs: if-else,switch, conditional operator & goto statements
If statement, If.....Else statement, Nesting of If....Else Statement, else if ladder, The ?: operator, goto statement, Switch statement, Compound statement, Loop controls, for, while, do-while loops, break, continue, goto statement.

UNIT 3- Functions: categories of functions User defined and library function , recursion, Function arguments, Return values and nesting of function, Recursion, Calling of functions, Scope and life of variables - local and global variable, Storage class specified - auto, extern, static, register.

Arrays : what is array, declaring initializing , 2D and 3D array. String: declaration, string functions – strcat,strcpy,strcmp,strlen,strstr.

UNIT 4-Pointers: operations on pointers, pointers Basic of pointers and operators, Pointers and function, Array of pointers, Pointer and strings, Pointer to structure, Pointers within structure ;The preprocessor, #define, defining functions like macros, #error,#include, conditional compilation directives i.e. #if, #else, #elif and#ifdef & undef **Structures** : the concept of structure of structure , intilizing a structure, the structure tag, period operator , array of structure, structure and pointer, te arrow operator and nesting of structure. Unions : initialization and use of it in a program.

UNIT 5-File Management: Introduction – File handling, File structure, File handling function, File types, Streams, Text, Binary, File system basics, The file pointer,Opening a file, Closing a file, Writing a character, Reading a character, Using fopen(), getc(), putc(), and fclose(), Using feof(), Working with string fputs() and fgets(), Standard streams in C,Flushing astream, Using fread() and fwrite(), Direct access file, fseek() and random access I/O, fprintf() and fscanf(), Command line arguments

Reference:
1.Let us C
2.Programming in ANSI C
3.C Programming
4. The sprit of C
5. Programming with ANSI & Turbo C

Yashwant Kanitkar, BPB Publicatiuon
Balgurusuamy Tata McGraw Hill
Schaum's series
Mulish Cooper, Jaico Publishing
Kamthane, Pearson Education.

5/13

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Min. Passing Marks : 40

Max. Marks : 100
Subject to aggregate of 50% in total Examination.

First Semester Nov-Dec-2018

Paper - IV
PGDCA 104 : Computer Organization and Architecture

UNIT 1-Component of computer system, number system, binary, octal, hexadecimal conversion, 1's compliment and 2's compliment, binary arithmetic - addition, subtraction character codes (ASCII, EBCDIC). Error detection and correction codes,

UNIT 2-Boolean Algebra - Representation of values and complement, AND, OR, NOT operators, d'morgan's theorem, simplifying expressions, truth table, logic gate : AND, OR, NOT, NAND, NOR, XOR, XNOR and karnaugh map method, combination logic design.

UNIT 3-Flip flops-clocked RS, D, JK flip flops. Counters - Ripple, Synchronous, Ring Counters. Registers - Buffer, Controlled Buffer Register. Addressing Techniques - Direct, Immediate, Indirect Addressing.

UNIT 4-Control Unit - Its purpose, instruction word, instruction cycle.I/O devices - Printers: Dot matrix, Electro magnetic, Thermal, Laser, CRT's, Keyboards.

UNIT 5-Memory- Main, Ram, Static & Dynamic, ROM, EPROM, cache memory, Auxiliary storage : floppy disk, introduction to microprocessor, interfacing buses, bus formats address, data and control.

Reference:

1) DDigital computer fundamental-Thomas C Bartee
2) Computer system architecture-M.M Mano
3) Computer fundamentals (architecture & organization) B.Ram.

6/13

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Min. Passing Marks : 40

Max. Marks : 100
Subject to aggregate of 50% in total Examination.

First Semester   Nov-Dec-2018

Paper - V
PGDCA 105 : Information System Analysis and Design

UNIT 1-Overview of Systems Analysis and Design : Systems Development Life Cycle. Concept and Models : requirements determination. logical design, Physical design, test planning implementation planning & performance evaluation; communication, interviewing, risk and feasibility analysis.

UNIT 2- structures walkthroughs, and design and code reviews; prototyping; database design; software quality metrics; software evaluation and acquisition.

UNIT 3-Information requirement Analysis: Process modeling with physical and logical data flow diagrams, data modeling with logical entity relationship diagrams; Developing a Proposal: Feasibility study and cost estimation.

UNIT 4-Systems Design: Design of input and control, design of output and control, file design/database design, S/W design, cohesion ,coupling , user interface design; prototyping; documentation.

UNIT 5-Application Development Methodologies and CASE tools: Information engineering, structured systems analysis and design and object oriented methodologies for application development data modeling, process modeling, use of computer aided software engineering (CASE) tools in the analysis, design and implementation of information systems.

Reference: -

1. Haryszkiewycz, I.T., "Introduction of Systems Analysis and Design". Prentice Hall of India. 1989.
2. Rajaraman,V., " Analysis and Design of Information Systems". Prentice Hall of India. 1991.
3. Senn J.A., " Analysis and Design of Information systems". Tata McGraw Hill Book Company, 1986.
4. Whiten, J.K., Bentley, L.D., Beslow, V.M., " Systems   Analysis and Design Methods". Galgotia Publications Pvt. Ltd. 1994.

7/13

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Max. Marks : 100

Min. Passing Marks : 40

Subject to aggregate of 50% in total Examination.

Second Semester   April-May-2019
Paper - I
PGDCA 201 :   Visual Basic

UNIT 1-A profile of VB - Menus, Tool bar Buttons , Tool box, Form , Project, controls, Properties, Program window.
Programming Essentials- General Procedures, Sub Procedures and function-designning,. Calling & passing controls as arguments , Constant & variable : Decleration, Scope and types.

UNIT 2-Designing a project :- start up form , Properties and Program design , Managing multiple forms.
Flow of control - decesions - if statement , Else if clause ,Select case structure, Nested decisions.
Loops :- Do loops , For loops ,

UNIT 3-Arrays ,Declarings arrays ,Multidimentional & dynamic arrays , User defined types :- Recorded structures, With statement arrary of records .
Date file :- Random Access Files - Opening & closing of file , Put # , Get# ,Seek# statements.
Text files - opening & closing file, Write# , Print# , Input # , Line input # statements.

UNIT 4-Input & Out put Procedures - Defining a Menu , Control Arrays , Input Techniches - Validating & Formatting the Input , Moving the focus , Menu choices out put techniques - Calculation & Display , Drawing chart .

UNIT 5-Visual basic controls:- Intrinmic Controls, Custom control, Common dialog control , Printer object. Object, Classes and Collections :- Developing classes & collection MDI form , OLE controls . Data base connections.Data manager programme , Data control ,Bound controls.

Reference:

1. Foundation of Visual Basic - Douglus Hergert.
2. Visual Basic Programming Explorer- Peter G. Aitken.

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Min. Passing Marks : 40

Max. Marks : 100
Subject to aggregate of 50% in total Examination.

Second Semester   April-May-2019

Paper - II

PGDCA 202 :   Object Oriented Programming

UNIT-I
Overview of C++ : Object oriented programming, Introducing C++ classes, Concepts of object oriented programming. Classes & Objects : Classes, Structure & classes, Union & Classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members: Static data member, Static member function, Passing objects to function, Returning objects, Object assignment.

UNIT-II
Array, Pointers references & The Dynamic Allocation operators : Array of objects, Pointers to object, Type checking C++ pointers, The This pointer, Pointer to derived types, Pointer to class members, References: Reference parameter, Passing references to objects, Returning reference, Independent reference, C++ 's dynamic allocation operators, Initializing allocated memory, Allocating Array, Allocating objects. Constructor & Destructor : Introduction, Constructor, Parameterized constructor, Multiple constructor in a class, Constructor with default argument, Copy constructor, Default Argument, Constructing two dimensional Array, Destructor.

UNIT-III
Function & operator overloading : Function overloading, Overloading constructor function finding the address of an overloaded function, Operator Overloading: Creating a member operator function, Creating Prefix & Postfix forms of the increment & decrement operation, Overloading the shorthand operation (i.e. +=,-= etc), Operator overloading restrictions, Operator overloading using friend function, Overloading New & Delete, Overloading some special operators, Overloading [ ], ( ), -, comma operator, Overloading << .

UNIT-IV
Inheritance : Base class Access control, Inheritance & protected members, Protected base class inheritance, Inheriting multiple base classes, Constructors, destructors & Inheritance, When constructor & destructor function are executed, Passing parameters to base class constructors, Granting access, Virtual base classes . Virtual functions & Polymorphism : Virtual function, Pure Virtual functions, Early Vs. late binding

UNIT-V
The C++ I/O system basics : C++ streams, The basic stream classes: C++ predefined streams, Formatted I/O: Formatting using the ios members, Setting the format flags, Clearing format flags, An overloaded form of setf ( ), Examining the formatted flags, Setting all flags, Using width() precision() and fill(), Using manipulators to format I/O, Creating your own manipulators.

TEXT & REFERENCE BOOKS :
C++ The complete reference - Herbert Schildt,- TMH Publication
Object Oriented Programming C++ - R. Lafore
Object Oriented Programming with C++ - R. Subburaj, Vikas Publishing House, New Delhi.
C++- E. Balguruswamy, , TMH Publication

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Min. Passing Marks : 40

Max. Marks : 100
Subject to aggregate of 50% in total Examination.

Second Semester April-May-2019

Paper - III

PGDCA 203 : Concept of DBMS Through FoxPro

UNIT 1-Introduction: database system, advantages of database systems-redundancy, consistency, sharing, standards, integrity, security, conflicting requirements and data independence, concept of distributed database, DBMS, component.Architecture of database systems: schema, sub-schema; logical and conceptual view. data description language (DDL), DML and database administrator.

UNIT 2-Data models: relational model-structure, tupple, attributes, relation normalization, key-primary key, candidate key, alternate key. relational calculus & relational algebra-concepts, definition of union, set difference, Cartesian product -selection, intersection, quotient and join. Normal forms : -first, second, third normal forms.

UNIT 3-Hierarchical and network model-concept, structure, advantages and disadvantages. protection and security : - types of crashes, security on databases.

UNIT 4-FOXPRO-database file, record & field, field types, creating database file-defining, saving structure, entering, listing, removing, updating, searching, sorting, viewing records. closing database.Index - creating index files, multiple fields-compound & structural index, creating index - ascending, descending order, saving index file.

UNIT 5-Seek, index, sort, time, date, date arithmetic, mathematical functions-sqrt (), abs (), min (), max (), round (), mod (), Len (), mathematical commands sum average, count, calculate, do while-enddo, skip, trim, accept, input, wait, if-end if, scan - endscan, for-end for, do case - endcase, text-endtext, handling multiple database database files-select, set relation, designing custom screen @--say-get and read, range, picture, designing custom screen using @ command @ prompt, define menu, popup features defining : size title character function - isupper(), islower() , replicate(),left(),right(),at().

