CS/IT – 1101 COMPUTER ORGANIZATION

Commencing from 2011-12 onwards

UNIT I

Evolution of Computers and Computer Generations, Computer Classification Processing speed of a computer, Technology Trends, Measuring Computer Performance, MIPS.von Neumann Machine Architecture, Functional Units and Components in Computer Organization, Computers – Block diagram, Memory addressing capability of a CPU, Word length of a computer Basic components of a Digital Computer - Control unit, ALU, IO Subsystem of a Computer, Bus Structures, Uses of Program Development Tool, Editor, Compiler, Assembler, Interpreter)

UNIT II

Number systems – Decimal Number system, Binary number system and Hexa-decimal number system,1's & 2's complement, Representation of Positive and Negative Numbers Binary Fixed-Point Representation, Arithmetic operation on Binary numbers, Overflow & underflow. Floating Point Representation, Codes, ASCII Logic Gates, AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates. Counters, Registers, Shift Registers

UNIT III

Storing data and Program in Memory, Memory Hierarchy in a Computer Internal Organization of Semiconductor Main Memory Chips, Semiconductor Memory RAM and ROM Auxiliary Memory Peripheral Devices, Secondary Storage Memory, Magnetic Memories and Hard Disk Optical Disks and CD Memories

UNIT IV

Algorithm, Flowchart, Logic Development & Problem solving. Algorithms for simple problems involving conditional manipulation of memory variables The 8085 Programming Model, 8085 Hardware Model, Block Diagram and uses of Registers, Accumulator, Flag, Program counter and stack pointer How to write, assemble and execute a simple program: Illustrate Program –Adding two hexadecimal numbers.

UNIT V

Input Devices, keyboard, Mouse, Output Devices, CRT Monitor, LCD Displays, Touch Screen Displays Print Devices Multiprocessor and Multi core Architecture Flynn Classification SISD, SIMD, MISD, MIMD.

TEXT BOOK

Computer Fundamentals – B. Ram – New Age International Publishers

REFERENCE BOOKS

1. Rashid Sheikh, "**Computer Organization & Architecture**"
2. William Stallings, "**Computer Organization & Architecture**", Pearson.
3. BARTEE, ***"Digital Computer Fundamentals"*** TMH Publication
4. *MORRIS MANO, **"Computer System Architecture"*** PHI
5. W. Hayes, Computer Architecture, McGraw-Hill

Problems Solving Skills Book

1. Nicholas P Carter, Schaum Outline on Computer Architecture and Organization, TMH, Special Indian Edition Adaptation,, 2010

Note: Faculty teaching the subject will also given to students the besides 50 hours teaching the appropriate exercises and assignments.

CS/IT-1101P - Practical on Comp. Org. and MS-Office

Practical Session -01 - Practical on MS-OFFICE:

WINDOWS

1. Creating folder, cut, copy, paste, managing file and folder in windows.
2. Arrange icons, set display properties
3. Adding and removing software and hardware
4. Setting date and time, screen saver and appearance.
5. Using windows accessories.
6. Settings of all control panel items
7. Search file

MS-Word

1. Creating & Editing Document
2. Formatting Document
3. Use of Auto-text, Autocorrect, Spelling and Grammar Tool,
4. Page Formatting, Page Border, Background,
5. Creation of MS-Word-Mail Merge, Macros, Tables.
6. Practice of Printing, page setup etc.

MS-Excel

1. Creating & Editing Worksheet, Fill Handle
2. Use Formulas and Functions
3. Preparing Charts

MS-PowerPoint

1. Creating, Manipulating & Enhancing Slides,
2. Inserting Organizational Charts, Excel Charts
3. Using Word Art
4. Putting Animations and Sounds
5. Inserting Animated Pictures
6. Inserting Recorded Sound Effect

Computer Organization

Practical Session 02 - Using Debug/MASM/TASM

To Study of DEBUG visit the following website:
http://kipirvine.com/asm/debug/Debug_Tutorial.pdf

Practical on Flip-flops, Logic Gates and Registers.

Do the following tasks: -

1. Add 3, 4 and 7 and display result in only AX register
2. Add 3, 8 and 9 using three different registers and show result of all registers
3. Take dump of location 110 and display
4. Add your name and date of birth at location 120. Move only the date of birth to location 200. Search through 100 to 300 to find the date
5. Move 3 to AX register and multiply it with 3 to show the result.
6. Use int 21 in all your assembled codes
7. Use comparison command to compare the date of birth at location 120 and 100.

Write complete assembly codes for the following tasks. Submit code and output trace:

1. A program that displays your name and date of birth.
2. A program that adds the following numbers
a. 1000 b. 4000 c. 1700

3. A program that does the following a. Add two numbers X and Y
b. Multiply the result with C
c. Increment the result

4. A program that subtracts
a. Two numbers X and Y such that X>Y
b. Two numbers X and Y such that Y>X

5. A program that divides
a. Two numbers X and Y such that X%Y = 0
b. Two numbers X and Y such that X%Y != 0 c. Two numbers X and Y such that Y = 0

2016-2017

Semesters

BSc Maths 2016-17.
I to VI Sems

उच्च शिक्षा विभाग, म.प्र. शासन

बी.एससी/बी.ए. कक्षाओं के लिये एकल प्रश्नपत्र प्रणाली सेमेस्टर के अनुसार पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित

Department of Higher Education, Govt. of M.P.

Single Paper System Semester wise syllabus

B.Sc./ B.A. I Semester

Recommended by central Board of studies

Name of the Paper	Theory (M.M.)	Minimum Passing Marks in Theory	C.C.E. (M.M.)	Minimum Passing Marks in C.C.E.	Practical MM	Minimum Passing Marks	Total
Matrix Theory, Calculus, Geometry	125	42	25	8	---	---	150

Note: There will be three sections in the question paper. All questions from each section will be compulsory.

Section –A (20 marks.) will contain 10 objective type questions, two from each unit, with the weightage of 2 marks.

Section –B (35 marks.) will contain 5 short answer type questions (each having internal choice), one from each unit having 7 marks.

Section –C (70 marks.) will contain 5 long answer type questions (each having internal choice), one from each unit, having 14 marks.

There should be 12 teaching periods per week for Mathematics like other Science Subject

(6 Period Theory + 6 Period Practical)

M.R.S.C.P.S. INDORE

उच्च शिक्षा विभाग, म.प्र. शासन

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B.Sc./ B.A. Single Paper System Semester wise syllabus

Recommended by central Board of studies

सत्र / Session : 2014-15

Max. Marks/ अधिकतम अंक	:	125
Class/ कक्षा	:	B.Sc. /B.A.
Semester/ सेमेस्टर	:	I
Subject/ विषय	:	**Mathematics**
Title / शीर्षक	:	Matrix Theory, Calculus, Geometry

: Particulars/ विवरण :

Unit-1	Rank of a matrix, Eigen values, eigen vectors, Characteristic equation of a matrix, Cayley Hamilton theorem and its use in finding inverse of matrix, Application of matrix to a system of linear (both homogenous and non - homogenous) equations, Theorems on consistency and inconsistency of a system of linear equations, Solving the linear equations with three unknowns.
इकाई–1	आव्यूह की जाति, आयगेन मान एवं आयगेन सदिश आव्यूह की चारित्रिकता, केल–हैमिल्टन प्रमेय एवं आव्यूह का व्यूत्क्रम ज्ञात करने में इसका उपयोग, रैखिय समीकरणों के निकाय (समघात एवं असमघात) के हल के लिये आव्यूहों का प्रयोग, रैखिक समीकरणों के निकाय की संगतता एवं असंगतता पर प्रमेय, तीन अज्ञात राशियों के रैखिक समीकरणों के हल।

Unit-2	Relation between the roots and coefficients of a general polynomial equation in one variable, Transformation of equations, Descarte's rule of signs, De Moivre's theorem and its applications, Direct and inverse circular and hyperbolic functions, Expansion of trignometrical function.
इकाई–2	एक चर के सामान्य बहुपदों के समीकरण के गुणांकों एवं मूलों के बीच संबध, समीकरणों का रूपांतरण, चिन्हों का दिकार्ते नियम, डी–मॉवर्स प्रमेय एवं इसके उपयोग, प्रत्यक्ष एवं व्यूत्क्रम, वृत्तीय एवं अतिपरवलयीय फलन, त्रिकोणमीतीय फलनों का विस्तार ।
Unit-3	Continuity of function of one variable, Properties of continuous function, Uniform continuity, Chain Rule of differentiability, Mean value theorems and their geometrical interpretations, Darboux's Intermediate Value Theorem for derivatives.
इकाई–3	एक चर के फलनों का सांतत्य, संतत फलनों के गुणधर्म, एकसमान सातत्य, अवकलनीयता का श्रृंखला का नियम, माध्यमान प्रमेय एवं उनका ज्यामितीय अर्थ, अवकलन के लिए डॉरबाक्स का माध्यमान प्रमेय ।
Unit-4	Integration of irrational algebraic functions and transcendental functions, Reduction formulae, Definite Integrals.
इकाई–4	अपरिमेय, बीजीय एवं अबीजीय फलनों का समाकलन। समानयन सूत्र। निश्चित समाकलन।
Unit-5	Equation of cone with given base, generators of cone, condition for three mutually perpendicular generators, Right circular cone, Equation of Cylinder and its properties, Right circular cylinder, enveloping cylinder and their properties.

इकाई–5	दिए गए आधार के शंकु का समीकरण, शंकु के जनक, तीन परस्पर लम्बवत् जनकों हेतु शर्त, लंबवृत्तीय शंकु बेलन का समीकरण एवं उसके गुणधर्म, लंबवृत्तीय बेलन, अन्वलोपिय बेलन एवं उसके गुणधर्म।

Texts Books :

1. S.L. Loney – Plane Trigonometry Part II
2. K.B. Datta – Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd. New Delhi 2000
3. Chandrika Prasad – A Text Book on Algebra and Theory of Equations, Pothishala Pvt. Ltd. Allahabad
4. N. Saran & R.S. Gupta : Analytical Geometry of Three dimensions. Pothishala Pvt. Ltd.Allahabad
5. S.L. Loney, Elements of Coordinate Geometry, Macmillan and Co. London.
6. Gorakh Prasad – Differential Calculus, Pothishala pvt. Ltd. Allahabad
7. Gorakh Prasad – Integral Calculus, Pothishala pvt. Ltd. Allahabad
8. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & sons, 1999.

Reference Books:

1. P. B. Bhattacharya, S. K. Jain and S.R. Nagpaul, First Courses in Linear Algebra, Wiley Eastern, New Delhi. 1983.
2. R.S. Verma and K.S. Shukla, Text Book on Trigonometry Pothishala Pvt. Ltd.
3. P.K. Jain & Khalil Ahmad, A text book of Analytical Geometry of Three Dimensions, Wiley Eastern Ltd. 1999
4. R.J.T. Bell : Elementary Treatise on Coordinate Geometry of Three dimensions, Macmillan India Ltd. 1994.
5. N. Piskunov, Differential and Integral Calculus, Peace Publishers, Moscow.
6. H.S. Hall and S.R. Knight, Higher Algebra, H.M. publication, 1994.
7. म.प्र. हिन्दी ग्रथ अकादमी की पुस्तकें ।

SEMESTER - I

EL1101: Components and Networks

Maximum Marks: 85 **Min Pass Marks: 28**

Unit 1: Basic Components

Circuit symbols, working principle, classification according to construction, specifications, and applications of passive components – Resistors & Color Coding, Inductors, Transformers, Switches, Relays(Electromagnetic), Thermistor , LDR, Micro- Phone and Loud-Speakers.

Unit 2: Capacitors

Capacitors: - Capacitance, Capacitor Specifications, Classification of Capacitor- Fixed (Mica, Paper, Ceramic, Plastic, Electrolytic etc.), Variable capacitor (Trimmer, Padder, Gang). Stray Capacitance, Leakage Resistance, Testing of Condenser, Area of Application, Problem related to Electrical Energy Storage.

Unit 3: Basic Circuits

Concept of Ideal and Practical Voltage and Current Sources, Internal Resistance, AC and DC Sources, Ohms Law, AC Currents & Voltages, Expression for RMS value & Mean Value, j Operator, study of LR, CR , Series & Parallel resonance circuit, Expression for Q factor & Band width in resonance circuit, Phase relationship between Current & Voltage in different circuits. Numerical on Quality Factor, Power Factor, Bandwidth Calculations.

Unit 4: Network Theorems

Kirchhoff's Current and Voltage Law, Application of KVL& KCL to simple DC Resistive Networks. Thevenin's and Norton's Theorems and corresponding equivalent of simple Resistive Networks. Superposition Theorem, Maximum Power Transfer Theorem, Loop Current and Node Voltage Analysis Methods.

Unit5: Filters

Types of filters: Choke input (inductor) filter, Shunt Capacitor filter, L section, π section and T filters, Low Pass, High Pass, Band Pass and Band Reject Filters.

Text Books

1. B.L. Theraja : Electrical Technology, S. Chand & Co Ltd.
2. Bernard Grob: Basic Electronics, McGraw-Hill Publishing Co.

Problem Solving Book

1. Schaum Series : Electric Circuits, TMH

w.e.f. 2011-14 Batch Onwards

1. **Identification of Components / Tools**
   a) Minimum 10 different types of components must be given.
   b) Identification based on visual inspection / data sheets be carried out.

2. **Use of Multimeter (Analog and Digital)**
   a) Measurement of AC/DC voltage and Current – on different ranges.
   b) Measurement of R.
   c) Testing of L, C, Diodes & Transistors.

3. **Study of Function Generator / CRO**
   a) Understand how to use Function Generator / CRO.
   b) Study of Front panel controls.
   c) Measurement of Amplitude and Frequency of different Waveforms.
   d) Demonstrate the use of Component Testing.

4. Verification of KCL / KVL, Network Theorems: Thevenin's, Norton's, Maximum Power Transfer, Superposition Theorem.

5. Design, build and test Low pass and High pass RC Filters.

6. Charging and Discharging of Capacitors in R-C Circuits.

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उच्च शिक्षा विभाग, म.प्र. शासन
स्नातक कक्षाओं के लिए सेमेस्टर अनुसार पाठ्यक्रम
केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित

w.e.f. Session 2014-15

Class	:	B.A./B.Sc./B.Com./B.H.Sc. I Year
Semester	:	I
Subject	:	Foundation Course (आधार पाठ्यक्रम)
Paper	:	I
Title of Paper	:	**नैतिक मूल्य और भाषा** (Moral Values & Language)
Compulsory/ Optional	:	Compulsory
Max. Marks	:	85 (Moral Education- 15, Hindi- 35, English- 35)

Particulars

Part - A

Unit – 1	**नैतिक मूल्य** 1. नैतिक मूल्य परिचय एवं वर्गीकरण– डॉ. शशि राय 2. आचरण की सभ्यता – सरदार पूर्ण सिंह	15
Unit – 2	**हिन्दी भाषा** 1. स्वतंत्रता पुकारती (कविता) – जयशंकर प्रसाद 2. जाग तुझको दूर जाना (कविता) – महादेवी वर्मा 3. उत्साह (निबंध) – रामचन्द्र शुक्ल 4. शिरीष के फूल (ललित निबंध) – हजारी प्रसाद द्विवेदी 5. वाक्य संरचना और अशुद्धियाँ (संकलित)	17
Unit- 3	**हिन्दी भाषा** 1. नमक का दारोगा (कहानी) – प्रेमचन्द्र 2. हार की जीत (कहानी) – सुदर्शन 3. भगवान बुद्ध (निबंध) – स्वामी विवेकानंद 4. लोकतंत्र एक धर्म है (निबंध) – सर्वपल्ली राधाकृष्णन 5. पर्यायवाची– विलोम शब्द, एकार्थी–अनेकार्थी शब्द, शब्दयुग्म (संकलित)	18
	Part - B	
Unit- 4	**English Language** 1. John Keats : Ode to a Nightingale 2. Rabindra Nath Tagore : Where the Mind is Without Fear 3. Rajgopalachari : Preface to the Mahabharata 4. J.L. Nehru : Tryst with Destiny	17
Unit- 5	**English Language** Comprehension/ Unseen Passage Composition and Paragraph writing (Based on the expansion of an idea) **Basic language skills** : vocabulary, synonyms, antonyms, word formation, prefixes, suffixes, confusing words, misused words, similar words with different meanings. proverbs **Basic language skills :** Grammer and Usage, Tenses, Prepositions, determiners, countable/ uncountable nouns, verbs, articles and adverbs.	18

* सैद्धान्तिक परीक्षा हेतु उपरोक्तानुसार 85 (15+35+35) अंक और आन्तरिक मूल्यांकन (सीसीई) हेतु पृथक से 15 (5+5+5) अंक निर्धारित है।

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स्नातक कक्षाओं के लिए सेमेस्टर अनुसार पाठ्यक्रम
केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित

Session 2014-15

Class	:	बी.ए./बी.एससी/बी.कॉम/बी.एससी (गृह विज्ञान)/बी.ए. (मैनेजमेंट)/बी.सी.ए.Semester
	:	I
Paper	:	II
Subject	:	आधार पाठ्यक्रम
Title of Paper	:	**उद्यमिता विकास**
Compulsory/ Optional	:	Compulsory
Max. Marks	:	50 (Theory 35 + CCE 15)

Particulars

इकाई – 1	उद्यमिता–परिभाषा, विशेषताऐं एवं महत्व, एक उद्यमी के प्रकार एवं कार्य, उद्यमिता अभिप्रेरणा घटक।	
इकाई – 2	अ) लक्ष्य प्राप्ति की प्रेरणा एवं विचारों की स्थापना। लक्ष्य निर्धारण एवं चुनौती का सामना। समस्या समाधान एवं सृजनात्मकता। क्रमबद्ध योजना एवं क्षमता की दिशाबद्धता। आत्मविश्वास का विकास। ब) सम्प्रेषण कला। शब्दिक व अशाब्दिक संप्रेषण प्रभावित करने की क्षमता। सम्प्रेषण की आधुनिक तकनीक	
इकाई – 3	अ) परियोजना प्रतिवेदन चुनी हुई प्रक्रिया का मूल्यांकन विस्तृत परियोजना प्रतिवेदन– आवश्यकता एवं प्रासंगिकता परियोजना प्रपत्र के प्रमुख भाग, परियोजना प्रतिवेदन तैयार करना। ब) संगठन के प्रकार का चयन–एकाकी व्यवसाय, साझेदारी एवं सहकारी समिति का अर्थ एवं विशेषताएं संगठन के चयन को प्रभावित करने वाले घटक। स) आर्थिक प्रबंधन वित्तीय संस्थान एवं बैंको की भूमिका, बैंकिग, वित्तिय योजना, कार्यशील पूँजी–मूल्यांकन तथा प्रबंधन, लागत व मूल्य निर्धारण तथा लाभ कामूल्यांकन, आर्थिक लेखा–जोखा रखना।	

इकाई – 4	अ) उत्पादन का प्रबंधन, कच्चा माल क्रय करने की प्रक्रिया चल सम्पत्ति/माल का प्रबंधन गुणवत्ता प्रबंधन कर्मचारी प्रबंधन पैकिंग ब) विपणन प्रबंधन बिक्री एवं बेचने की कला बाजार की समझ एवं विपणन नीति उपभोक्ता प्रबंधन समय प्रबंधन	
इकाई – 5	1. नियामक संस्थाओं की भूमिका–जिला उद्योग केन्द्र, प्रदूषण निवारण मंडल, खाद्य एवं औषधि प्रशासन, विद्युत विभाग तथा नगर निगम का विशेषअध्ययन। 2. विकासात्मक संस्थाओं की भूमिका, खादी एवं ग्रामीण आयोग/बोर्ड, मध्यप्रदेश वित्त निगम, अनुसूचित बैंक, मध्य प्रदेश का महिला आर्थिक विकास निगम। 3. स्वरोजगार मूलक योजनाएँ – प्रधानमंत्री रोजगार योजना, स्वर्ण जयंती शहरी रोजगार योजना, रानी दुर्गावती स्वरोजगार योजना, दीनदयाल स्वरोजगार योजना। 4. विभिन्न अनुदान योजनाएँ– लागत पूँजी अनुदान, ब्याज अनुदान, प्रवेश कर से छूट, परियोजना प्रतिवेदन, प्रतिपूर्ति अनुदान आदि। 5. महिला उद्यमियों हेतु विशेष प्रेरणाएँ, संभावनाएँ एवं समस्याएँ। 6. मध्य प्रदेश आदिवासी वित्त विकास निगम की योजनाएँ , म.प्र. अन्त्यावसायी निगम की योजना, म.प्र. पिछड़ा वर्ग एवं अल्पसंख्यक वित्त विकास निगम की योजनाएँ।	

* सैद्धान्तिक परीक्षा हेतु उपरोक्तानुसार 35 अंक और आन्तरिक मूल्यांकन (सीसीई) हेतु 15 अंक निर्धारित है।

CS/IT – 1201- PROGRAMMING AND PROBLEM SOLVING THROUGH C
Commencing from 2011-12 onwards

UNIT I

Algorithm, Flowchart, Logic Development & Problem Solving. Structure of C program, C declarations, keywords, identifiers, constants, variables, Data types, type conversion, Types of operators and expressions, Input and output functions in C.

UNIT II

Decision Statement – IF-ELSE statement, break, continue, goto, switch() case and nested IF statement. Loop Control Statements – For loop, While loop , Do-while loop and nested loops. Arrays – Definition, Initialization, characteristics, One, Two, Three and Multi-dimensional Arrays Working with scanf, printf, Strings & Standard Functions.

UNIT III

Pointers – Introduction, Features, Declaration & Arithmetic operations on pointers. Pointers and Arrays, Array of pointers. Pointers to pointers, pointers and strings, Void pointers Functions – Declaration, Prototype, Types of functions, Call by value and reference, Function with operators

UNIT IV

Function with decision statements, function with Loop statements. Function with Arrays and Pointers.Types of Storage Classes. Introduction to Files, Streams and File Types, Steps for file operations, File IO,

UNIT V

Files – Streams and file types, file operations Write and Other file functions.Command line arguments, Application of Command Line Arguments Structure and Union – Declaration, Initialization, structure within structure. Array of structure, Enumerated data types, Union of structure

TEXT BOOKS

1. *E. Balaguruswamy,* ***"Programming In C ",*** *TMH Publications*
2. *Kanetkar,* **"Let Us C"**

REFERENCES BOOKS

1. Ashok N. Kamthane, "Programming with ANSI and Turbo C", Pearson Education
2. Ashok N. Kamthane et. al., Computer Programming and IT (for RTU), Pearson Education, 2011 (ISBN 978-81-317-5970-7)
3. *Mahapatra,* ***" Thinking In C ",*** *PHI Publications*

Problem Solving Skills Book:

1. *Gottfried, Schaums Outline Series,* ***" Programming With C ",*** *TMH Publications*

Note: Faculty teaching the subject will also given to students the besides 50 hours teaching the appropriate exercises and assignments. l.