Reference:

1)IIntroduction to database systems- C. J date.
2)PPrinciples of database system Jeffery D Ullman.
3)FFOXPRO made simple- R.K Taxali.

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Min. Passing Marks : 40

Max. Marks : 100
Subject to aggregate of 50% in total Examination.

Second Semester   April-May-2019

Paper - IV

PGDCA 204 Introduction to Internet Technologies

UNIT- 1 Introduction of Internet : What is Internet , Services Of Internet , H/W & S/W Requirements to Connect to the Internet .E-mail, Introduction of WWW, Web Server and Web Client , Difference between the web and the Internet , Internet Service Provider (ISP). Web publishing Concepts, Domain name Registration, Space on Host Server for Web site,

UNIT- 2 Choosing an Internet Service Provider :Location , Stability , Customer Service, Performance , Pricing , Establishing an Internet Account.

E-mail Basics : Running an E-mail Program , Sending mail, Reading mail, Replying to mail, Deleting mail. Newsgroups, mailing Lists , Chatting.

UNIT –3

Data Transmission Protocols, Client/Server Architecture & its Characteristics, FTP & its usages. Telnet Concept, Remote Logging, Protocols, Terminal Emulation. Massage Board, Internet chatting - Voice chat, text chat.

UNIT –4 An Introduction to Internet Explorer : Starting Internet Explorer , A Quick Tour with Internet Explorer , At the Helm in internet Explorer, Viewing Various file Types .

Internet Search Engines: What is Search Engines , How do Search Engines work ?, Types of Search Engines.

UNIT -5 Creating a Web Page : What is HTML , What can You Do with HTML , Creating , Saving and Viewing HTML documents , Applying Structure Tags , Applying Common Tags and attributes Images, Hyperlinks, Backgrounds and Colour controls, Different HTML tags, Table layout and presentation, Use of font size & Attributes, List types and its tags. Use of Frames and Forms in web pages. Creating a New Web, Opening an Existing Web, Creating , Opening and Saving Web Pages , Entering and Editing Text. Printing Page , Spell Checking, Finding or Replacing Text.

Reference:

Alexis leon and Mathews Leon   - Internet for every one (Tech World)
Douglas Comer - The Internet Book (prentice Hall)
SYBEX- bpb publication – Internet Complete (Second Edition).
V.K.Jain - O level Module - M 1.2 - Internet & web page designing , BPB Publications

18(8)18

11/13

18/8/18

Scanned with Oken Scanner

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Min. Passing Marks : 40

Max. Marks : 100
Subject to aggregate of 50% in total Examination.

Second Semester April-May-2019

Paper - V
PGDCA 205 - Introduction to Linux

UNIT – I
Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories. Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces. Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down process, init and run levels.

UNIT–II
Essential linux commands Understanding shells, Processes in linuxprocess fundamentals, connecting processes with pipes, tee, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, Printing commands, find, sort, touch, file, file related commands-ws, sat, cut, dd, etc. Mathematical commands- bc, expr, factor, units. Creating and editing files with vi, joe & vim editor

UNIT–III
System administration Common administrative tasks, identifying administrative files – configuratinn and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel. Backup and restore files, reconfiguration hardware with kudzu, installaing and removing packages with rpm command. Configure X-windows desktop-redhat-config-Xfree86, understanding XF86config file, starting & using X desktop. KDE & Gnome graphical interfaces, changing X settings.

UNIT–IV
Shell programming- Basic of shell programming, Various types of shell available in Linux, comparisons between various shells, shell programming in bash, read command, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automate system tasks.

UNIT-V
Simple filter commands – pr, head, tail, cut, paste, sort, uniq, tr. Flter using regular expressions – grep, egrep, and sed. awk programming – report printing with awk.

TEXTS & REFERENCES BOOKS :
UNIX – Concepts & Applications (Third Ed.) – Sumitabha Das, Tata McGraw Hill Publications.
Unix for programmers and users (Third Ed.) – Graham Glass & King Ables, Pearson Education India. (Low Prices Edition).
Red Hat Linux 9 Bible – Cristopher Negus, IDG Books India Ltd.
LINUX Complete – BPB Publication

12/13

Govt. KRG PG Autonomous College, Gwalior, MP

PGDCA – Session 2018-19

Min. Passing Marks : 40

Max. Marks : 100
Subject to aggregate of 50% in total Examination.

Second Semester   April-May-2019

PGDCA 206 - Minor Project

The project is to be done by the student reflecting the knowledge gained during the course of work . Presentation of the project will be in the accepted norms and should be of real life value .

Project report will be submitted by the students latest on the date announced by the department and then evaluated by the examiner.

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Scheme

Semester – 1

Nov- Dec-2018

Code	Theory Paper	External	Internal	Practical	Total
BCA101	Calculus	80	20	-	100
BCA102	Information Technology	80	20	-	100
BCA103	Environmental Study	80	20		100
BCA104	Problem solving using 'C'	80	20	-	100
BCA105	PC Packages	80	20	50	150
BCA106	Practical in 'C'	-	20	80	100
	Total	400	120	130	650

Semester – 11
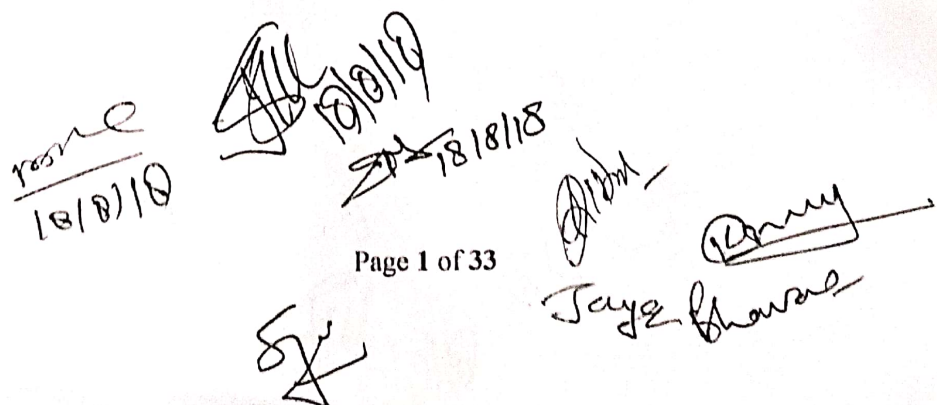
April- May -2019

Code	Theory Paper	External	Internal	Practical	Total
BCA201	Advance Calculus	80	20	-	100
BCA202	Computer Organization	80	20	-	100
BCA203	Communicative English Grammar	80	20	-	100
BCA204	Object Oriented Programming in C++	80	20	-	100
BCA205	DBMS	80	20	50	150
BCA206	Practical in c++	-	20	80	100
	Total	400	120	130	650

Semester – III

Nov- Dec-2018

Code	Theory Paper	External	Internal	Practical	Total
BCA301	Discrete	80	20		100
BCA302	Programming in Visual Basic	80	20		100
BCA303	Introduction to System Analysis & Design	80	20	-	100
BCA304	Communication Techniques	80	20	-	100
BCA305	Computer Graphics & Multimedia	80	20	50	150
BCA306	Practical in VB	-	20	80	100
	Total	400	120	130	650

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Semester – IV

April- May -2019

Code	Theory Paper	External	Internal	Practical	Total
BCA 401	Numerical Methods	80	20	-	100
BCA 402	Advanced Computer Architecture	80	20	-	100
BCA 403	Data Structure using c++	80	20	-	100
BCA 404	Accounting & Management Control	80	20	-	100
BCA 405	Introduction to Operating System	80	20	50	150
BCA 406	Practical in Data Structure	-	20	80	100
	Total	400	120	130	650

Semester – V

Nov- Dec-2018

Code	Theory Paper	External	Internal	Practical	Total
BCA 501	Differential Equations	80	20	-	100
BCA 502	Networking Concepts	80	20	-	100
BCA 503	Introduction to E-commerce	80	20	-	100
BCA 504	Programming in JAVA	80	20	-	100
BCA 505	Oracle 8i	80	20	50	150
BCA 506	Practical in JAVA	-	20	80	100
	Total	400	120	130	650

Semester – VI

April- May - 2019

Code	Theory Paper	External	Internal	Practical	Total
BCA 601	Probability & Statistics	80	20	-	100
BCA 602	Software Engineering	80	20		100
BCA 603	Internet Technologies	80	20	-	100
BCA 604	Active Server Pages Programming	80	20	-	100
BCA 605	Linux Operating System	80	20	50	150
BCA 606	Practical in ASP	-	20	80	100
	Total	400	120	130	650

Paper I
PAPER CODE BCA - 101

Calculus
Max. Marks: External 80 + Internal 20

UNIT–I
Review of concepts of function of one variable:
Definition of a function, Types of Functions.

LIMITS: DEFINITION, WORKING RULE FOR FINDING OUT THE LIMIT, FUNDAMENTAL PROPERTIES OF LIMITS, PROBLEMS BASED ON LIMITS.

Continuity: Definition, Points of Discontinuity, Classification of Discontinuity, Problems based on Continuity & Discontinuity.

Differentiability: Condition for Differentiability and problems.

UNIT-II
Rolles theorem, First and Second Mean value theorems, Taylor's theorem, Successive differentiation, Leibnitz Theorem, Taylor's & Maclaurin's series, Intermediate forms.

UNIT-III
Tangents, Normals, Curvature, Tests for Concavity and Convexity, Points of Inflexion, Multiple Points, Tracing of Curves in cartesian and polar co-ordinates.

UNIT-IV
Integration of rational and irrational algebraic functions and transcendental functions, reduction formulae.

UNIT-V
Definite Integrals, Quadrature, Rectification, Volumes and surfaces of solids of revolution.

Recommended Books:
1. Differential Calculus by Gorakh Prasad
2. Integral Calculus by Gorakh Prasad
3. Schaum's Outline Series on Calculus

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper II
PAPER CODE BCA – 102
Information Technology

Max. Marks: External 80 + Internal 20

UNIT 1 - Computer system concepts, Computer system characteristics, Capabilities and limitations, Types of computers- Analog, Digital, Hybrid, General, Special Purpose, Micro, Mini, Mainframe, Super, Basic components of a computer system - Control unit, ALU, Input/Output functions and characteristics, memory - RAM, ROM, EPROM, PROM and other types of memory. Data representation and codes, Decimal, Binary ,Octal and Hexadecimal System and inter conversion, BCD numbers and ASCII codes.

UNIT 2-Computer hardware, Input devices-
Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Output devices- Monitors - characteristics and types of monitor -
Digital, Analog, Size, Resolution, Refresh Rate, Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Interlaced / Non Interlaced, Dot Pitch, Video Standard
- VGA, SVGA,

XGA ETC, PRINTERS - DAISY WHEEL, DOT MATRIX, INKJET, LASER, LINE PRINTER, PLOTTER, SOUND CARD AND SPEAKERS , , MEMORY DEVICES, RAM, ROM, WINCHESTER DRIVE, MASS STORAGE DEVICES, CD-ROM, FLASH MEMORY AND THEIR CHARACTERISTICS AND USES.

UNIT 3-System software - Assemblers, Translators, Interpreters, Compilers, Operating Systems - Functions, Types- Batch, Single, Multiprogramming, Languages : High level languages, Procedural and Object Oriented languages.
Application Software – Word Processing, Spreadsheet, Presentation Graphics, Data Base Management

UNIT 4-MANAGEMENT INFORMATION SYSTEM - INTRODUCTION, CHARACTERISTICS, NEEDS, DIFFERENT VIEWS OF MIS, DESIGNING, PLACEMENT OF MIS, PITFALLS IN DESIGNING AN MIS, COMPUTER BASED MIS – ADVANTAGES & DISADVANTAGES.
COMPUTER APPLICATIONS IN BUSINESS-NEED AND SCOPE, COMPUTER APPLICATIONS IN PROJECT MANAGEMENT, COMPUTER IN PERSONNEL ADMINISTRATION, INFORMATION SYSTEM FOR ACCOUNTING-COST AND BUDGETARY CONTROL, MARKETING AND MANUFACTURING, COMPUTER APPLICATIONS IN MATERIALS MANAGEMENT, INSURANCE AND STOCK-BROKING, PRODUCTION PLANNING AND CONTROL, PURCHASING, BANKING, CREDIT AND COLLECTION, WAREHOUSING.
USE OF COMPUTERS IN COMMON PUBLIC SERVICES AND E-GOVERNANCE.

UNIT 5-Computer networking: Goals and applications, LAN, MAN ,WAN
COMPUTER COMMUNICATION.: COMMUNICATION MODES : SIMPLEX, HALF DUPLEX, FULL DUPLEX.TYPES OF NETWORK - LAN, WAN, MAN ETC., TOPOLOGIES OF LAN - RING, BUS, STAR, MESH AND TREE TOPOLOGIES, COMPONENTS OF LAN -MEDIA, BRIDGES, HUB, ROUTERS, REPEATER AND GATEWAYS, COMMUNICATION CHANNELS - TWISTED, COAXIAL, FIBER OPTIC, SERIAL AND PARALLEL COMMUNICATION, MODEM - WORKING AND CHARACTERISTICS, TYPES OF CONNECTIONS - DIALUP, LEASED LINES, ISDN, USE OF COMMUNICATION IN DAILY LIFE.

Reference

1.INTRODUCTION TO COMPUTERS C. XAVIER 2ND EDITION,

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper III
PAPER CODE BCA – 103
ENVIRONMENTAL STUDY
Max. Marks: External 80 + Internal 20

OBJECTIVE: To Introduce the concept of Environmental Awareness. UNIT I

Environment meaning, structure and type of environment components of environment and society environment and resources. Man Environmental relationship ; Approach to study; man Interaction; with environment (historical to present day).

UNIT II

Environmental Degradation: Meaning of degradation, types of degradation, process of degradation, cause of degradation, Religious and Philosophical factors deforestation agricultural development and degradation population growth and Degradation, urbanization and degradation, Modern technology And degradation.

UNIT III

Ecology: Definition of ecology and ecosystem. Types of Ecosystem, components of ecosystem functions of ecosystem Productivity and stability of ecosystems. Environmental Disasters: Meaning and concepts, types of hazards and disaster, man induced and natural hegards, global warning, ozone deption, green house effect and other major Environmental problems.

UNIT IV

Environmental Pollution: Air, water, solid, noise pollution Meaning, definition, sources, types, adheres effects and methods Of control.

UNIT V

Environmental Planning and Management: Concepts, aspects and Approaches, resources management, ecological Mgt. Biosphere Reserves, Management of wild life. Environmental Regulation and Rules: Vision of environment by Govt. of India, Environmental Policy, waste disposal rules and laws and legislation enacted by Parliament for environmental protection.

BOOKS:
1. Environmental Geography By Savinder Singh
2. Environmental Concept/Issues By Rupa And Co.
3. Environment Rules and Regulation
4. Environment Mgt. Vikas Publication by G.N.Pandey.

Paper IV
PAPER CODE BCA - 104
Problem solving using 'C'
Max. Marks: External 80 + Internal 20

UNIT 1-PROGRAMMING FUNDAMENTALS : PROGRAM CONCEPT, ALGORITHMS, FLOW CHARTS - SYMBOLS, RULES FOR MAKING FLOW CHART, TYPES OF FLOWCHART, ADVANTAGE & DISADVANTAGE, , TECHNIQUES OF PROBLEM SOLVING : PROGRAMMING TECHNIQUES – TOP DOWN, BOTTOM UP, MODULAR, STRUCTURED - FEATURES, MERITS & DEMERITS, PROGRAMMING LOGIC- SIMPLE, BRANCHING, LOOPING, RECURSION, COHESION & COUPLING, PROGRAMMING. TESTING & DEBUGGING & THEIR TOOLS .

UNIT 2-Programming in C including features of 'C', Ctokens, Variables, Expressions, Identifiers, Keywords, Data Types, Constants, Operator and expression Operator: Arithmetic, Logical, Relational, Conditional and Bit wise Operators, Precedence and Associativity of Operators, Type conversion in expression, Basic input/output and library functions Single character input/output i.e. getch(), getchar(). getche(), putchar(),Formatted input output i.e. printf() and scanf().

Branching Constructs: if-else,switch, conditional operator & goto statements

IF STATEMENT, IF.....ELSE STATEMENT, NESTING OF IF....ELSE STATEMENT, ELSE IF LADDER, THE ?: OPERATOR, GOTO STATEMENT, SWITCH STATEMENT, COMPOUND STATEMENT, LOOP CONTROLS, FOR, WHILE, DO-WHILE LOOPS, BREAK, CONTINUE, GOTO STATEMENT.

UNIT 3- FUNCTIONS: CATEGORIES OF FUNCTIONS USER DEFINED AND LIBRARY FUNCTION , RECURSION, FUNCTION ARGUMENTS, RETURN VALUES AND NESTING OF FUNCTION, RECURSION, CALLING OF FUNCTIONS, SCOPE AND LIFE OF VARIABLES - LOCAL AND GLOBAL VARIABLE, STORAGE CLASS SPECIFIED - AUTO, EXTERN, STATIC, REGISTER.

Arrays : what is array, declaring initializing , 2D and 3D array. String: declaration, string functions – strcat,strcpy,strcmp,strlen,strstr.

UNIT 4-Pointers: operations on pointers, pointers Basic of pointers and operators, Pointers and function, Array of pointers, Pointer and strings, Pointer to structure, Pointers within structure;The preprocessor, #define, defining functions like macros, #error,#include, conditional compilation directives i.e. #if, #else, #elif and#ifdef & undef Structures : the concept of structure of structure , intilizing a structure, the structure tag, period operator , array of structure, structure and pointer, te arrow operator and nesting of structure. Unions : initialization and use of it in a program.

UNIT 5-File Management: Introduction – File handling, File structure, File handling function, File types, Streams, Text, Binary, File system basics, The file pointer,Opening a file, Closing a file, Writing a character, Reading a character, Using fopen(), getc(), putc(), and fclose(), Using feof(), Working with string fputs() and fgets(), Standard streams in C,Flushing astream, Using fread() and fwrite(), Direct access file, fseek() and random access I/O, fprintf() and fscanf(), Command line arguments

Reference

1.Let us C   Yashwant Kanitkar, BPB Publicatiuon
2.Programming in ANSI C   Balgurusuamy Tata McGraw Hill
3.C Programming   Schaum's series
4. The sprit of C   Mulish Cooper, Jaico Publishing
5. Programming with ANSI & Turbo C   Kamthane, Pearson Education.

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper V
PAPER CODE BCA - 105
PC Packages
Max. Marks: External 80 + Internal 20
UNIT – 1

MS WINDOWS: INTRODUCTION TO M.S. WINDOWS; FEATURES OF WINDOWS; VARIOUS VERSIONS OF WINDOWS & ITS USE; WORKING WITH WINDOWS; MY COMPUTER & RECYCLE BIN ; DESKTOP, ICONS AND WINDOWS EXPLORER;

Screen description & working styles of Windows; Dialog Boxes & Toolbars; Working with Files & Folders; Shortcuts & Autostarts; Accessories and Windows Settings using Control Panel; Start button & Program lists; Installing new Hardware & Software.

UNIT – II

BASICS OF WORD: CREATING WORD DOCUMENTS; THE WORD WINDOW , ENTERING TEXT . EDITING DOCUMENT TEXT; TEXT, COPYING AND MOVING TEXT. APPLYING TEXT ENHANCEMENTS; APPLYING FONTS AND FONT STYLES IN WORD, HIGHLIGHTING TEXT FOR DISTINCTIVE LOOK . ALIGNING AND FORMATING ; ALIGNING TEXT, USING IDENTATION OPTIONS, SETTING LINE SPACING OPTIONS, USING TABS. CREATING LISTS, NUMBERS AND SYMBOLS ; NUMBERING AND BULLETS, CREATING SPECIAL CHARACTERS. REPLACING AND CHECKING TEXT ; CREATING AND APPLYING FREQUENTLY USED TEXT, FINDING AND REPLACING TEXT , MORE ABOUT SPELLING AND GRAMMAR, USING THE THESAURUS COMMAND. GETTING INTO PRINT ; USING PRINT PREVIEW, CHANGING PAGE ORIENTATION AND PAPER SIZE, ALIGNING TEXT VERTICALLY, SETTTING MARGINS, PRINTING OPTIONS.