(Effective from July 2011 session for 2011-14 batch onwards)

CS/IT – 1201P - Practical on C Language

(*Student Must Write 50 Programs including following 25 Programs in their Computer Practical Book with* **Algorithm/Flowchart**)

1. Write a program for swapping two variables without using third variable.
2. Write a program to calculate simple Interest and Compound Interest.
3. Write a program to convert temperature entered into centigrade to Fahrenheit.
4. Write a program to find maximum of three numbers.
5. Write a program to read in a three digit number produce following output (assuming that
the input is 539)
5 hundreds
3 tens
9 units
6. Write a program to find sum of digits of accepted number.
7. Write a program to find student grade using IF-ELSE ladder
8. Write a program that prints given three integers in ascending order using IF- ELSE
9. Write a program for simple calculator using switch/case loop.
10. Write a program for print Fibonacci series up to N number.
11. Write a program to find sum of first 50 odd numbers and even numbers.
12. Write a program to find reverse of given number.
13. Write a program to find factorial of accepted number.
14. Write a program to find all prime number between two given numbers
15. Write a program to find minimum, maximum, sum and average of given one dimensional
array.
16. Write a program for sparse matrix.

17. Write a program to find addition, subtraction, multiplication of matrix.
18. Write a program to print terms of each of the following series
i. Sin(x) ii. Cos(x)
19. Display the following output on the screen
a. b. c.
* 1 A
** 12 AB
*** 123 ABC
**** 1234 ABCD
***** 12345 ABCDE
20. Write a program to read and write a structure.
21. Write a program for factorial function.
22. Write a program to read a string and print its reverse.
23. Write a program to find ab using Call by reference.
24. Write a program for create, open and append a file.
25. Write a program to copy the contents of one file to another.

(Effective from July 2011 session for 2011-14 batch onwards)

SEMESTER - II

EL1201: Electronic Devices

Min Pass Marks: 28

Maximum Marks: 85

Unit 1: Semiconductors

Conductors, Semiconductors and Insulators. Their classification on the basis of Band Theory, Intrinsic and Extrinsic semiconductor, Diode current equation (Derivation not required), Drift & Diffusion.

Unit 2: P-N junction

P-N junction- Forward and Reverse bias of Diode, Concept of recombination of carriers, temperature variation of Forward and Reverse Current through the P-N Junction. Characteristics of Forward & Reverse Bias Diode, Dynamic and Static Resistances, Voltage dependent Junction Capacitance of a P-N junction.

Unit -3: Special Diodes

Zener Diode, its construction and characteristics. Temperature coefficient of Zener Diode. Zener Diode as Voltage Regulator, Schottky Diode, Power Diode, Tunnel Diode, LED, Solar Cell, Photodiodes.

Unit –4: BJT

BJT, construction and characteristics in different configuration, comparative merits and demerits, biasing of transistor: different methods, load line, Q point and thermal stability. Transistor as an ON/OFF switch. Transistor as a black box: h-parameter concept only. Qualitative analysis of h-parameter model in CE, CB and CC mode.

Unit –5: Power Devices

Construction, characteristics and uses of SCR, DIAC, TRIAC, UJT and Optocoupler devices.

Text Books

1) R. Boylestad, L.Nashelsky : Electronic Devices and Circuit Theory, Pearson. Education
2) Kamakhya Prasad Ghatak and Debashis De : Basic Electronics, Pearson Publication

Reference Books

1) Malvino : Electronics Principles, TMH
2) Millman and Halkias : Integrated Electronics, TMH
3) Bernard Grob : Basic Electronics, McGraw-Hill Publishing Co.

SEMESTER - II

EL1202 : Practical

1. Study of Forward and Reverse Bias characteristics of PN Junction Diode.
2. Study of Forward and Reverse Bias characteristics of LED.
3. Study of Breakdown Characteristics and Voltage Regulation action of Zener Diode.
4. Study of Forward and Reverse Bias Characteristics of Power Diode.
5. Study of Forward and Reverse Bias Characteristics of SCR.
6. Study of Forward and Reverse Bias Characteristics of DIAC.
7. Study of Forward and Reverse Bias Characteristics of TRIAC.
8. Study of Forward and Reverse Bias Characteristics of UJT.
9. To study the characteristics of PNP transistor in CB and CE configuration.
10. To study the characteristics of NPN transistor in CB and CE configuration.
11. To study the characteristics of Emitter Follower.
12. To study photo diode characteristics
13. To study optocoupler
14. To find the Q- point of a bipolar junction transistor
15. To study transistor as a switch
16. To study I-V characteristics of a solar cell as a function of light intensity.

w.e.f. 2011-14 Batch Onwards

M.R.S.C.P.S. INDORE

उच्च शिक्षा विभाग, म.प्र. शासन

बी.एससी / बी.ए. कक्षाओं के लिये एकल प्रश्नपत्र प्रणाली सेमेस्टर के अनुसार पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित

Department of Higher Education, Govt. of M.P.

Single Paper System Semester wise syllabus

B.Sc./ B.A. II Semester

Recommended by central Board of studies

Name of the Paper	Theory (M.M.)	Minimum Passing Marks in Theory	C.C.E. (M.M.)	Minimum Passing Marks in C.C.E.	Practical MM	Minimum Passing Marks	Total
Advanced Calculus, Differential Equations vector Calculus	125	42	25	8	---	---	150

Note: There will be three sections in the question paper. All questions from each section will be compulsory.

Section –A (20 marks.) will contain 10 objective type questions, two from each unit, with the weightage of 2 marks.

Section –B (35 marks.) will contain 5 short answer type questions (each having internal choice), one from each unit having 7 marks.

Section –C (70 marks.) will contain 5 long answer type questions (each having internal choice), one from each unit, having 14 marks.

There should be 12 teaching periods per week for Mathematics like other Science Subject

(6 Period Theory + 6 Period Practical)

उच्च शिक्षा विभाग, म.प्र. शासन

बी.एससी./बी.ए. कक्षाओं के लिये एकल प्रश्नपत्र प्रणाली सेमेस्टर के अनुसार पाठ्यक्रम

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Department of Higher Education , Govt. of M.P.

B.Sc./ B.A. Single Paper System Semester wise syllabus

Recommended by central Board of studies

सत्र / Session : 2014-15

Max. Marks / अधिकतम अंक	:	125
Class/ कक्षा	:	B.Sc. /B.A.
Semester/ सेमेस्टर	:	II
Subject / विषय	:	Mathematics
Title / शीर्षक	:	Advanced Calculus, Differential Equations, Vector Calculus

: Particulars/ विवरण :

Unit-1	Successive differentiation, Leibnitz theorem, Maclaurin and Taylor series expansions, Asymptotes, Curvature ,Tests for concavity and convexity, Points of inflexion, Multiple points, Tracing of curves in Cartesian co-ordinates.
इकाई–1	उत्तरोतर अवकलन, लैबनीज का प्रमेय, मैकलारिन एवं टेलरे श्रेणी में विस्तार, अनंत स्पर्शी, वक्रता, उत्तलता एवं अवतलता के परीक्षण, नती परिवर्तन बिन्दु, बहुबिन्दु, कार्तीय निर्देशांको में वक्रों का अनुरेखण ।
Unit-2	Limit and continuity of functions of two variables, Introduction of Partial differentiation, Euler's Theorem on homogeneous function, Jacobians, Differentiability of real-valued functions of two variables, Taylor's theorem for functions of two variables, Double and triple integrals, Dirichlet's integrals.
इकाई–2	दो चरों के फलनो की सीमा एवं सांतत्य, आंशिक अवकलन की अवधारणा, समघात फलनों पर आयलर का प्रमेय, जेकोबियन, दो चरों के वास्तविक मान फलनों के आंशिक अवकलज एवं

	अवकलनीयता, दो चरों के फलनों के लिए टेलर का प्रमेय,द्विश:एवं त्रि–सामाकलन,डिरिक्ले का समाकल।
Unit-3	Linear Differential equations and equations reducible to the linear form, Exact differential equation, First order and higher degree equations Solvable for x, y and p, Clairaut's form and singular solutions, Linear differential equations with constant coefficients.
इकाई–3	रैखिक अवकल समीकरण, रैखिक समीकरणों में रूपांतरणीय समीकरण, यथातथ अवकल समीकरण, x, y और p में हल होने वाले प्रथम कोटि एवं उच्चघात के समीकरण, क्लारेट फार्म एवं विचित्र हल, अचर गुणांको के रैखिक अवकल समीकरण।
Unit-4	Homogenous linear ordinary differential equations, linear differential equations of second order, Transformation of the equation by changing the dependent variable and the independent variable, Method of variation of parameters, Ordinary simultaneous differential equations.
इकाई–4	सामान्य समघात रैखिक अवकल समीकरण, द्विघात रैखिक अवकल समीकरण, परतंत्र एवं स्वतंत्र चरों को बदल कर समीकरण का रूपांतरण। प्राचल विचरण की विधि, साधारण युगपद अवकल समीकरण।
Unit-5	Vector differentiation, Gradient, Divergence and Curl, Vector integration, Theorem of Gauss (without proof) and problems based on it, Theorem of Green (without proof) and problems based on it, Stoke's theorem (without proof) and problems based on it.
इकाई–5	सदिश अवकलन, ग्रेडियंट, डायव्हर्जेंस एवं कर्ल, सदिश समाकलन, गॉस की प्रमेय (बिना उपपत्ति) एवं उस पर आधारित प्रश्न, ग्रीन का प्रमेय (बिना उपपत्ति) एवं उस पर आधारित प्रश्न, स्टोक का प्रमेय (बिना उपपत्ति) एवं उस पर आधारित प्रश्न।

Texts Books :

1. Gorakh Prasad – Differential Calculus, Pothishala pvt. Ltd. Allahabad
2. Gorakh Prasad – Integral Calculus, Pothishala pvt. Ltd. Allahabad
3. D.A. Murray : Introductory Course in Differential Equations, Orient Long man, India 1967.
4. N. Saran & S.N. Nigam – Introduction to Vector Analyss, Pothishala Pvt. Ltd., Allahabad.
5. Murray R. Spiegel, Theory & problems of Advanced Calculus.Schaum's outline series, Schaum Publishing Co. NewYark.

Reference Books:

1. P.K. Jain and S. K. Kaushik, An introduction of Real Analysis, S.Chand & Co. New Delhi 2000.
2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons 1999.
3. G. F. Simmons, Differential Equations, Tata Mcgraw Hill, 1972.
4. E.A. Codington, An introduction to ordinary differential equations, Prentice Hall of India, 1961.
5. H.T.H. Piaggio, Elementary Treatise on Differential equations and their applications, C.B.S. Publisher and Distributors, Delhi 1985.
6. W.E. Boyce and P.C. Diprima, Elementary Differential equations & Boundary Value problems, John Wiley 1986.
7. Murray R. Spiegel, Vector Analysis, Schaum Publishing Co. New York.
8. Shanti Narayan, A text book of Vector Calculus, S. Chand & Co., New

9. म.प्र हिन्दी ग्रंथ अकादमी की पुस्तकें ।

Department of Higher Education, Govt. of M.P.
Under Graduate Semester wise Syllabus
As recommended by Central Board of Studies and approved by the Governor of M.P.