Advanced Formatting Techniques in Word : Formatting Pages; Formatting Sections, Creating and Modifying Page Numbers, Creating Headers and Footers , Taking Care of Loose Ends .Working With Columns ; Working With Newspaper Columns, Revising Column Structure. Constructing High-Quality Tables ; Creating and Revising Tables , Modifying Table Structure , Formatting Tables, Using Tables Calculatingly. Working Smarter with Word ; Using Templates. Creating Outlines in Word ; Creating an Outline , Modifying an Outline

UNIT- III

ACCESS CONCEPTS & TERMS : DATABASE TABLES ,RELATIONAL DATABASES , RECORDS , FIELDS , CONTROLS & OBJECTS , QUERIES & DYNASETS, FORMS, REPORTS ,PROPERTIES , WIZARDS , MACROS , ACCESS REQUIREMENTS , STARTING & QUITTING ACCESS , THE ACCESS WORKSPACE & TOOL, VIEWS .
Creating database & tables with & without wizard , field name , data types & properties , adding & deleting fields in fields , renaming fields & their caption , resizing fields , freezing columns , primary key field & indexing fields.
Form: Form wizard , saving & modifying forms : Entering & Editing data , Finding , sorting & displaying data , queries & dynasets , creating & using select queries , using wild cards in queries , reformatting dynasets.
Reports : Creating reports, previewing reports, printing reports, modifying, saving. Relational databases – definition, purpose, creation, viewing, deleting. Expressions , Macros

UNIT - IV

Creating Excel Worksheets : Entering and Editing Cell Entries ; The excel Application Window , Workbooks and Worksheets, Moving the Cell Pointer, Entering Text and Numbers , Revising Text and Numbers. Working with Numbers ; Creating Formulas, Formatting numbers. Changing Worksheet Layout ; Adjusting Column Width and Row Height, Inserting and Deleting Rows and Columns, Inserting and Deleting Cells , Moving and Copying Cell Contents , Naming a Worksheets , Selecting Worksheets , Copying and Moving Worksheets, Inserting and Deleting Worksheets, Other Formatting Options ; Aligning Text , Border and Color. Printing in Excel ; Print Preview, Changing Page Setup , Checking Worksheet Spelling.

Advanced Techniques in Excel :
Using Functions and References ; Using Functions , Entering Functions, Relative and Absolute Cell References. Naming Ranges ; Naming Ranges , Using Names . Creating Easy-to-Understand Charts ; Pie Charts , Series Charts , Creating Charts , Moving , Sizing , and Printing Chart Objects . Editing and Formatting Charts ; Adding a Data Series , Deleting a Data Series , Modifying and Formatting Charts.

UNIT – V

Creating PowerPoint Presentations: Creating a Basic Presentation , Building Presentations, Modifying Visual Elements , Formatting and Checking Text , Adding Objects, Applying Transitions , Animation Effects and Linking , Preparing handouts , Taking the Show on the Road.

Reference :
1. Microsoft Office 97 : Will Train , Gini Courter, Annette Marquis

bpb Publication.

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper I
PAPER CODE BCA– 201
Advanced Calculus
Max. Marks: External 80 + Internal 20

UNIT–I
Partial differentiation:

Function of several variables, Limits, continuity and differentiability, Partial derivatives, Euler's Theorem, Mean value theorem & Taylor's theorem for functions of Two variables.

UNIT-II

Envelopes, Evolutes, Maxima, Minima and saddle points of functions of two variables, Lagrange's multiplier method.

UNIT-III

Gamma and Beta functions and their properties, some important deductions (duplication formula)

UNIT-IV

Multiple integrals:

Integration of functions of two & three variables, Double & triple integrals, Change of order of Intigration , Use of double and triple integrals in finding areas and volumes.

UNIT-V
Improper Integrals:

Convergence of improper integrals, Evaluation of convergent improper integrals.

Recommended Books:
1. Schaum's Outline Series on Calculus
2. Differential Calculus by Gorakh Prasad
3. Integral Calculus by Gorakh Prasad

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper II
PAPER CODE BCA - 202
Computer organization
Max. Marks: External 80 + Internal 20

UNIT 1-Boolean algebra, Boolean equation of logic gates , Logic Gates, AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates, Boolean Algebra, Basic Boolean Law's, Demorgan's theorem, Boolean laws and theorems, Duality theorem.

UNIT 2-KARNAUGH MAP MAP SIMPLIFICATION, MINIMIZATION TECHNIQUES, SUM OF PRODUCT & PRODUCT OF SUM., PAIRS, QUADS AND OCTATS , DONOT CARE CONDITION,,GREY CODE,MULTIPLEXER AND DEMULTIPLEXER, BCD TO DECIMAL DECODER, SEVEN SEGMENT DCODER,ENCODER.

UNIT 3-ARITMATIC CIRCUITS, BINARY ADDITION, UNSIGNED BINARY NUMBERS, SIGN MAGNITUDE NUMBERS, 2'S COMPLEMENT ARITHMETIC ADDITION, SUBTRACTION, OVERFLOW, HALF ADDER, FULL ADDER, SUBTRACTOR CIRCUITS.

UNIT 4-Flip flops, RS, D, JK, Master Slave, Shift registers, Types of shift registers, Asynchronous and Synchronous counters.

UNIT 5-SEMICONDUCTOR MEMORIES, MEMORY ADDRESSING, ROM, PROMS, EPROMS, RAMS, DRAMS, SRAMS, MEMORY CELLS A TO D AND D TO A CONVERTERS.

Reference:

1.Digital Principles and applications   Malvino A.P. & Leech
                                               Tata Mc Graw Hill

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper III
PAPER CODE BCA - 203
Communicative English Grammar
Max. Marks: External 80 + Internal 20

UNIT 1-Noun, Pronoun, Adverb, Adjective and Verb in detail articles Sentence-kinds, function & classification.

UNIT 2-TENSES-PRESENT INDEFINITE, PRESENT CONTINUOUS, PRESENT PERFECT, PAST INDEFINITE AND COMBINATION OF TENSES AGREEMENT SYNTHESIS.

UNIT 3-Transformation - Simple, compound, complex, Reporte speech, active & passive voice, degree, change the forms of sentence using too or enough, use of idioms & phrase synthesis.

UNIT 4-VOCABULARY - WORD BUILDING, SUFFIXES/PREFIXES. FORMING NOUN FROM VERB/ADJECTIVE AND VICE VERSA COMMON ERROR RELATING TO NOUNS, PRONOUNS, VERBS, ADJECTIVES, PUNCTUATION. TRANSLATION - HINDI TO ENGLISH & VICE VERSA.

UNIT 5-National events, monuments, personalities (thinkers, Sages, Politicians and social workers) some current international events & personalities.

Reference:

1. WREN & MARTIN - GRAMMAR
   2. ROBERT ELLEN – ENGLISH LIVING STRUCTURE.

Paper IV
PAPER CODE BCA - 204
Object Oriented Programming with C++
Max. Marks: External 80 + Internal 20

UNIT-I

Overview of C++ : Object oriented programming, Introducing C++ classes, Concepts of object oriented programming. Classes & Objects : Classes, Structure & classes, Union & Classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members: Static data member, Static member function, Passing objects to function, Returning objects, Object assignment.

UNIT-II

Array, Pointers references & The Dynamic Allocation operators : Array of objects, Pointers to object, Type checking C++ pointers, The This pointer, Pointer to derived types, Pointer to class members, References: Reference parameter, Passing references to objects, Returning reference, Independent reference, C++ 's dynamic allocation operators, Initializing allocated memory, Allocating Array, Allocating objects.

Constructor & Destructor : Introduction, Constructor, Parameterized constructor, Multiple constructor in a class, Constructor with default argument, Copy constructor, Default Argument, Constructing two dimensional Array, Destructor.

UNIT-III

Function & operator overloading : Function overloading, Overloading constructor function finding the address of an overloaded function, Operator Overloading: Creating a member operator function, Creating

Prefix & Postfix forms of the increment & decrement operation, Overloading the shorthand operation (i.e. +=,-= etc), Operator overloading restrictions, Operator overloading using friend function, Overloading New & Delete, Overloading some special operators, Overloading [ ], ( ), -, comma operator, Overloading << .

UNIT-IV

Inheritance : Base class Access control, Inheritance & protected members, Protected base class inheritance, Inheriting multiple base classes, Constructors, destructors & Inheritance, When constructor & destructor function are executed, Passing parameters to base class constructors, Granting access, Virtual base classes .

Virtual functions & Polymorphism : Virtual function, Pure Virtual functions, Early Vs. late binding

UNIT-V

The C++ I/O system basics : C++ streams, The basic stream classes: C++ predefined streams, Formatted I/O: Formatting using the ios members, Setting the format flags, Clearing format flags, An overloaded form of setf ( ), Examining the formatted flags, Setting all flags, Using width() precision() and fill(), Using manipulators to format I/O, Creating your own manipulators.

TEXT & REFERENCE BOOKS :

 C++ The complete reference - Herbert Schildt,- TMH Publication
Object Oriented Programming C++ - *R. Lafore*

OBJECT ORIENTED PROGRAMMING WITH C++ - *R. SUBBURAJ, VIKAS PUBLISHING HOUSE, NEW DELHI. C++- E. BALGURUSWAMY, , TMH PUBLIC*

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper V
PAPER CODE BCA - 205
DBMS
Max. Marks: External 80 + Internal 20

UNIT 1
Introduction: Database system concepts, Data base system, Advantages of database systems; Data Architecture of data system: View/Schema, logical, conceptual and physical and their interrelationship DDL, DML and data dictionary, Data base administrator. Entity Relationship Model as a tool of conceptual design : Entities &Entity set, Relationship & Relationship set, Attributes, Mapping Constraints, Keys, Entity-Relationship diagram (E-R diagram) : Strong & weak entities, Generalization, Specialization, Aggregation,Reducing ER diagram to tables.

UNIT 2
Relational, Hierarchical and Network Model their advantages and disadvantages, storage organization for Relations. Rational Model: Structure tupple Attributes, Normalization : First, Second, Third & BCNF Normal Forms, integrity rule.key, primary key, Candidate key, Integrity rules : Entity integrity, Referential

UNIT 3
Relational algebra: select, project, cross product, different types of joins i.e. Theta join, equi join, natural join, outer join, set operations definition of union, set difference, cartesian product, selection, intersection, relational query language.

UNIT 4
Functional protection and crash recovery: protection against crashes: different types of crashes; backup, journal, rollback, committed and uncommitted transactions, security on database.

UNIT 5
Transaction concept, Transaction state, serializability security or Database: user identification. Physical Protection and maintenance, Transmitted of Rights. Integrity: Integrity violation, Implementation of check's in enforcing integrity; Concept of Distributed database.

REFERENCE:1.INTRODUCTION OF DATABASE SYSTEM - C.J. DATE - ADDITION - ESLEY
2. Principles of database system - Jeffery D. Ullman Galgotia Publication
3. Database system concepts - Henry F. Korth
Abraham silberschatz Megraw - Hill International Edition

Paper I

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

PAPER CODE BCA - 301
Discrete Mathematics

Max. Marks: External 80 + Internal 20

UNIT-I Introduction and Preliminaries: Logical connectives, Truth tables, Tautologies and Contradiction, Logical equivalence, Algebra of propositions.

Set Theory: Set, Singleton set, Finite and Infinite sets, Subsets, Proper subsets, Equality of sets, Union, Intersection and Difference of sets, Universal set, De Morgan laws, Symmetric difference of sets, Generalized De Morgan laws, Cartesian product of sets.

UNIT-II Relations: Relation between two sets, Binary relation on a set, Types of binary relations, Equivalence relation, Equivalence class, Partition of a set, Fundamental theorem of equivalence relation, Composition of relations.

Functions: Function or mapping, One-one, Many-one, into and onto mappings, Identity mapping, Constant mapping, Equality of mappings, Inverse of a mapping, Composition of mappings.

UNIT-III Boolean algebra: Definition and properties of Boolean algebra, a brief introduction to the application of Boolean algebra to switching theory, conversion of complicated switching circuits to simple one, Disjunctive and Conjunctive normal forms.

Graph Theory: Introduction to graph theory, Paths and Circuits, Trees, Spanning trees, Cut-sets, Fundamental circuits and cut-sets.

UNIT-IV Matrices: Introduction, Expression of complex numbers in the form of a matrix, De Moivre's theorem, Elementary transformations, Elementary matrices, Equivalent matrices, Properties of equivalent matrices, Sub-matrix of a matrix, Rank and Nullity of a matrix, Row equivalence and canonical form, Normal form of a matrix.

UNIT-V Solution of Homogeneous and Non-homogeneous system of linear equations, Characteristic roots and Characteristic vectors of a matrix, Caley-Hamilton theorem, to find the inverse of a non-singular matrix using Caley-Hamilton theorem.

Recommended Books:
1. Discrete Mathematical Structures with Applications to Computer Science by Tremblay & Manohar.
2. Discrete Mathematics by Iyengar, Chandrasekharan, Venkatesh & Arunachalam.
3. Discrete Mathematical Structures by Kolman, Busby & Ross.
4. Graph Theory with Applications to Engineering and Computer Science by Narsingh Deo.
5. Discrete Mathematical structure by Kolman.
6. Discrete Mathematics by J.P. Sharma
7. Graph Theory by Harvey.

Paper II
PAPER CODE BCA - 302
Programming in Visual Basic

Max. Marks: External 80 + Internal 20

UNIT 1-A profile of VB - Menus, Tool bar Buttons , Tool box, Form , Project, controls, Properties, Program window.
Programming Essentials- General Procedures, Sub Procedures and function-designning,. Calling & passing controls as arguments , Constant & variable : Decleration, Scope and types.

UNIT 2-DESIGNING A PROJECT :- START UP FORM , PROPERTIES AND PROGRAM DESIGN , MANAGING MULTIPLE FORMS.
Flow of control - decesions - if statement , Else if clause ,Select case structure, Nested decisions. Loops :- Do loops , For loops ,

UNIT 3-Arrays ,Declarings arrays ,Multidimentional & dynamic arrays , User defined types :- Recorded structures, With statement arrary of records .
Date file :- Random Access Files - Opening & closing of file , Put # , Get# ,Seek# statements.
TEXT FILES - OPENING & CLOSING FILE, WRITE# , PRINT# , INPUT # , LINE INPUT # STATEMENTS.

UNIT 4-INPUT & OUT PUT PROCEDURES - DEFINING A MENU , CONTROL ARRAYS , INPUT TECHNICHES - VALIDATING & FORMATTING THE INPUT , MOVING THE FOCUS , MENU CHOICES OUT PUT TECHNIQUES - CALCULATION & DISPLAY , DRAWING CHART .

UNIT 5-Visual basic controls:- Intrinmic Controls, Custom control, Common dialog control , Printer object. Object, Classes and Collections :- Developing classes & collection MDI form , OLE controls . Data base connections.Data manager programme , Data control ,Bound controls.

REFERENCE:

1. Foundation of Visual Basic - Douglus Hergert.

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper III
PAPER CODE BCA - 303
INTRODUCTION TO SYSTEM ANALYSIS AND DESIGN

Max. Marks: External 80 + Internal 20

UNIT 1-SYSTEM: DEFINITION AND CONCEPT; REAL TIME AND DISTRIBUTED SYSTEMS; DATA INFORMATION AND RELATED ATTRIBUTES; SYSTEM ANALYSIS AND ANALYST.

UNIT 2-System development life cycle: study, analysis, design, development and implementation; System planning; data fact finding techniques.

UNIT 3-SYSTEM DESIGN AND MODELING: LOGICAL AND PHYSICAL DESIGN REPRESENTATION, DATA FLOW DIAGRAM, ERD, STRUCTURE CHARTS.

UNIT 4- forms design :classification, user interface; standards; control and validation checks; user interface guidelines modular and structured design.

UNIT 5-SYSTEM IMPLEMENTATION & MAINTENANCE; PROJECT MANAGEMENT TECHNIQUES; USE OF AN AVAILABLE TOOL TO IMPLEMENT A CASE STUDY.

Reference:

1.James, A.S.: Analysis and Design of Information systems, McGraw Hill, 1986.

2.Ludeberg, M., Golkuhl, G. & Hilson, A.: Information Systems Development, A sysematic Approach, Prentice Hall International, 1981.

3.Leason, M.: Systems Analysis and Design, Science Research Associates,

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper IV
PAPER CODE BCA - 304
Communication Techniques

Max. Marks: External 80 + Internal 20

English Language:

UNIT 1-Review of English Grammar; Written and Spoken Language; Common Errors in language; Punctuation (purpose, role, importance and use); OED; Language Skills(Listening, Speaking, Reading, Writing).

UNIT 2- Meaning what you mean; Listening: Effective and efficient listening in various situations (discussions, lectures, news, seminars, speech, telephone calls etc.); Reading: Purpose; Comprehension; Tactics and strategies for good reading; Writing: Guidelines for good writing; various writing styles (General and Technical writing styles).

COMMUNICATION SKILLS:

UNIT 3-COMMUNICATION (PURPOSE, ROLE, IMPORTANCE, ELEMENTS); EFFECTIVE AND EFFICIENT COMMUNICATION; ROLE OF CONTENT, CONTEXT AND LANGUAGE; SPOKEN AND WRITTEN COMMUNICATION; PRESENTATION AND DELIVERY; ROLE OF SPEAKER AND AUDIENCE; STYLE AND BODY LANGUAGE.

UNIT 4-Planning, organization, presentation, participation, conduction and feedback of discussions, meetings, seminars etc; Effective and efficient presentation and discussion skills; Discussion and Presentation skills of conferences, meetings, seminars etc.

UNIT 5-General and Technical documents(correspondence (applications, letters, resumes, CV), drafts, proposals, précis, reports, summary, synopsis,),Use of Audio-Visual Aids: OHP, Slides, Charts, Computers.

REFERENCE :

1.WREN & MARTIN - GRAMMAR
2.BOOKS PRESCRIBED BY M.P. UCHAHA SHIKSHA ANUDAN AYOG ARE THE TEXT BOOKS FOR THIS SYLLABUS.

Paper V
PAPER CODE BCA - 305
Computer Graphics & Multimedia

Max. Marks: External 80 + Internal 20

UNIT 1-BASICS OF GRAPHICS SYSTEMS APPLICATIONS, DISPLAY DEVICES : VIDEO DISPLAYS, RASTER-SCAN DISPLAYS, RANDOM SCAN DISPLAYS, DVST, FLAT-PANEL DISPLAYS. INPUT DEVICES : KEYBOARDS, MOUSE, TRACKBALL AND SPACE BALL, JOYSTICKS, IGITIZERS, IMAGE SCANNER, TOUCH PANEL, LIGHT PENS, VOICE SYSTEMS ETC.

UNIT -2-Line drawing algorithms: DDA Algorithm, Bresenham's line Algorithm. Bresenham's Circle drawing algorithm, Mid-Point Circle Algorithm, Scan-line Polygon Fill Algorithm, Inside-Outside test, Boundary Fill algorithm, Flood-Fill algorithm. Pixel, Pixel addressing, Antialiasing.

UNIT 3-CLIPPING : COHEN-SUTHERLAND LINE CLIPPING ALGORITHM, LINE CLIPPING USING NON RECTANGULAR CLIP WINDOWS, POLYGON CLIPPING, TEXT CLIPPING.

UNIT 4- Two-dimensional geometric transformation : Translation, Rotation, Scaling, Reflection, Shear, Matrix representation and Homogeneous coordinates. Composite transformation: Translations, Rotations, Scalings. General Pivot-Point Rotation and Scaling.

UNIT 5 -INTRODUCTION TO MULTIMEDIA: REVIEW OF MULTIMEDIA, MULTIMEDIA APPLICATIONS, MULTIMEDIA

SYSTEMS ARCHITECTURE, MULTIMEDIA HRADWARE, MULTIMEDIA SOFTWARE, REPRESENTATION AND OPERATIONS

ON VARIOUS MULTIMEDIA DATA TYPES: TEXT, IMAGES, GRAPHICS, VIDEO AND AUDIO, INTRODUCTION TO MULTIMEDIA AUTHORING.

Paper I
PAPER CODE BCA – 401
Numerical Methods

Max. Marks: External 80 + Internal 20

Unit – I Computer Arithmetic, Floating point number operations, Normalization and their consequences, Emphasis on computational Algorithms, Iterative methods, Zeros of a single transcendental equation and zeros of polynomials using Bisection, False position, Newton- Raphson and Secant methods, convergence of solutions.

Unit – II Simultaneous linear equations, Solution of simultaneous linear equations, Gauss elimination method with pivoting, Gauss – Jordan method, Jacobi's iteration method and Gauss – Seidel iteration method, Ill-conditioned equations and refinement of solutions.

Unit – III Difference Operators and Interpolation: Definition of Forward, Backward, Shifting, Divided difference, Central and Averaging Operators and their relationships, Newton's forward difference, backward difference and divided difference interpolation formulae, Lagrange's Interpolation formula.

Unit – IV Numerical Differentiation and Integration:
Numerical Differentiation using Newton's forward difference, backward difference and divided difference interpolation formulae, General Quadrature formula, Newton Cote's integration, Trapezoidal rule, Simpson's one – third and three – eight rules.

Unit – V Numerical Solution of Ordinary Differential equations by Euler's Method, Modified Euler's method, Taylor's series method, Picard's method, Runge Kutta, second order and fourth order methods, Predictor-corrector methods.

Recommended Books:
1. Computer Oriented Numerical Methods by V.Rajaraman. .
2. Numerical Analysis by S.S.Sastry.
3. Numerical Algorithms by E.V.Krishnamurthy
4. Numerical Methods by B.S.Grewal.
5. Numerical Methods for Scientific & Engg. Computer by Jain & Iyenger.
6. Numerical Method by Bala Guru Swamy .
7. Computer oriented Numerical Method by Salaria.
8. Numerical & Statsitical Methods in Computer By Singh.

Scanned with Oken Scanner

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper II
PAPER CODE BCA - 402
Advanced Computer Architecture

Max. Marks: External 80 + Internal 20

UNIT 1-Structure and Function, Computer Interconnection Structure, The computer system, system buses, computer function, fetch and execution cycle, interrupts, multiple interrupts by interconnection and bus design , PCI bus .