उच्च शिक्षा विभाग, म.प्र. शासन
स्नातक कक्षाओं के लिए सेमेस्टर अनुसार पाठ्यक्रम
केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित

w.e.f. Session 2014-15

Class	:	B.A./B.Sc./B.Com./B.H.Sc. I Year
Semester	:	II
Subject	:	Foundation Course (आधार पाठ्यक्रम)
Paper	:	I
Title of Paper	:	**नैतिक मूल्य और भाषा** (Moral Values & Language)
Compulsory/ Optional	:	Compulsory
Max. Marks	:	85 (Moral Education- 15, Hindi- 35, English- 35)

Particulars

Part - A

Unit – 1	**नैतिक मूल्य** 1. अंतर्ज्ञान और नैतिक जीवन – सर्वपल्ली राधाकृष्णन 2. अप्प दीपो भव. – स्वामी श्रद्धानंद 3. बुद्ध की करुणा – डॉ. सद्धा तिस्स	15
Unit – 2	**हिन्दी भाषा** 1. भारत वन्दना (कविता) – सूर्यकांत त्रिपाठी 'निराला' 2. पुष्प की अभिलाषा (कविता) – माखनलाल चतुर्वेदी 3. अकाल और उसके बाद (कविता) – नागार्जुन 4. निर्माल्य (ललित निबंध) – विद्यानिवास मिश्र 5. मानक हिन्दी का स्वरूप (संकलित)	17
Unit- 3	**हिन्दी भाषा** 1. अफसर (व्यंग्य) – शरद जोशी 2. भोलाराम का जीव (व्यंग्य) – हरिशंकर परसाई 3. भारत का सामासिक व्यक्तित्व (चिंतनपरक) – जवाहरलाल नेहरू 4. भारत देश और उसके निवासी (विश्लेषणपरक) – रामधारी सिंह दिनकर 5. पल्लवन और संक्षेपण (संकलित)	18
	Part - B	
Unit- 4	**English Language** 1. William Wordsworth : The Solitary Reaper 2. A Song of Kabir- Translated by Tagore 3. Khushwant Singh : The Portrait of a Lady 4. Mahatma Gandhi : Satyagraha	17
Unit- 5	**English Language** Comprehension, Unseen Passages, Report- writing, Composition, Short Essay, Paragraph Writing (Based on the expansion of an idea) **Basic language skills :** vocabulary, synonyms, antonyms, word formation, prefixes, suffixes, confusing words, similar words with different meanings, proverbs, situational conversations like conversation at the post office, bank, market place, railway station, college etc. **Basic language skills :** Grammer and Usage, Tenses, Prepositions, determiners, countable/ uncountable nouns, verbs, articles and adverbs	18

* सैद्धान्तिक परीक्षा हेतु उपरोक्तानुसार 85 (15+35+35) अंक और आन्तरिक मूल्यांकन (सीसीई) हेतु पृथक से 15 (5+5+5) अंक निर्धारित है।

Department of Higher Education, Govt. of M.P.
Under Graduate Semester wise Syllabus
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उच्च शिक्षा विभाग, म.प्र. शासन
स्नातक कक्षाओं के लिए सेमेस्टर अनुसार पाठ्यक्रम
केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित

Session 2014-15

Class	:	बी.ए./बी.एससी/बी.कॉम/बी.एससी (गृह विज्ञान)/बी.ए. (मैनेजमेंट)/बी.सी.ए.Semester
	:	II
Paper	:	II
Subject	:	आधार पाठ्यक्रम
Title of Paper	:	**उद्यमिता विकास**
Compulsory/ Optional	:	Compulsory
Max. Marks	:	50 (Theory 35 + CCE 15)

Particulars

Unit – 1	उद्यमिता का आशय, मत, उद्यमिता के गुण, सफल उद्यमी के गुण	
Unit – 2	उद्यमिता के प्रकार, महत्व और विभिनन विद्वानों क`मत लक्ष्य निर्माण, लक्ष्य कैसे प्राप्त करें। लक्ष्य प्राप्ति में समस्याएं, उनका समाधान स्वप्रेरणा, स्वप्रेरणा के तत्व और विकास विभिन्न विद्वानों के मत, आकलन, निष्कर्ष नेतृत्व समता, उसका निकास और प्रतिफलन	
Unit- 3	परियोजनाएं तथा विभिन्न संगठन (शासकीय–अशासकीय) शासकीय परियोजनाएं अशासकीय परियोजनाएं बैंकों का योगदान, उनकी सीमाएं, क्षेत्र	

Unit- 4	अच्छे उद्यमी के कौन–कौन से कार्य, गुण, प्रबंधन इत्यादि अच्छे उद्यमी के गुण आधुनिक और पूर्ववर्ती उद्यमी की प्रबंधन कला उद्यमी के प्रेरक तत्व	
Unit- 5	उद्यमी की समस्याएं, क्षेत्र पूंजी की समस्या शक्तिकरण की समस्या पूंजीवन की समस्या प्रशासनिक समस्याएं स्वामित्व की समस्याएं इत्यादि	

* सैद्धान्तिक परीक्षा हेतु उपरोक्तानुसार 35 अंक और आन्तरिक मूल्यांकन (सीसीई) हेतु 15 अंक निर्धारित है।

CS/IT-2301 DATA STRUCTURE USING C LANGUAGE
Commencing from 2012 onwards

Unit- I

Introduction to Data Structures: Definition of Data structure and Abstract data type Classification of Data structures: Linear, Non-linear, homogeneous, non-homogeneous, static & dynamic. Arrays: Definition & types of array, Memory representation of one & two dimensional array, Operations: Insertion ,Deletion, Traversal Sparse Matrix: Definition & memory representation.

Unit- II

Stack : Definition, Array implementation of stack (static stack) : Operations PUSH, POP, TRAVERSE .Applications of stack : Infix, Prefix , Postfix representation and evaluation using stack, Use of stack in recursive implementation. Queue : Definition, Array implementation of queue (static queue) : Operations INSERT, DELETE, TRAVERSE.

Introduction to Circular queue: Definition & implementation, Priority queue, Double ended queue Applications of queue

Unit- III

Introduction to Linked List: Definition, advantages, Types of linked list: single, doubly, circular linked list Operations: Creation, insertion, deletion & traversal of linked list

Unit- IV

Complexity of Algorithms: Time & space complexity, Best-case, worst-case, average-case, Big – oh notation. Searching Algorithm: Linear or sequential search, Binary search, Interpolation search using array. Complexity of Linear search, Binary search, Interpolation Search Sorting Algorithm: Bubble sort, Selection sort, Insertion sort, Merge sort Complexity of sorting algorithm.

Unit- V

Introduction to Tree: Definition, Binary tree: Definition, representation, Operations: Traversal, insertion, deletion Binary search Tree(BST): Definition and creation, Search using BST Introduction to B-Tree & B+ tree. Introduction to graph: Definition & representation, Graph Traversal: Depth First Search (DFS),Breadth First Search(BFS) algorithm.

Text Books:

1.Yedidyah Langsam Moshe J. Augenstein, Aaron M. Tenenbaum," Data Structures using C & C++", PHI New Delhi,2nd Edition

Reference Books:

1. G.S.Baluja," Data Structures Through C", Dhanpat Rai & Co.,4th Edition
2. Seymour Lipschutz,"Data Structures", Schaum's Outline Series, Tata McGraw Hill Publishing Company Ltd.
3. Adam Drodzek," Data Structures & Algorithm in C++", 2nd Edition

(Effective from July 2011 session for 2011-14 batch onwards)

CS/IT 2301P Practical Exercise on Data Structure using C
Commencing from 2012-13 onwards

1. Write a program for address calculation of an element in one and two dimensional array (row major order and column major order).
2. Write a program for insertion, deletion and traversal of elements of an array.
3. Write a program for sparse matrix implementation.
4. Write a program for complete implementation of stack using array with push, pop and traversal operations.
5. Write a program for conversion of an infix expression into postfix representation and evaluation of that postfix form.
6. Write a program for complete implementation of queue using array with insertion, deletion and traversal operations.
7. Write a program for complete implementation of circular queue using array with insertion, deletion and traversal operations.
8. Write a program for complete implementation of double ended queue using array with insertion, deletion and traversal operations.
9. Write a program to create singly link list (creation, insertion, deletion and traversal).
10. Write a program to create doubly link list (creation, insertion, deletion and traversal).
11. Write a program to create circular singly link list (creation, insertion, deletion and traversal).
12. Write a program to create circular doubly link list (creation, insertion, deletion and traversal).
13. Write a program for complete implementation of stack using link list with push, pop and traversal operations.
14. Write a program for complete implementation of queue using link list with insertion, deletion and traversal operations.
15. Write a program for implementation of binary tree (creation, insertion, deletion), with preorder, inorder and postorder traversal.
16. Write a program for implementation of binary search tree (creation, insertion, deletion), with preorder, inorder and postorder traversal.
17. Write a program for implementing graphs and showing depth first search and breadth first search traversals.
18. Write a program for linear search.
19. Write a program for Binary search.
20. Write a program for interpolation search.
21. Write a program for bubble sort.
22. Write a program for selection sort.
23. Write a program for insertion sort.
24. Write a program for merge sort.

(Effective from July 2011 session for 2011-14 batch onwards)

SEMESTER – III

EL -2101: ANALOG ELECTRONICS AND OP-AMP

Maximum Marks: 85 **Min Pass Marks: 28**

Unit I: Power Supplies

Rectifiers: Half wave, Full wave and Bridge Rectifiers, Efficiency, Ripple factor and voltage regulation. Block Diagram of Regulated Power Supply, Series and Shunt Regulation. Three terminal Regulators (78XX and 79XX).

Unit II: FETs & Amplifiers

JFET and MOSFET, Construction and Characteristics, Depletion and Enhancement type MOSFET, problems related to pinch off voltage, I_{DSS}, V_{gs}, transfer characteristics, μ, r_d, g_m, I_D, I_{DSS} relation for FET and threshold voltage.
Transistor as an amplifier: Class A, Class B, Class AB and Class C operation and their Applications, Class B push pull amplifier, Noise and Distortion in Amplifier.

Unit III: Feedback and Oscillators

General theory of feedback, classification of feedback, closed loop gain, open loop gain and return difference, stabilization of gain, Negative feedback in amplifier, Effect of negative feedback on gain, non linear distortion, Band width, Noise, Input and output impedance, Topologies of feedback.
Positive feedback and Barkhausen criterion for oscillator, RC phase shift oscillator, wien Bridge oscillator, RF oscillator, effect of L and C on RF oscillator frequency, Hartley oscillator, colpitts oscillator, crystal oscillator.

Unit IV: Operational Amplifier

Basic Building Block of Op-Amp, Differential amplifier and its types. DC and AC analysis of Differential amplifier, Concept of Virtual ground.

Op-amp Parameters: Concept of ideal op-amp, Input and output offset voltage, Input offset current, Input bias current, CMRR, PSRR and slew rate, open loop gain, Input and output resistance, frequency response. Calculation of CMRR and Slew rate.

Unit V: Linear and Non linear applications of op-amp

Voltage Amplifier: Inverting and non inverting amplifier, summing amplifier, Differential and Instrumentation Amplifiers.
Comparator, Zero crossing and limit detector. Schmitt trigger, Differentiator, Integrator and logarithmic amplifier and problems related to above topics.