UNIT 2-COMPUTER MEMORY SYSTEM, AND THEIR CHARACTERISTICS, SEMI CONDUCTOR / MAIN MEMORY , CHIP PACKAGING ERROR CORRECTION , CACHE MEMORY AND IT'S MAPPING .

UNIT 3-External memory - magnetic disk organization, RAID, Optical memory, CD- ROM, VROM magnetic tape .

UNIT 4-INPUT/OUTPUT EXTERNAL DEVICES, I/O MODULE PROGRAMMED I/O AND INTERRUPT DRIVER, I/O INTERRUPT CONTROLLER.

UNIT 5- programmable peripheral interface, DMA I/O channels and external interface.
ASSEMBLY LANGUAGE PROGRAMMING: DETAILED STUDY OF 8086/8088 ASSEMBLY LANGUAGE

INSTRUCTION SET, LOOPS AND COMPARISONS, CONDITION AND PROCEDURE, ARITHMETIC OPERATOR ASSEMBLY

LANGUAGE, ILLUSTRATIONS USING TYPICAL PROGRAMS LIKE : TABLE SEARCH, SUBROUTINES, SYMBOLIC AND

NUMERICAL MANIPULATIONS AND I/O

Reference:

1.COMPUTER ORGANISATION AND ARCHITECTURE - STALLING WILLIAMS - PHI
2.MANO, M.M. - COMPUTER SUSTEM ARCHITECTURE, PRENTICE HALL OF INDIA

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper III
PAPER CODE BCA – 403
Data Structure using C++

Max. Marks: External 80 + Internal 20

UNIT 1-Introduction to data structure, Array, records, stacks Introduction to stack & primitive operation on stack, Stack as an abstract data type, Multiple Stack, Stacks application: Infix, post fix, Prefix and Recursion . : Introduction to queues, Primitive Operations on the Queues, Queue as an abstract data type, Circular queue, Dequeue, Priority queue, Applications of queue

UNIT 2- Pointer & linked allocation, linear, circular & Doubly linked list, Operations on linked list, application of Linked list: Polynomial manipulation.

UNIT 3-Tree: General & Binary tree. Conversion of General to binary tree. B$^+$, traversal methods- In order, Preorder & post order,Application of tree: Manipulation of arithmetic expression.

UNIT 4-Graph: Graph & their representations. Breadth first & Depth first search. Spanning trees. Application of Graphs: PERT & related techniques.

UNIT 5-Introduction to file organization; Sequential, Indexed sequential, Relative & Direct file organization. Searching: Linear & Binary Search Sorting :Concept, selection sort, Bubble sort merge Sort, Tree sort & Partition - Exchange sort.

Reference :

Data Structure and Program design in C by Kruse/Leung - PHI
FUNDAMENTALS OF DATA STRUCTURE, By S. Sawhney & E. Horowitz
DATA STRUCTURE : By Trembley & Sorrenson
DATA STRUCTURE : By lipschuists (Schaum's Outline Series Mcgraw Hill Publication)

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper IV
PAPER CODE BCA - 404
Accounting & Management Control

Max. Marks: External 80 + Internal 20

UNIT-I Meaning of Financial Accounts, Important concepts of Accounts, types of accounts, Rules of Journal, Simple journal entries, , Cash Book – Types, Format of Cash book, Balancing of Cash Book, Ledger, posting of entries.

UNIT – II TRIAL BALANCE, ADJUSTMENT ENTRIES RELATING TO CLOSING STOCK, OUTSTANDING EXPENSES, PREPAID EXPENSES, ACCRUED INCOME, UNEARNED INCOME, DEPRECIATION AND INTERESTS ON CAPITAL., SIMPLE FINAL ACCOUNTS WITH THE ABOVE ADJUSTMENTS.

UNIT – III Meaning and need of material control, purchasing of materials, inspection of materials, FIFO and LIFO methods of outgoing material, their advantages and limitations.

UNIT – IV PAY MASTER'S DEPARTMENT, PAY ROLL ACCOUNTING , METHODS OF PAYMENTS OF WAGES, OVERVIEW OF COMPUTERIZED METHOD FOR PAYROLL PREPARATION.

UNIT – V Meaning and scope of financial management , functions of finance , Objectives of financial management , Mathematics of finance : present value techniques, fund from operations, importance & usefulness of statement .

TEXT & REFERENCE BOOKS
1. Book Keeping by Grewal T.S.
2. Cost Accounting by S.K. Maheshwari

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

Paper V
PAPER CODE BCA - 405
Introduction to Operating System

Max. Marks: External 80 + Internal 20

UNIT 1-Computer system overview, Basic elements , functions and types of operating system Serial Processing , Batch System, multi- programmed , Batch System, Time sharing systems., System components, Operating system Services, System Calls, Processor registers, Instruction execution, Interrupts, Interrupt processing.

UNIT 2- Memory hierarchy, Cache memory, I/O Communication techniques , Concept of Process, Memory management, Information Protection, Scheduling and Resource Management Structure , Process description, Process state, Two state process model, Creation and termination of processes, Five state model, Suspended process, Process description, Process attributes

UNIT 3-. Semaphores, Classical Problem Of Synchronization, Monitors, Atomic Transactions, System Model, Deadlock Characterizations, Method for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Combined approach to Deadlock.

UNIT 4-. PROCESS CONCEPTS, PROCESS STATE & PROCESS CONTROL BLOCK, PROCESS SCHEDULING, SCHEDULING, CRITERIA, SCHEDULING ALGORITHMS, MULTIPLE- PROCESSOR SCHEDULING REAL-TIME SCHEDULING, CRITICAL SECTION Problem.

UNIT 5-Loading programs, Fixed portioning, dynamic portioning, Relocation, simple paging, Simple segmentation, Loading and Linking.Paging, Segmentation, Segmentation With Paging, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement, Page Replacement Algorithms

Reference :
OPERATING SYSTEM CONCEPTS - SILBERSCHATZ & GALVIN,ADDISON WESLEY PUBLICATION
Operating System - W. Stallings, Second Edition, Prentice Hall of India

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

PAPER CODE BCA – 501

Differential Equations

UNIT–I

Differential Equations of First Order and First Degree:
Homogeneous Differential Equations, Reducible to Homogeneous Differential Equations, Linear Differential Equations, Reducible to Linear Differential Equations, Bernoulli's Equation, Exact Differential Equations, Change of Variables.

Differential Equations of First Order and Higher Degree:
Differential Equations solvable for p, solvable for y, solvable for x, Clairaut's Equation.

UNIT–II
Family Of Curves:

Linear Differential Equations of Higher order with constant coefficients, Differential Equations reducible to Linear Differential Equations with Constant Coefficients, Simultaneaus differential equation of first order..

UNIT–III
Partial Differential Equations:

Definition and Formation. Partial Differential equation of first order, Lagrange's method, standard forms, Charpit's Method, Linear Partial Differential Equation of Higher order with Constant Coefficients.

UNIT–IV

Linear Differential Equations of second order, Application of Partial differential equation : Method of separation of variables , Solution of One dimensional wave equation and one dimensional heat equation.
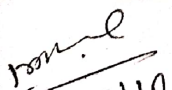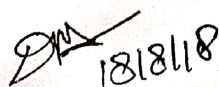
UNIT–V
Series Solution of Differential Equations:
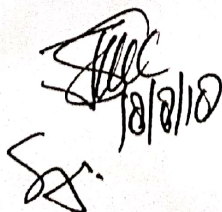
Power series method, Bessel and Legendre functions and their properties, Recurrence relations for Besseles function & Legendre function .
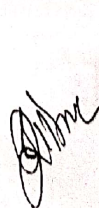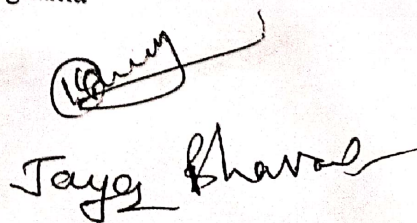
Recommended Books:
1. Partial differential equation by Snadden
2. Ordinary and Partial Differential Equations by M.D.Raisinghania

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

PAPER CODE BCA – 502
Networking Concepts

UNIT 1-DataCommunication System: Purpose, Components : Source, transmitter, transmission System, receiver, and destination. Data transmission: Frequency, Spectrum and Bandwidth. Time-domain and frequency domain Concepts. Relationship between data-rate and Bandwidth.

UNIT 2-ANALOG AND DIGITAL DATA TRANSMISSION. DATA AND SIGNAL. ANALOG AND DIGITAL SIGNALING OF ANALOG AND DIGITAL DATA. MODEM, MODULATION TECHNIQUES, CODEC, DIGITAL TRANSMITTER ETC. TRANSMISSION IMPAIRMENTS :ATTENUATION AND ATTENUATION DISTORTION, DELAY DISTORTION, NOISE.

UNIT 3-Introduction to Network, OSI reference model, TCP/IP reference model. Transmission Media: Magnetic Media, Twisted-Pair cables, Baseband & Broadband Coaxial cables, Fiber Optics. Wireless Transmission: Radio Transmission, Microwave Transmission.

UNIT 4-ISDN; ATM; DATA LINK LAYER: SERVICES, FRAMING, ERROR CONTROL, ERROR-DETECTING & CORRECTING CODES. DATA LINK PROTOCOLS: STOP-AND-WAIT PROTOCOL, SLIDING WINDOW PROTOCOL. HDLC; STATIC & DYNAMIC CHANNEL ALLOCATION IN LANS & MANS.

UNIT 5-Multiple Access Protocols: ALOHA, CSMA/CD; IEEE standards 1002.3 and Ethernet, 1002.4: Token Bus; 1002.5: Token Ring. Bridges, Routers, Gateways, Routing Algorithm, Congestion control Algorithm, Internetworking, The TCP/IP Protocol ,IP Addressing, Subnets.

Reference:
1. Computer Networks By Tanenbaum

2. Data&Computer Communications By Stallins.

Scanned with Oken Scanner

PAPER CODE BCA - 503
Introduction to E –Commerce

UNIT 1 : *Introduction*
Brief history of e-com , Elements of e-com, Types, Intermediaries and E-Commerce, Advantages & Disadvantages of e-com , E-Commerce practices Vs traditional business practices.

UNIT 2 : E-BUSINESS; E-BUSINESS VS E-COMMERCE, EDI- WHO USE EDI, ORIGIN, BENEFITS , MIGRATION TO OPEN EDI-APPROACH , E-com WITH WWW/INTERNET.

UNIT 3: *Electronic communication*& WWW
PC and networking , Network topologies and communication media , E-mail , OSI and TCP/IP Models , LAN, WAN, MAN, Internetworking – Bridges and gateways , What is Web(World Wide Web), Web Architecture, The Web and E-Com.

UNIT 4: *Electronic Payment System*:
Electronic payment system – Overview , Electronic or digital cash , Electronic Checks-Benefits , Online credit card based system , Debit card, Smart Cards.

UNIT 5: *Security and Application*
Need of computer security, Security strategies, Firewalls And Network security, Types of Firewalls, Transaction Security, Cryptography, Public key encryption, Private key encryption, Digital signatures,. Digital Certificates, Secure Electronic Transaction(SET).

REFERENCE BOOKS:

1.”Electronic Commerce(A Manager's Guide)” By Ravi Kalakota and Andrew B. Whinston. 2.”Web Commerce Technologies Handbok”By Daniel Minoli & Emma Minoli 3.”E-Commerce” By Dr.Varinder Bhatia

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

PAPER CODE BCA – 504
Programming in Java

UNIT–I

C++ Vs JAVA, JAVA and Internet and WWW, JAVA support systems, JAVA environment. JAVA program structure, Tokens, Statements, JAVA virtual machine, Constant & Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting. Operators : Arithmetic, Relational, Logical Assignments, Increment and Decrement, Conditional, Bitwise, Special, Expressions & its evaluation. If statement, if…else… statement, Nesting of if…else… statements, else…if Ladder, Switch, ? operators, Loops – While, Do, For, Jumps in Loops, Labelled Loops.

UNIT–II

DEFINING A CLASS, ADDING VARIABLES AND METHODS, CREATING OBJECTS, ACCESSING CLASS MEMBERS, CONSTRUCTORS, METHODS OVERLOADING, STATIC MEMBERS, NESTING OF METHODS. INHERITANCE: EXTENDING A CLASS, OVERRIDING METHODS, FINAL VARIABLES AND METHODS, FINAL CLASSES, FINALIZE METHODS, ABSTRACT METHODS AND CLASSES, VISIBILITY CONTROL.

UNIT–III

ARRAYS: ONE DIMENSIONAL & TWO DIMENSIONAL, STRINGS, VECTORS, WRAPPER CLASSES, DEFINING INTERFACE EXTENDING INTERFACE, IMPLEMENTING INTERFACE, ACCESSING INTERFACE VARIABLE, SYSTEM PACKAGES, USING SYSTEM PACKAGE, ADDING A CLASS TO A PACKAGES, HIDING CLASSES.

UNIT–IV

CREATING THREADS, EXTENDING THE THREADS CLASS, STOPPING AND BLOCKING A THREAD, LIFE CYCLE OF A THREAD, USING THREAD METHODS, THREAD EXCEPTIONS, THREAD PRIORITY, SYNCHRONIZATION, IMPLEMENTING THE RUNNABLE INTERFACE.

UNIT–V

LOCAL AND REMOTE APPLETS VS APPLICATIONS, WRITING APPLETS, APPLETS LIFE CYCLE, CREATING AN EXECUTABLE APPLET, DESIGNING A WEB PAGE, APPLET TAG, ADDING APPLET TO HTML FILE, RUNNING THE APPLET, PASSING PARAMETERS TO APPLETS, ALIGNING THE DISPLAY, HTML TAGS & APPLETS, GETTING INPUT FROM THE USER.

TEXT & REFERENCE BOOKS:
JAVA COMPLETE REFERENCE – TMH PUBLICATIONS
JAVA VOLUME I & II – PEARSON EDUCATION
PROGRAMMING IN JAVA, 2ND EDITION, E. BALAGURUSWAMY, ,TMH PUBLICATIONS
PETER NORTON GUIDE TO JAVA PROGRAMMING , PETER NORTON, TECHMEDIA PUBLICATIONS

PAPER CODE BCA - 505
ORACLE 8i

UNIT - I DIFFERENT DATA BASE MODEL ,RDBMS COMPONENTS – KERNEL, DATA DICTIONARY,CLIENT/SERVER COMPUTING AND ORACLE, OVERVIEW OF ORACLE ARCHITECTURE – ORACLE FILES, SYSTEM AND USER PROCESS, ORACLE MEMORY, ROLE OF DBA, SYSTEM DATA BASE OBJECT, PROTECTING DATA

UNIT - II SQL Plus, Oracle data types, Creation, Insertion, Updation, Deletion of tables, Modification of structure of tables, Removing, Deleting, Dropping of Tables, Data Constraints, Column level & table Level Constraints.Null, Unique Key, Default key, Foreign key ,Check Integrity constraints. Defining different constraints on the table Defining Integrity Constraints in the ALTER TABLE Command, Select Command, Logical Operator, Range Searching, Pattern Matching,Oracle Function, Grouping data from Tables in SQL, Manipulation Data in SQL

UNIT-III Joining Multiple Tables (Equi Joins),Joining a Table to itself (self Joins),Subqueries Union, interesect & Minus Clause,Creating view,Renaming the Column of a view,Granting Permissions, -Updation, Selection, Destroying view,Permission on the objects created by the user,GRANT statement,Object Privileges,Referencing a table belonging to another user,Revoking the permission given,Indexes

UNIT-IV PL/SQL, SQL & PL/SQL DIFFERENCES, BLOCK STRUCTURE, VARIABLES, CONSTANTS, DATATYPE, ASSIGNING DATABASE VALUES TO VARIABLES, SELECT ... INTO, CURSORS, USING FLOW CONTROL AND LOOP STATEMENT, GOTO STATEMENT, ERROR HANDLING, BUILT-IN EXCEPTIONS, USER DEFINED EXCEPTIONS, THE RAISE-APPLICATION-ERROR PROCEDURE, ORACLE TRANSACTION, LOCKS, IMPLICIT AND EXPLICIT LOCKING. 21

UNIT-V Procedures & Functions - Concept, creation, execution, advantages, syntax, deletion,Triggers - Concept, use, how to apply database triggers, type of triggers, syntax, deleting,Import, Export,Oracle backup and recovery

Recommended Books:
1. *Ivan Bayross, "SQL, PL/SQL", BPB Publications"*
2. *Liebschuty, "The Oracle Cook Book", BPB Publication*
3. *Michael Abbey, Michael J.Corey, "Oracle a Beginners guide". TMH Publication*
4. *Oracle Unleashed (Chapter 1,2,3,4,5 and 9)*

PAPER CODE BCA - 601
(Probability & Statistics)

UNIT-I Introduction: Frequency distribution and Frequency charts, Histogram, Frequency polygons, Frequency curves and Cumulative frequency distribution, Ogives.

Measures of Central Tendency: Arithmetic mean, weighted arithmetic mean, geometric mean, harmonic mean, median, mode, quartiles, deciles and percentiles.

Measures of Dispersion: Range, mean deviation, semi-inter quartile range for quartile deviation, absolute and related dispersion, coefficient of variation.

UNIT-II Moments, Skew ness and Kurtosis: Moments of various types, relation between moments, Sheppard's correction, Skew ness and kurtosis, moment generating functions.

Elementary Probability Theory: Sample space, events, classical definition of probability, theorems on total and compound probability, independent and dependent events, mutually exclusive events, mathematical expectation.

UNIT-III Probability Distributions: Discrete and continuous probability distributions, basic concepts and applications of Binomial, Poisson, Rectangular, Exponential and Normal distributions.

UNIT-IV Regression and Correlation: Regression analysis, Least square fit, polynomial and curve fitting, Linear and non-linear regression algorithms, Linear correlation, measures of correlation, coefficient of correlation, rank correlation, multiple and partial correlation for three variables.

UNIT-V Testing of Hypotheses: Simple and composite hypothesis, errors of kind-I and kind-II, critical region, level of significance.

Tests of Significance: Tests for simple hypotheses, Chi-square, t, F and z tests, ANOVA-one way and two-way classification.

Recommended Books:
1. Mathematical Statistics by J. N. Kapur and H. C. Saxena.
2. Mathematical Statistics by M.Ray and H. S. Sharma.
3. Statistical Methods by S.P. Gupta
4. Statistics- Theory, Methods and Applications by Sancheti and Kapoor.
5. Probability & Staistic in Engg. By Hines.
6. Probability Models for Computer Science by M.Ross.
7. Introduction to Probability by Roussars.

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

PAPER CODE BCA - 602
SOFTWARE ENGINEERING

UNIT 1-INTRODUCTION TO S/W ENGINEERING; SOFTWARE PRODUCT AND PROCESS: GENERIC PHASES, SOFTWARE DEVELOPMENT MODELS; PROJECT SCHEDULING AND TRACKING.

UNIT 2-Software architecture and design: Prominent design methodologies; Verification, validation and performance evaluation; SW Configuration Management and maintenance; SW measurement- Size, Process and Project Metrics; LOC , FP metrics.

UNIT 3-Testing and the related concepts : Testability and features of Test Cases; Software Testing techniques: WBT,BBT, Software Testing Strategies: Approach, Issues; integration, System, alpha , Beta testing etc.

UNIT 4-Quality Factors, framework, Quality assurance: concepts, Activities etc. . SW Reliability, SQA Plan, Quality models: ISO 9000 and SEI-CMM and their relevance.

UNIT 5-FUNCTIONS OF CASE TOOLS AND THEIR USE WITH PRACTICAL EXAMPLES OF SPECIAL CASE TOOLS, SUCH AS TURBO ANALYST.

Reference:

Software Engineering a Practitioner's Approach - Pressman R.S. (McGraw Hill)

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

PAPER CODE BCA - 603
Internet Technologies

UNIT- 1 INTRODUCTION OF INTERNET : IS INTERNET , SERVICES OF INTERNET , H/W & S/W REQUIREMENTS TO CONNECT TO THE INTERNET .E-MAIL, INTRODUCTION OF WWW, WEB SERVER AND WEB CLIENT , DIFFERENCE BETWEEN THE WEB AND THE INTERNET , INTERNET SERVICE PROVIDER (ISP).

Web publishing Concepts, Domain name Registration, Space on Host Server for Web site,

UNIT- 2 Choosing an Internet Service Provider :, Stability , Customer Service, Performance , Pricing , Establishing an Internet Account.

E-mail Basics : Running an E-mail Program , Sending mail, Reading mail, Replying to mail, Deleting mail. Newsgroups, mailing Lists , Chatting.

UNIT –3

Data Transmission Protocols, Client/Server Architecture & its Characteristics, FTP & its usages. Telnet Concept, Remote Logging, Protocols, Terminal Emulation. Massage oard, Internet chatting - Voice chat, text chat.

UNIT –4 An Introduction to Internet Explorer : Starting Internet Explorer , A Quick Tour with Internet Explorer , At the Helm in internet Explorer, Viewing Various file Types .