BOOKS RECOMMENDED:

1. Ramakant Gaikwad : Operational Amplifier
2. D. Roy Choudhary & Shail B. Jain : Linear Integrated Circuits
3. R. Boylestad, L.Nashelsky : Electronic Devices and Circuit Theory, Pearson. Education
4. Malvino : Electronics Principles, TMH
5. Millman and Halkias : Integrated Electronics, TMH

w.e.f. 2011-14 Batch Onwards

SEMESTER - III

EL 2102: PRACTICAL

SCHEME OF PRACTICAL EXAMINATION

1. Study of Half Wave, Full Wave and Bridge Rectifiers.
2. Study of Regulated Power Supply Using IC 7805/7905.
3. Study of output and transfer characteristics of JFET/MOSFET.
4. Study of Wien Bridge Oscillator.
5. Study of Hartley Oscillator.
6. Study of Colpitt's Oscillator.
7. Op-Amp 741C as an inverting and non- inverting amplifier.
8. Op-Amp 741C as adder and Subtractor.
9. Op-Amp as Voltage Comparator.
10. Op-Amp as Differential and Instrumentation Amplifier.
11. Op-Amp as Integrator and Differentiator.

उच्च शिक्षा विभाग, म.प्र. शासन

बी.एससी / बी.ए. कक्षाओं के लिये एकल प्रश्नपत्र प्रणाली सेमेस्टर के अनुसार पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित

Department of Higher Education, Govt. of M.P.

Single Paper System Semester wise syllabus

B.Sc./ B.A. III Semester

Recommended by central Board of studies

Name of the Paper	Theory (M.M.)	Minimum Passing Marks in Theory	C.C.E. (M.M.)	Minimum Passing Marks in C.C.E.	Practical MM	Minimum Passing Marks	Total
Real Analysis, Differential Equation, Abstract Algebra	125	42	25	8	---	---	150

Note: There will be three sections in the question paper. All questions from each section will be compulsory.

Section –A (20 marks.) will contain 10 objective type questions, two from each unit, with the weightage of 2 marks.

Section –B (35 marks.) will contain 5 short answer type questions (each having internal choice), one from each unit having 7 marks.

Section –C (70 marks.) will contain 5 long answer type questions (each having internal choice), one from each unit, having 14 marks.

There should be 12 teaching periods per week for Mathematics like other Science Subject

(6 Period Theory + 6 Period Practical)

उच्च शिक्षा विभाग, म.प्र. शासन

बी.एससी./बी.ए. कक्षाओं के लिये एकल प्रश्नपत्र प्रणाली सेमेस्टर के अनुसार पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित

Department of Higher Education , Govt. of M.P.

B.Sc./ B.A. Single Paper System Semester wise syllabus

Recommended by central Board of studies

सत्र / Session : 2015-16

Max Marks / अधिकतम अंक : 125

Class/ कक्षा : B.Sc. /B.A.

Semester/सेमेस्टर : III

Subject / विषय : Mathematics

Title / शीर्षक : Real Analysis, Differential Equation, Abstract Algebra

: Particulars/ विवरण :

Unit-1	Definition of a sequence, Theorems on limits of sequences, Bounded and monotonic sequences, Cauchy's convergence criterion, Series of non-negative terms, Comparison test, Cauchy's integral test, Ratio test, Raabe's test, logarithmic test, Leibnitz's theorem, Absolute and conditional convergence.
इकाई–1	अनुक्रम की परिभाषा, अनुक्रमों की सीमाओं पर प्रमेय, परिबद्ध एवं एकदिष्ट अनुक्रम, कॉशी के अभिसरण का मापदंड, अऋणात्मक पदों की श्रेणी, तुलना परीक्षण, कॉशी का समाकल परीक्षण, अनुपात परीक्षण, रॉबी का परीक्षण, लघुगणकीय परीक्षण, लिबनीज का प्रमेय, निरपेक्ष एवं सापेक्ष अभिसरण ।
Unit-2	Series Solution of Differential Equations-Power series Method, Bessel's Equation ,Bessel's function and its properties, recurrence and generating relations, Legendre's Equation, Legendre's function and its properties, recurrence and generating relations.
इकाई–2	अवकल समीकरणों की श्रेणी हल, घात–श्रेणी विधि, बेसल का समीकरण, बेसल का फलन एवं उसके गुणधर्म, पुनरागमन एवं जनक संबध, लीजेन्डर का समीकरण,

	लीजेन्डर का फलन एवं उसके गुणधर्म, पुनरागमन एवं जनक संबध।
Unit-3	Laplace transformations, Linearity of the Laplace transformation, Existence theorem of Laplace transforms, Laplace transforms of derivatives and integrals, Shifting theorem, Differentiation and integration of transforms, Inverse Laplace transforms, Convolution theorem, Applications of Laplace transformation in solving linear differential equations with constant coefficients.
इकाई–3	लाप्लास रूपांतरण, लाप्लास रूपांतरणों की लांबिकता, लाप्लास रूपांतरणों का अस्तित्व प्रमेय, अवकलों एवं समाकलों के लाप्लास रूपांतरण, स्थानांतरण प्रमेय, रूपांतरणों का अवकलन एवं समाकलन, प्रतिलोम लाप्लास रूपातंरण, सवलन प्रमेय, अचर गुणांकों वालें रैखिक अवकल समीकरणों को हल करने में लाप्लास रूपांतरणों के अनुप्रयोग।
Unit-4	Definition and basic properties of group, Order of an element of a group, Subgroups, Algebra of subgroups, Cyclic groups and their simple properties, Coset decomposition and related theorems, Lagrange's theorem and its consequences.
इकाई–4	समूह की परिभाषा एवं मूलभूत गुणधर्म, समूह के अवयव की कोटि, उपसमूह, उपसमूहो का बीजगणित। चक्रीय समूह एवं उनके साधारण गुणधर्म, सह समुच्चय विभाजन एवं संबधित प्रमेय, लेग्रांजे प्रमेय एवं उसके निगमन ।
Unit-5	Normal sub group, Quotient groups, homomorphism and isomorphism of groups, Kernel of homomorphism of groups, fundamental theorem of homomorphism of groups, Permutation groups (even and odd permutations), Alternating groups A_n, Cayley's theorem.
इकाई–5	प्रसामान्य उपसमूह, विभाग समूह, समूहों की समकारिता एवं तुल्यकारिता, समकारिता की अष्टि, समूहो की समकारिता का मूलभूत प्रमेय, क्रमचय समूह (सम एवं विषम क्रमचय) एकांतर समूह A_n, कैली का प्रमेय ।

Text Books :

1. R.R. Goldberg, Real Analysis, I.B.H. Publishing Co. New Delhi, 1970.
2. Gorakh Prasad, Integral Calculus, Pothishala Pvt. Ltd. Allahabad.
3. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & sons, 1999.
4. I. N. Herstein – Topics in Algebra, Wiley Eastern Ltd. New Delhi 1977.
5. Sharma and Gupta-Integral Transform, Pragati Prakashan Meerut

6ए म.प्र हिन्दी ग्रंथ अकादमी की पुस्तकें ।

Reference Books:

1. T.M. Apostol Mathematical Analysis Narosa Publishing House New Delhi 1985.
2. Murray R.Spiegel, Theory and Problems of Advanced Calculus, Schaum Publishing Co. New York.
3. N. Piskunov, Differential and Integral Calculus, Peace Publishers, Moscow.
4. S.C. Malik, Mathematical Analysis, Wiley Eastern Ltd. New Delhi.
5. P.B. Bhattacharya, S.K. Jain and S.R. Nagpaul, Basic Abstract Algebra, Wiley Eastern, New Delhi, 1997.
6. I. S. L.uther and I.B. S. Passi, Alegebra Vol- I , II, Narosa Publishing House.

Department of Higher Education, Govt. of M.P.
Under Graduate Semester wise Syllabus
As recommended by Central Board of Studies and approved by the Governor of M.P.

उच्च शिक्षा विभाग, म.प्र. शासन
स्नातक कक्षाओं के लिए सेमेस्टर अनुसार पाठ्यक्रम
केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित

w.e.f. Session 2015-16

Class	:	B.A./B.Sc./B.Com./B.H.Sc. II Year
Semester	:	III
Subject	:	Foundation Course (आधार पाठ्यक्रम)
Paper	:	I
Title of Paper	:	**नैतिक मूल्य और भाषा** (Moral Values & Language)
Compulsory/ Optional	:	Compulsory
Max. Marks	:	85 (Moral Education- 15, Hindi- 35, English- 35)

Particulars

Part - A

Unit – 1	**नैतिक मूल्य** 1. शिकागो व्याख्यान – स्वामी विवेकानंद 2. धर्म और राष्ट्रवाद – महर्षि अरविन्द 3. सादगी – महात्मा गांधी 4. भय से मुक्ति – जे कृष्णमूर्ति 5. चित्त जहाँ भय शून्य – रवीन्द्रनाथ ठाकुर	15
Unit – 2	**हिन्दी भाषा** 1. कछुआ धर्म (निबंध) – चन्द्रधर शर्मा 'गुलेरी' 2. वह तोड़ती पत्थर (कविता) – निराला 3. सपनों की उड़ान (प्रेरक निबंध) – ए.पी.जे. अब्दुल कलाम 4. चीफ की दावत (कहानी) – भीष्म सहानी 5. वर्ण–विन्यास (व्याकरणपरक) – विश्वनाथ प्रसाद मिश्र	17
Unit- 3	**हिन्दी भाषा** 1.आदिवासी धरोहर (निबंध) – डॉ. श्यामाचरण दुबे 2.नारीत्व का अभिशाप (निबंध) – महादेवी वर्मा 3.ब्रह्माण्ड की रचना (वैज्ञानिक लेख) – जयंत विष्णु नार्लीकर 4.प्रमुख वैज्ञानिक आविष्कार (संकलित) 5.संधि और समास (संकलित)	18
	Part - B	
Unit- 4	**English Language** 1. Tree : Tina Morris 2. Night of the scorpion : Nisssim Ezekiel 3. What is Science? : George Orwell 4. On the Rule of the Road : A.G. Gardiner	17
Unit- 5	**English Language** Comprehension of Unseen Passages, Paragraph Writing, Report- writing, Short Essay on a given topic Correspondence skills (Formal & Informal Letters and Application) **Basic language skills :** Tenses, prepositions, determiners, verbs & Articles	18

* सैद्धान्तिक परीक्षा हेतु उपरोक्तानुसार 85 (15+35+35) अंक और आन्तरिक मूल्यांकन (सीसीई) हेतु पृथक से 15 (5+5+5) अंक निर्धारित है।

Department of Higher Education, Govt. of M.P.
Semester Wise Syllabus for Undergraduates
As recommended by Central Board of Studies and
Approved by HE the Governor of M.P.

Session 2015-16

Class - **बी.ए. / बी.कॉम. / बी.एस.सी. / बी.एस.सी. गृह विज्ञान / बी.सी.ए.**
Subject - **आधार पाठ्यक्रम**
Paper Title - **पेपर II : पर्यावरणीय अध्ययन**
Semester – III

कुल अंक– थ्योरी 35 + 15 सी.सी.ई.