Internet Search Engines: What is Search Engines , How do Search Engines work ?, Types of Search Engines.

UNIT -5 Creating a Web Page : What is HTML , What can You Do with HTML , Creating , Saving and Viewing HTML documents , Applying Structure Tags , Applying Common Tags and attributes Images, Hyperlinks, Backgrounds and Colour controls, Different HTML tags, Table layout and presentation, Use of font size & Attributes, List types and its tags. Use of Frames and Forms in web pages. Creating a New Web, Opening an Existing Web, Creating , Opening and Saving Web Pages , Entering and Editing Text. Printing Page , Spell Checking, Finding or Replacing Text.

Reference:
Alexis leon and Mathews Leon - Internet for every one (Tech World)
Douglas Comer - The Internet Book (prentice Hall)
SYBEX- bpb publication – Internet Complete (Second Edition).
V.K.Jain - O level Module - M 1.2 - Internet & web page designing , BPB Publications

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2018-19

PAPER CODE BCA - 604
ACTIVE SERVER PAGES PROGRAMMING

UNIT – I
VBSCRIPT BASICS, EMBEDDING VBSCRIPT IN HTML, VBSCRIPT TO DISPLAY INFORMATION, HIDING VBSCRIPT FROM OLDER BROWSERS, CODE DOCUMENTATION AND FORMATTING, DEFINING AND USING VARIABLES, SUBTYPES, AND CONSTANTS, SINGLE AND MULTI DIMENSIONAL ARRAYS, VBSCRIPT PROCEDURES, PROGRAM CONTROL STATEMENTS AND STRUCTURE, STRINGS, NUMBERS, DATES AND TIMES FUNCTIONS.

UNIT – II
ACTIVE SERVER PAGES - INTRODUCTION & BENEFITS OF ASP, INTRODUCTION TO WEB SERVER, PWS & IIS, WORKING WITH OBJECTS, USING THE RESPONSE OBJECT – BUFFERING, CACHE, WRITE, FLUSH, END, REDIRECT ETC. USING THE REQUEST OBJECT – QUERYSTRING & FORM COLLECTION, RETRIEVING FORM DATA, WORKING WITH COOKIES IN ASP

UNIT – III
APPLICATION AND SESSION OBJECTS, GLOBAL.ASA FILE, CLIENT-SIDE FORM VALIDATION, THE FILESYSTEMOBJECT AND THE TEXTSTREAM OBJECT. WORKING WITH THE FILE SYSTEM, READING AND WRITING TO A FILE, WORKING WITH DRIVES AND FOLDERS.

UNIT – IV
USING DATABASES – INTRODUCTION TO THE ACTIVEX DATA OBJECTS MODEL (ADO), CONNECTING TO A DATABASE, DISPLAYING RECORDS, CREATING DYNAMIC DROP-DOWN MENUS AND OPTION GROUPS, FILTERING RECORDS WITH SQL WHERE CLAUSES AND WILDCARDS, ADDING, UPDATING, AND DELETING RECORDS, WORKING WITH RECORDSETS – RETRIEVING A RECORDSET, RECORDSET CURSOR AND LOCKING TYPES, ADVANCED METHODS AND PROPERTIES OF THE RECORDSET OBJECT.

UNIT – V
GENERATING DYNAMIC CONTENT FROM THE SERVER - DETECTING BROWSER PROPERTIES, USING THE CONTENT ROTATOR COMPONENT, THE CONTENT LINKING COMPONENT, THE COMMAND OBJECT AND THE PARAMETERS COLLECTION, CREATING A DATA BROWSER, PAGING THROUGH ROWS IN A RECORDSET, CASE STUDY ON CREATING A JOB SITE.

TEXTS & REFERENCE BOOKS :
ACTIVE SERVER PAGES 2.0 (UNLEASHED) BY STEPHEN WALTHER : TECHMEDIA
TECH YOURSELF ASP 3.0 IN 21 DAYS BY SCOTT MITCHELL, JAMES ATKINSON: TECHMEDIA MASTERING
ACTIVE SERVER PAGES 3.0 BY RUSSELL JONES: BPB
ASP 3 Programming Bible by Eric A.Smith: IDG Books

PAPER CODE BCA – 605
Linux Operating System

UNIT – I

Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks,

How Linux access files, storage files, Linux standard directories. Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces. Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down process, init and run levels.

UNIT–II

Essential linux commands Understanding shells, Processes in linuxprocess fundamentals, connecting processes with pipes, tee, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, Printing commands, find, sort, touch, file, file related commands-ws, sat, cut, dd, etc. Mathematical commands- bc, expr, factor, units. Creating and editing files with vi, joe & vim editor

UNIT–III

System administration Common administrative tasks, identifying administrative files – configuratinn and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel. Backup and restore files, reconfiguration hardware with kudzu,

installaing and removing packages with rpm command. Configure X-windows desktop-redhat-config-Xfree86, understanding XF86config file, starting & using X desktop. KDE & Gnome graphical interfaces, changing X settings.

UNIT–IV

Shell programming- Basic of shell programming, Various types of shell available in Linux, comparisons between various shells, shell programming in bash, read command, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automate system tasks.

UNIT-V

Simple filter commands – pr, head, tail, cut, paste, sort, uniq, tr. Flter using regular expressions – grep, egrep, and sed. awk programming – report printing with awk.

TEXTS & REFERENCES BOOKS :

UNIX – Concepts & Applications (Third Ed.) – Sumitabha Das, Tata McGraw Hill Publications.

Unix for programmers and users (Third Ed.) – Graham Glass & King Ables, Pearson Education India. (Low Prices Edition).

Red Hat Linux 9 Bible – Cristopher Negus, IDG Books India Ltd.

LINUX Complete – BPB Publication

33/33

Class	:	B.A./B.Sc./B.com./B.H.Sc.
Subject	:	Foundation Course
Paper	:	Paper - II
Title of Paper	:	Basics of Computer & Information Technology – I
Semester	:	Fifth (V)

Max. Marks – 35

Unit I : INTRODUCTION TO COMPUTER

Basic Organization of Computer System: Block diagram & Functions (Central Processing Unit, Input/Output Unit, Storage Unit); Characteristics; Capabilities & Limitations.

Types of Computing Devices: Desktop, Laptop & Notebook, Handheld, Smart-Phone, Tablet PC, Server, Workstation & their Characteristics.

Primary Memory & Their Types: RAM (DRAM, SRAM, DDR, RDRAM & EDORAM); ROM, PROM, EPROM, EEPROM; Cache Memory.

Unit II: PHERIPHERAL DEVICES

Input Devices: Keyboard, Mouse, Trackball, Joystick, Digitizer or Graphic tablet, Scanners, Digital Camera, Web Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition devices, Light pen & Touch Screen.

Output Devices: Display Devices (CRT, TFT, LCD, LED, Multimedia Projectors); Video Standard: VGA, SVGA, XGA *etc;* Impact Printers (Daisy Wheel, Dot Matrix & Line Printer); Non-Impact Printers (Inkjet, Laser, Thermal); Plotters (Drum & Flatbed); Speakers.

General introduction of Cards, Ports and SMPS: Expansion Cards (Display/Video/Graphics, Sound and Network Interface), Ports (USB, Serial and Parallel, Network), SMPS.

Unit: III STORAGE DEVICES

Magnetic Tape, Cartridge Tape, Data Drivers, Hard Disk Drives (Internal & External), Floppy Disks, CD, VCD, CD-R, CD-RW, Zip Drive, DVD, DVD-RW, USB Flash Drive, Blue ray Disc & Memory cards.

Brief description of above storage devices with elementary idea about their capacity and speed.

Unit IV: OPERATING SYSTEM (OS)

Functions of Operating System. Types of Operating System. Introduction to Operating System for i-pad & Smartphones

Elementary idea of DOS, WINDOWS & LINUX Operating Systems.

DOS Basics: FAT, File & directory structure and naming rules, Booting process, DOS system files. Internal & External DOS commands.

Windows basics (Only elementary idear):
(i) Windows 7 & 8 : Desktop, Control Panel; Saving, Renaming, Moving, copying & Searching file & folders, Restoring from Recycle Bin. Creating Shortcut, Establishing Network Collections.

(ii) **Features of Windows 8.1** : Touch Screen Features, Tiles, Charms, Customizations and Apps.

LINUX basics: Features of LINUX, Starting & Shutting down Linux, Introduction to Linux files & Directory. General idea about popular mainstream Linux distribution such as Debian, Ubuntu & Fedora

Unit V : Text Reading & Editing Software

General information about PDF readers: Adobe Acrobat, Nitro, PDF-XChange, *etc.*

General information about application packages: MicrosoftOffice, Open office & WPS office.

Text editing and formatting using Word-2007 & onwards versions : Creating documents using Template; Saving word file in various file formats; Previewing documents, Printing document to file/page; Protecting document; Editing of Selected Text, Inserting, Deleting and Moving text.

Formatting Documents : Page Layout, Paragraph formats, Aligning Text and Paragraph, Borders and Shading, Headers and Footers.

*****

शासकीय कमलाराजा कन्या स्नातकोत्तर स्वशासी महाविद्यालय ग्वालियर (म.प्र.)

उच्च शिक्षा विभाग म.प्र. शासन

स्नातक स्तर पर सेमेस्टर पद्धति के अन्तर्गत एकल प्रश्न पत्र प्रणाली अनुसार पाठयक्रम
केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के महामहिम राज्यपाल द्वारा अनुमोदित

Department of Higher Education, Govt. of M.P.
Single Paper Pattern Syllabus for U.G. Classes Under Semester System
As recommended by Central Board of Studies and approved by
the Governor of M.P.
Effective from Session 2017 -18

Class : B.A./B.Sc./B.com./B.H.Sc.
Subject : Foundation Course
Paper : Paper - II
Title of Paper : Basics of Computer & Information Technology – II
Semester : Sixth (VI)

Max. Marks – 35

Unit- I : PowerPoint – I

- Creating presentation using Slide master and Template in various Themes & Varients.
- *Working with slides*: New slide, move, copy, delete, duplicate, slide layouts, Presentation views.
- *Format Menu:* Font, Paragraph, Drawimg & Editing.
- *Printing presentation:* Print slides, notes, handouts and outlines.
- *Saving presentation in different file formats.*

Unit- II : PowerPoint – II

- Idea of SmartArt graphics, inserting text/data using SmartArt, Converting d style presentation into new style through SmartArt.\
- Inserting objects (Video, Audio, Symbol, Equation, etc.), table & excel sheets, picture, chart, photo album, shapes and SmartArt; Trimming of audio/videos.
- Connecting slides through hyperlink and action button.
- Slide sorter, slide transition and animation effects.
- *Presenting the slide show :* Setup Slide Show, Rehearse Timing.