इकाई–1 पर्यावरण एवं पारिस्थितकीय अध्ययन

(क) परिभाषा एवं महत्व

(ख) जनभागीदारी एवं जन जागरण

इकाई–2 पर्यावरणीय प्रदूषण

(क) वायु, जल, ध्वनि, ताप एवं आणविक प्रदूषण–परिभाषा, प्रदूषण के कारण, प्रभाव एवं रोकथाम

(ख) आपदा प्रबंधन– बाढ़, भूकंप, चक्रवात एवं भूस्खलन

इकाई–3 पर्यावरण और सामाजिक समस्याऍ

(क) धारणीय विकास

(ख) नगरों की ऊर्जा समस्या, सौर ऊर्जा, जैविक ईधन तथा पवन ऊर्जा

(ग) जल संरक्षण– वर्षा, जल–संग्रहण

इकाई–4 प्राकृतिक संसाधनों के संरक्षण में मनुष्य की भूमिका

(क) खाद्य–आहार संसाधन – विश्व आहार समस्या

(ख) ऊर्जा संसाधन– ऊर्जा की बढ़ती मांग

इकाई पाँच– पर्यावरण संरक्षण कानून

(क) वायु तथा जल प्रदूषण–संरक्षण कानून

(ख) वन्य प्राणी संरक्षण कानून

(ग) पर्यावरण तथा स्वास्थ्य रक्षा में सूचना प्रौद्योगिकी की भूमिका

संदर्भ पुस्तक– मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल द्वारा प्रकाशित पुस्तक

Department of Higher Education, Govt. of M.P.
Semester Wise Syllabus for Undergraduates
As recommended by Central Board of Studies and
Approved by HE the Governor of M.P.

Session 2015-16

Class	-	B.A./B.Sc./B.Com./B.H.Sc./BCA II
Subject	-	Foundation Course
Paper Title	-	Paper II : Environmental Studies
Semester	–	III

Max. Marks– Theory 35+15 CCE

Unit - I Study of Environment and ecology:

(a) Definition and Importance.

(b) Public participation and Public awareness.

Unit - II Environmental Pollution :

(a) Air, water, noise, heat and nuclear pollution- Definition, Causes, effect and prevention of pollution.

(b) Disaster management – Flood, Earthquake, cyclones and landslides.

Unit - III Environment and social problems :

(a) Sustainable development- Introduction

(b) Energy problems of cities, solar energy, biogas and wind energy

(c) Water conservation – rain-water harvesting.

Unit - IV Role of mankind in conserving natural resources :

(a) Food resources – World food problem.

(b) Energy resources – increasing demand for energy.

Unit - V Environment conservation laws :

(a) Conservation laws for air and water pollution.

(b) Wildlife conservation laws.

(c) Role of information technology in protecting environment & health.

CS/IT–2401 DATABASE MANAGEMENT SYSTEM
Commencing from 2012-13 onwards

Unit – 1

Fundamentals of DBMS: Data, Information, Database & Computers, DBMS Definition, DBMS versus file processing system, Components of DBMS Environment, Instances & Schemas, Three Levels Architecture, Data Independence, Data Dictionary, Database Users, Data Administrators.

Unit – 2

Modeling the Real World, Various Data Models & their Comparison, Entity Relationship Models. RDBMS –Concept, Components, Data Integrity, Keys, Relational data Manipulations and Relational Algebra, Tuple Calculus.

Unit – 3

Normalization: Definition, Decomposition, Basic Concepts like FD, Objectives of Normalization. Normal Forms- First, Second, Third Normal Form, BCNF, Concept of Multi Valued Dependencies & Higher Normal Forms.

Unit – 4

Introduction to SQL, DDL, DML, and DCL statements, Creating Tables, Adding Constraints, Altering Tables, Update, Insert, Delete & various Form of SELECT- Simple, Using Special Operators for Data Access. Nested Queries & Exposure to Joins, Aggregate Functions.

Unit – 5

Transaction: Concept of Transaction, Concurrency Control-Problem & its Basis, Concurrency Control -Locks & Deadlocks. Recovery-Kind of Failures, Recovery Techniques, Security-Authentication, Authorization, Access Control.

Text Book:

1. H. F. Korth & A. Silverschatz, Database Concepts, Tata McGraw Hill, New Delhi

References Books:

1. Elmasri & Navathe, Fundamentals of Database systems, Addison & Weisely, New Delhi.
2. C. J. Date, Database Systems, Prentice Hall of India, New Delhi.
3. Ivan Bayrros, SQL, Pl/SQL, BPB Publications New Delhi.

(Effective from July 2011 session for 2011-14 batch onwards)

CS/IT-2401P-Practical on Data Base Management System

1. Write a command to create following table structure, item-master .

Column name	datatype
Itemcode	char(4)
Itemdesc	varchar(25)
No_of_item_available	int
Price	int.

Condition are:- (1) itemcode is primary key
(2) Itemdesc is not NULL
(3) No_of_item_available is non zero .
(4) Price value should be 200 Rs.

2. The Department of an employee Raj Sharma table changed from finance to marketing. The department code of marketing is 003 & the employee code of raj Sharma 0015.both the department code & employee code are of char data type. Write update statement to update table employee.

3.

News paper attribute	data type
Newspapercode	char (4)
Newspaper name	char(25)
Region	varchar(25)
Type of news paper	varchar(25)
City	char(20)
Country code	char(3)
Phnno	Char(15)
Second table	
Newpaperadver	
Newsadvo	varchar (4)
Adstart date	dates time

Write SQL command for:-
(a) Phnno should be [0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]
(b) Country code should be 001 by default.
(c) News paper code should primary key.
Modify table->
(a) Newsadvo Should be primary key
(b) News paper code should be foreign key.

4. Write a command to display the detail of all those employee who name at least 3-5 year experience.

Attribute	data type
Employ code	char
Employ name	char

(Effective from July 2011 session for 2011-14 batch onwards)

Department code	char
DOJ	date
YOE	int
Employ grade	char

5. The employee tables contain the employee name, address, age, salary of each employ. Write SQL command for-
   (a) Display all the detail of the employee
   (b) Whose age less than 40 year.
   (c) Salary is greater than 15000.

6. In a bank the customer table store's the detail of each customer. the bank has decided to give a 10% discount on all credit card's you want to generate a list of all customer who don't available the credit card facility. How do you generate the list? The structure of customer table.

Column	data type
Customecode	char
Customername	char
Customeraddress	char
Credit card	int

7. Consider title table with column name, title, title type pub ID of char type, while price advance, royalty, ytd-sales is off int type.
   (a) Display the highest advance paid.
   (b) Display the lower advance paid.
   (c) Display the total no. of book.
   (d) Display total sales of book.
8. Write appropriate SQL command for following-
   (a) Increase the price of all items by 5%.
   (b) Update the quantity hold to 500 for item code 1001.
   (c) Delete a row from the item table where item code is 1001.
   (d) Update the price of item to 20 RS .
9. Write SQL definition command for each of the following
   (a) How would you add an attribute, CLASS, to the STUDENT table.
   (b) How would you remove the IS_REGISTERED table?
   (c) How would you change the field for FACULTY_NAME from 25 characters to 40 characters?
10. Consider employee table
    Employee (empno., Name, depid, Basic, HRA, Deduction, Tax)
    (a) Get the name of employee in the department 'D1' and basic pay less than 6000.
    (b) Get the average HRA of an employee.

(Effective from July 2011 session for 2011-14 batch onwards)

(c) Find the total basic pay for all the employee in the department 'D1' whose basic pay is greater than 6000.
(d) Find the name of the employee who get the maximum and minimum basic pay.

11. Consider the following table
Emp_master(emp_no, fname, mname, lname, dept, design, branch_no)
Branch_mastr(name, branch_no)
List the employee details along with branch names to which they belong.
12. Consider the following table
Cust_mstr (custno, fname, mname, lname)
Addr_dtls (code_no,addr1,addr2,city,state,pincode)
List the customer along with their multiple address details.
13. Consider table
Book (Bookid, title, author, Publisher, year, price)
Order_details (Orderno, bookid, quantity)
Publisher (pubid, name, city, country)
Catalog (Bookid, title, authorid, pubid, category_id, year, price)
Author (authorid, name, city, country)
    1. Get the title and price of all the books whose price is less than the average price of the books.
    2. Get the name of all authors who have more than two books in the catalog.
    3. Get the name of all the books for which an order has been placed.
14. Consider table Order (ordered, order_detail, qty, price)
    a) Alter table Order add column amount.
    b) Modify data type of price column from character to int.
15. Consider table
Product_master(Product_no,description,profit_percent,unit_measure,qty_on_hand,reorder, sell _price, cost_price).
Client_master(Clientno, name, city, pincode, state , bal_due)
Salesman_master(Salesmanno, salesmanname,address1,address2, city, pincode , state , sal_amt, tgt_to_get, Ytd_sales, remark)
    1. Find out the names of all the clients.
    2. Retrieve the entire contents of the client_master table.
    3. Retrieve the list of names and the cities of all the clients.
    4. List the various products available from the product_master table.
    5. List all the clients who are located in Bombay.
    6. Find the names of the salesman who have a salary equal to Rs. 3000.
16. Consider table
Client_master (Client_no, name, city, pincode, state, bal_due).
Product_master (Product_no, description, profit_percent, unit_measure, qty_on_hand, reorder, sell _price, cost_price).

Salesman_master (Salesmanno, salesmanname, address1, address2, city, pincode , state , sal_amt, tgt_to_get, Ytd_sales, remark)

1. Change the city of client_no 'C00005' to 'Bombay'.
2. Change the bal_due of client_no 'C00001' to Rs. 1000.
3. Change the cost price of '1.22 Floppies' to Rs. 950.00.
4. Change the city of the salesman to Mumbai.

17. Consider table

Product_master(Product_no,description,profit_percent,unit_measure,qty_on_hand, reorder,

sell _price, cost _price).

Client_master(Clientno, name, city, pincode, state , bal_due)

Salesman_master(Salesmanno, salesmanname,address1,address2, city, pincode , state , sal_amt, tgt_to_get, Ytd_sales, remark)

1. Delete all salesman from salesman_master whose salaries are equal to Rs. 3500.
2. Delete all products from product_master where the quantity on hand is equal to 100.
3. Delete from client_master where the column state hold the value 'Tamil Nadu'.

18. Consider employee table

Employee (empno, name, depid, basic, hra, deduction, tax)

1. Get the number of rows in a table
2. Find the department wise average pay of the employees.
3. Find the name of the employees whose basic pay is greater than the average basic pay.
4. Find the name of the employee who gets the basic pay.

19. The employee table stores the details of employees such as employee code, employee name, department code, date of joining, years of experience and the employee grade. Display only those grades in which the number of employees is more than 100. The table structure of the employee table is shown below:

Employee(emp_code, emp_name, Dept_code, Doj, Yrs_exp, Emp_grade)

20. Explain set operation command with example.

SEMESTER - IV
EL -2201: DIGITAL ELECTRONICS

Maximum Marks: 85

Min Pass Marks: 28

Unit I : Number Systems, Codes and Logic Gates

Decimal, Binary, Octal, Hexadecimal number systems and their interconversions, Signed and fractional binary number representation. BCD, Excess-3, Gray, ASCII & EBCDIC Codes. Basic logic gates & Derived gates(AND, OR, NOT, NAND, NOR, XOR, XNOR): Symbols, Truth Tables and Circuit diagrams using switches, diodes and transistors.

Unit II: Boolean Algebra and K-map

Boolean Algebra, minterms, maxterms, Boolean expression in SOP form and POS form, conversion of SOP/POS expression to its standard SOP/POS form, Demorgan's Theorem. Universal Gates, Simplification of Logic equations using laws of Boolean algebra and Karnaugh map (upto 4 variables)

Unit III: Arithmatic & Combinational Circuits

Binary addition, subtraction, multiplication & division, 1's and 2's complement, Half adder and Full Adder, Half Subtractor and Full Subtractor, Binary Adder, 2's complement Adder/Subtractor circuit, Digital Comparator, Multiplexer, Demultiplexer, Encoder, Decoder and code converters.

Unit IV: Sequential Circuits

RS & D Latches, RS, D, JK & T Flip Flops, Concept of racing and JK Master-Slave Flip Flops, Registers & Counters and their different types.

Unit V: A/D and D/A Converter

Basic D/A Converters: R-2R, Binary Weighted Resistor type, A/D Converters: Counter, Ramp, Flash and Successive Approximation. Sample and Hold Circuits: Basic Concept and Working.

BOOKS RECOMMENDED:

1. Malvino and Leach : Digital Principles and Applications
2. R.P. Jain : Modern Digital Electronics
3. Malvino and Brown : Digital Computer Electronics

w.e.f. 2011-14 Batch Onwards

SEMESTER - IV

EL 2202: PRACTICAL

SCHEME OF PRACTICAL EXAMINATION

1. Study of Basic Logic Gates and Universal Gates.
2. Verification of Demorgan's Theorem.
3. Study of Binary Half and Full Adder Circuit.
4. Study of Binary Half and Full Subtractor Circuits.
5. Study of code conversion binary to gray and gray to binary Circuits.
6. Study of 4 bit Parity Generator/ Checker Circuits.
7. Study of Multiplexer and Demultiplexer Circuits.
8. Study of Decoder and Encoder Circuits.
9. Study of R-S, D and J-K flip flop.
10. Study of 4 - Bit Ripple Up/Down Counter.
11. Study of Left and Right Shift Registers.
12. Study of Digital Comparator.
13. Study of D/A Conversion.
14. Study of A/D Conversion.
15. Study of Ring Counter and Decade Counter.

उच्च शिक्षा विभाग, म.प्र. शासन

बी.एससी/बी.ए. कक्षाओं के लिये एकल प्रश्नपत्र प्रणाली सेमेस्टर के अनुसार पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित

Department of Higher Education, Govt. of M.P.

Single Paper System Semester wise syllabus

B.Sc./ B.A. IV Semester

Recommended by central Board of studies

Name of the Paper	Theory (M.M.)	Minimum Passing Marks in Theory	C.C.E. (M.M.)	Minimum Passing Marks in C.C.E.	Practical MM	Minimum Passing Marks	Total
Abstract Algebra, Advanced Calculus, Partial Differential Equations, Complex Analysis	125	42	25	8	---	---	150

Note: There will be three sections in the question paper. All questions from each section will be compulsory.

Section –A (20 marks.) will contain 10 objective type questions, two from each unit, with the weightage of 2 marks.

Section –B (35 marks.) will contain 5 short answer type questions (each having internal choice), one from each unit having 7 marks.

Section –C (70 marks.) will contain 5 long answer type questions (each having internal choice), one from each unit, having 14 marks.

There should be 12 teaching periods per week for Mathematics like other Science Subject

(6 Period Theory + 6 Period Practical)

उच्च शिक्षा विभाग, म.प्र. शासन

बी.एससी./बी.ए. कक्षाओं के लिये एकल प्रश्नपत्र प्रणाली सेमेस्टर के अनुसार पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित

Department of Higher Education , Govt. of M.P.

B.Sc./ B.A. Single Paper System Semester wise syllabus

Recommended by central Board of studies

सत्र / Session : 2015-16

Max. Marks / अधिकतम अंक	:	125
Class/ कक्षा	:	B.Sc. /B.A.
Semester/ सेमेस्टर	:	IV
Subject / विषय	:	Mathematics
Title / शीर्षक	:	Abstract Algebra, Advanced Calculus, Partial Differential Equations, Complex Analysis

: Particulars/ विवरण :

Unit-1	Group automorphisms, inner automorphism, Group of automorphisms, Conjugacy relation and centraliser, Normaliser, Counting principle and the class equation of a finite group, Cauchy's theorem for finite abelian groups and non- abelian groups.
इकाई–1	समूह स्वकारिता (स्वसमरूपता), आंतर स्वकारिता, स्वकारिताओं का समूह, संयुग्मता संबधं एवं केन्द्रीयकारक, प्रसामान्यक, गणना सिद्धांत एवं परिमित समूह का वर्ग समीकरण। परिमित आबेली एवं अन–आबेली समूहों के लिये कौशी प्रमेय ।
Unit-2	Introduction to rings, subrings, integral domains and fields, simple properties and examples, ring homomorphism, ideals and quotient rings.
इकाई–2	वलय, उपवलय, पूर्णांकीय प्रांत एवं क्षेत्र का परिचय सरल गुणधर्म एवं उदाहरण, वलय समाकारिता, गुणजावली एवं विभाग वलय ।
Unit-3	Maxima, Minima and saddle points of functions of two variables, Improper integrals and their convergence, Comparison test, Abel's and Dirichlet's tests, Beta and Gamma

	functions.
इकाई–3	दो चरों के फलनों का उच्चिष्ठ, निम्निष्ठ एवं सोडल बिन्दु, विषम समाकल एवं उनका अभिसरण, तुलना परीक्षण, आबेल एवं डिरिक्ले का परीक्षण, बीटा एवं गामा फलन।
Unit-4	Partial Differential equations of the first order, Lagrange's solution, Some special types of equations which can be solved easily by methods other than general methods, Charpit's general method of solution, Partial differential equations of second and higher orders, Homogeneous and non- Homogeneous equations with constant coefficients, Partial differential equations reducible to equations with constant coefficients.
इकाई–4	प्रथम कोटि के आंशिक अवकल समीकरण, लेग्रांजे का हल, कुछ विशिष्ट प्रकार के समीकरण जिन्हें व्यापक विधि के अलावा सरल विधि से हल किया जा सके, हल के लिए चारपिट की व्यापक विधि, द्वितीय एवं उच्चतर कोटि के आंशिक अवकल समीकरण, अचर गुणांकों के समघातीय एवं असमघातीय समीकरण, आंशिक अवकल समीकरण जो अचर गुणांकों वाले समीकरणों में परिवर्तनीय है।
Unit-5	Continuity and differentiability of Complex functions, Analytical function, Cauchy Riemann equation, Harmonic function, Mobius transformations, fixed points, cross ratio.
इकाई–5	सम्मिश्र फलनों का सांतत्य एवं अवकलनीयता। वैश्लेषिक फलन, कौशी रीमान समीकरण, प्रसंवादी फलन, मोवियस रूपांतरण, स्थिर बिन्दु, तिर्यक अनुपात।

Text Books :

1. I.N. Sneddon, Elemets of partial Differential equatiins Mc graw Hill, Co. 1988
2. Shanti Narayan, Theory of Functions of a Complex Variable, S. Chand & Co., New Delhi.
3. I.N. Herstein Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1977.
4. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum Publishing Co., New York

5ण म.प्र हिन्दी ग्रंथ अकादमी की पुस्तकें ।

Department of Higher Education, Govt. of M.P.
Under Graduate Semester wise Syllabus
As recommended by Central Board of Studies and approved by the Governor of M.P.

उच्च शिक्षा विभाग, म.प्र. शासन
स्नातक कक्षाओं के लिए सेमेस्टर अनुसार पाठ्यक्रम
केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित

w.e.f. Session 2015-16

Class	:	B.A./B.Sc./B.Com./B.H.Sc.II Year
Semester	:	IV
Subject	:	Foundation Course (आधार पाठ्यक्रम)
Paper	:	I
Title of Paper	:	**नैतिक मूल्य और भाषा** (Moral Values & Language)
Compulsory/ Optional	:	Compulsory
Max. Marks	:	85 (Moral Education- 15, Hindi- 35, English- 35)

Particulars

Part - A

Unit – 1	**नैतिक मूल्य** 1. भारतीय संविधान की प्रस्तावना 2. नागरिक के अधिकार और कर्तव्य 3. राज्य की नीति के नीति–निदेशक तत्व	15
Unit – 2	**हिन्दी भाषा** 1. दिमागी गुलामी (निबंध) – राहुल सांकृत्यायन 2. फाँस (कहानी) – गोविन्द मिश्र 3. हमारा सौर मण्डल (संकलित) 4. जीवन : उत्पत्ति और संरचना (संकलित) 5. विराम चिन्ह – उपयोग और प्रयोग (संकलित)	17
Unit- 3	**हिन्दी भाषा** 1. इन्द्रधनुष का रहस्य (वैज्ञानिक लेख) – डॉ. कपूरमल जैन 2. चली फगुनहट बौरे आम (ललित निबंध) – विवेकी राय 3. भोजन और स्वास्थ्य (संकलित) 4. निबंध रचना (संकलित) 5. संक्षिप्तियाँ (संकलित)	18
	Part - B	
Unit- 4	**English Language** 1. Three Questions : C. Rajgopalachari 2. Ramanujan : C.P. Snow 3. The Power of W.E. : Roger Rosenblatt 4. A Short Extract from the Naked Ape : Desmond Morris	17
Unit- 5	**English Language** Narrative skills – narration of events and situations. Production of speech : Classification of sounds. Correction of common errors in th sentence structure, Drafting C.V. **Basic language skills :** Tenses, prepositions, determiners, verbs & Articles, Nouns & Pronouns.	18

* सैद्धान्तिक परीक्षा हेतु उपरोक्तानुसार 85 (15+35+35) अंक और आन्तरिक मूल्यांकन (सीसीई) हेतु पृथक से 15 (5+5+5) अंक निर्धारित है।

Department of Higher Education, Govt. of M.P.
Semester Wise Syllabus for Undergraduates
As recommended by Central Board of Studies and
Approved by HE the Governor of M.P.
Session 2015-16

Class - **बी.ए./बी.कॉम./बी.एस.सी./बी.एस.सी. गृह विज्ञान/ बी.सी.ए.**
Subject - **आधार पाठ्यक्रम**
Paper Title - **पेपर II: पर्यावरणीय अध्ययन**
Semester – IV

कुल अंक– थ्योरी 35 + 15 सी.सी.ई.

इकाई–1 प्राकृतिक संसाधन की समस्याएँ

(क) जल संसाधन की समस्या–सतह एवं भूजल का उपयोग, अतिदोहन, बाढ़, सूखा, जल पर संघर्ष, बॉध–लाभ एवं समस्याऍ।

(ख) वन संसाधन की समस्याएँ– उपयोग एवं अतिदोहन, वनोन्मूलन, इमारती लकड़ी, अकाष्ठ वनोत्पाद, बाँध एवं उनका वन पर प्रभाव।

(ग) भूमि संसाधन की समस्याएँ– स्रोत के क्रय में भूमि, भूमि का अवभ्रमण, मानव प्रेरित भू–स्खलन और मरूस्थलीकरण

इकाई–2 जैव विवधिता और उसका संरक्षण–

(क) प्रस्तावना : अनुवांशिक, जातीय तथा पारिस्थितिक विविधता

(ख) जैव विविधता का मूल्य – उपभोग्य उपयोग, उत्पादक उपयोग, सामाजिक, नैतिक तथा सौन्दर्यगत मूल्य

(ग) वृहत जैवविविधता केन्द्र के राष्ट्र रूप में भारत, राष्ट्रीय तथा स्थानीय स्तरों पर जैव विविधता।

(घ) जैव विविधता के खतरे– आवासीय हानि, वन्य जीवन में अनधिकार घुसपैठ तथा मानव, वन्य जीवन–संघर्ष।

इकाई–3 जनसंख्या तथा पर्यावरण

(क) जनसंख्या–वृद्धि, राष्ट्रों के बीच अन्तर

(ख) जनसंख्या–विस्फोट, परिवार कल्याण कार्यक्रम

(ग) पर्यावरण और मानव स्वास्थ्य

इकाई–4 पारिस्थितिकी तथा पारिस्थितिकी तंत्र

(क) पारिस्थितिकी – प्रस्तावना

(ख) पारिस्थितिक तन्त्र– अवधारणा, घटक, संरचना तथा कार्यप्रणाली, ऊर्जा का प्रवाह, खाद्य श्रृंखला, खाद्य जाल, पारिस्थितिक पिरामिड तथा प्रकार

इकाई–5 पर्यावरण सम्पदा

(क) भारत की प्रमुख नदियां तथा घास के मैदान

(ख) ग्रामीण, औद्योगिक एवं कृषि क्षेत्र

(ग) सामान्य पौधे, कीटों एवं पक्षियों का अध्ययन

संदर्भ पुस्तक– मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल द्वारा प्रकाशित पुस्तक

Department of Higher Education, Govt. of M.P.
Semester Wise Syllabus for Undergraduates
As recommended by Central Board of Studies and
Approved by HE the Governor of M.P.

Session 2015-16

Class	-	B.A./B.Sc./B.Com./B.H.Sc./BCA II
Subject	-	Foundation Course
Paper Title	-	Paper II : Environmental Studies
Semester	–	IV

Max. Marks– Theory 35+15 CCE

Unit - I Problem of natural resources

(a) Problem of water resources – Utilization of surface and ground water, over utilization, flood, drought, conflicts over water, dams-benefits and problem.

(b) Problems of forest resources – uses and over utilization, deforestation, utilization of timber, non-wood forest products, dams and its effect on forests.

(c) Problems of land resources – Land as a source, erosion of land, man-induced landslides and desertification.

Unit- II Bio-diversity and its protection –

(a) Introduction- Genetic, species and ecosystem diversity

(b) Value of bio-diversity – Consumable use: Productive use, Social, moral and aesthetic values.

(c) India as a nation of mega bio-diversity centre, bio-diversity at national and local levels.

(d) Threats to bio-diversity – Loss of habitat, poaching of wildlife, man-wildlife conflicts.

Unit- III Human Population and Environment

(a) Population growth, disparities between countries.

(b) Population explosion, family welfare Programme.

(c) Environment and human health.

Unit - IV Ecology and Ecosystem

(a) Ecology-Introduction

(b) Ecosystem- Concepts, components, structure & function, energy flow, food chain, food web, ecological pyramids and types.

Unit - V Environmental Wealth

(a) Main rivers of India and grasslands

(b) Rural, Industrial, Agricultural fields.

(c) Study of common plants, insects and birds.

Reference Book : Text Book for Environmental Studies – University Grants Commission, New Delhi & Bharati Vidyapeeth institute of Environment Education and Research, Pune

CS/IT-3501 Object Oriented Programming using C++
Commencing from 2013-14 onwards

Objective : To introduce the concept of object oriented programming through C++.

UNIT I

Introduction, OOPS languages, characteristics of OOP's languages, application of OOP's, OOP's paradigm, concepts: object, class, data abstraction, data encapsulation, inheritance, and polymorphism. Static and dynamic binding, message passing, benefits of OOP's, disadvantage of OOP's. Application of OOP's.

UNIT II

C++ programming basics, basic program structure ,preprocessor directive, data types, operators, manipulator, type conversions, C++ stream class. Control statement: for, do, while, do-while, Decision statement if, if-else, switch-Case. Jump statement: break, continue, go to, exit.

UNIT III

Function and arrays. Classes and instances, defining classes in object oriented language, building and destroying instances (constructors and destructors), modifiers, friend and inline functions, string handling function.

UNIT IV

Data encapsulation, polymorphism, operator overloading, function overloading, virtual functions.

UNIT V

Inheritance, reusability of code through inheritance, type of inheritance, data abstraction, abstract classes. Templates and exception handling.

TEXT BOOK:

1. Object oriented programming with C++ by Balaguruswamy, TMH Publishing

REFERENCE BOOKS:

1. C++, The Complete Reference, 4th Edition, Herbert Schildt, TMH.
2. C++ Primer, 3rd Edition, S.B. Lippman and J. Lajoie, Pearson Education.
3. The C++ Programming Language, 3rd Edition, B. Stroutstrup, Pearson education.
4. OOP in C++, 3rd Edition, T. Gaddis, J. Walters and G. Muganda, Wiley DreamTech Press.
5. Object Oriented Programming in C++, 3rd Edition, R.Lafore, Galigotia Publications pvt ltd.
6. Computer Science, A Structured Programming Approach Using C++, B.A.Forouzan and R.F. Gilberg, Thomson

(Effective from July 2011 session for 2011-14 batch onwards)

CS/IT-3501P PRACTICAL (OBJECT ORIENTED PROGRAMMING THROUGH C++)

1. Write a program to find the maximum of three using conditional operator.
2. Write a program to find the largest, second largest and third largest in a givenarray.
3. Write a program to generate Armstrong series.
4. Write a program to find the factorial of a given number.
5. Write a program to generate the Fibonacci series.
6. Write a program to check whether the given number is palindrome or not.
7. Write a program to find the GCD and LCM of two no's.
8. Write a program to print the diagonal elements of matrix.
9. Write a Program to demonstrate use of array of objects.
10. Program to demonstrate use of function overloading.
11. Write a function which accept object as a parameter and returns object.
12. Write a Program to demonstrate the virtual base class.
13. Write a Program to demonstrate use of polymorphism (virtual function).
14. Write a program to overload ++ operator to increment age of person by one month.
15. Write a program to illustrate the use of scope resolution operator.
16. Write a program to find the square root using inline function.
17. Write a program to illustrate the use of friend function.
18. Create two employee objects and display each object's yearly salary.
19. Give each employee a 10% raise and display each Employee's yearly salary again..
20. Write C++ program to create five object of book, get information of book using getdata() function including name, price, publication and author.

SEMESTER - V

EL -3101: MICROPROCESSOR AND INTERFACING

Maximum Marks: 85 **Min Pass Marks: 28**

Unit I : Microprocessor Introduction

Microprocessor architecture and Block diagram, pin out diagram, ALU and Control unit, concept of Fetch Cycle, Execution cycle, machine cycle and instruction cycle.

Unit II: Assembly Language Programming

8085 based instructions, Data Transfer, Arithmetic and Logical Branch I/O and machine control instruction and timing diagram, Stack, Stack pointer, Stack related instruction, code conversion, subroutines, conditional/unconditional call and return instructions.

Unit III: Assembly Language Programs (Interrupts)

Hardware and Software interrupt, Maskable and Non Maskable, vectored and Non vectored interrupt, priority interrupt and interrupt service routine DMA, Memory mapped I/O and I/O mapped I/O techniques, In and Out instruction & Timing diagrams.

Unit IV: Memory Interfacing

RAM, ROM, EPROM, Memory interface, Interfacing ROM, 2Kx8, 4Kx8, Interfacing. RAM 2Kx8 and 4Kx8. Timing diagram for memory read and memory write Instruction and T Cycle.

Unit V: Peripheral Interfacing

Interfacing peripheral devices, programmable, peripheral, interface, 8255 – Internal architecture, control register and control word 8255. Functional description-Operational programming in mode 0, mode 1 and mode 2.

BOOKS RECOMMENDED :

1) Digital Computer Electronics : Malvino
2) Microprocessor Architecture, Programming and Applications with 8085: R.S. Gaonkar

SEMESTER - V

EL 3102 : Practical

Using Microprocessor 8085:-

1. Addition and Subtraction of 8 bit Numbers.
2. Addition and Subtraction of 16 bit Numbers.
3. Addition of 8 bit numbers in BCD Code.
4. Addition of two string of numbers placed in memory location.
5. Multiplication and Division of 8 bit and 16 bit numbers.
6. Find the Largest and Smallest number from a given set of numbers loaded in the memory.
7. To arrange the numbers in Ascending and Descending order.
8. Find 1's & 2's Complement of Numbers.
9. Block Data Transfer in Memory.
10. Display 'HELP'
11. Interfacing of Peripheral IC 8255 with 8085 Microprocessor.

उच्च शिक्षा विभाग, म.प्र. शासन

बी.एससी / बी.ए. कक्षाओं के लिये एकल प्रश्नपत्र प्रणाली सेमेस्टर के अनुसार पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित

Department of Higher Education, Govt. of M.P.

Single Paper System Semester wise syllabus

B.Sc./ B.A. V Semester

Recommended by central Board of studies

Name of the Paper	Theory (M.M.)	Minimum Passing Marks in Theory	C.C.E. (M.M.)	Minimum Passing Marks in C.C.E.	Practical MM	Minimum Passing Marks	Total
Linear Algebra, Numerical Analysis	125	42	25	8	---	---	150

Note: There will be three sections in the question paper. All questions from each section will be compulsory.

Section –A (20 marks.) will contain 10 objective type questions, two from each unit, with the weightage of 2 marks.

Section –B (35 marks.) will contain 5 short answer type questions (each having internal choice), one from each unit having 7 marks.

Section –C (70 marks.) will contain 5 long answer type questions (each having internal choice), one from each unit, having 14 marks.

There should be 12 teaching periods per week for Mathematics like other Science Subject

(6 Period Theory + 6 Period Practical)

उच्च शिक्षा विभाग, म.प्र. शासन

बी.एससी./बी.ए. कक्षाओं के लिये एकल प्रश्नपत्र प्रणाली सेमेस्टर के अनुसार पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित

Department of Higher Education , Govt. of M.P.

B.Sc./ B.A. Single Paper System Semester wise syllabus

Recommended by central Board of studies

सत्र / Session : 2016-17

Max. Marks/ अधिकतम अंक : 125

Class/ कक्षा : B.Sc. /B.A.

Semester/ सेमेस्टर : V

Subject / विषय : Mathematics

Title / शीर्षक : Linear Algebra, Numerical Analysis

Note: Scientific Calculator will be allowed in the examination of this paper.

Particulars/ विवरण :

Unit-I	Definition and examples of vector spaces, subspaces, Sum and direct sum of subspaces, Linear span, Linear dependence, independence and their basic properties, Basis, Finite dimensional vector spaces, Existence theorem for basis, Invariance of the number of elements of a basis set, Dimension, Dimension of sums of vector subspaces.
इकाई–1	सदिश समष्टि की परिभाषा एवं उदाहरण, उपसमष्टि, उपसमष्टियों का योग एवं सीधा योग, रैखिक विस्तृति, रैखिक आश्रितता, स्वतंत्रता एवं उनके मूल गुणधर्म, आधार, परिमित विमीय सदिश समष्टियॉं, आधार का अस्तित्व प्रमेय, आधार समुच्चय में अवयवों की संख्या की अपरिवर्तनशीलता, विमा, सदिश उपसमष्टियों के योग की विमा ।
Unit-2	Linear transformations and their representation as matrices, The algebra of linear transformations, The rank- nullity theorem, Eigen values and eigen vectors of a linear transformation, Diagonalisation, Quotient space and its dimension.
इकाई–2	रैखिक रूपांतरण एवं उनका आव्यूह निरूपण, रैखिक रूपांतरणों का बीज गणित, जाति शून्यता प्रमेय, रैखिक रूपांतरणों के आयगन मान एवं आयगन सदिश, विकर्णीकरण, विभाग समष्टि एवं

	उसकी विधा।
Unit-3	Approximations, Errors and its types, Solution of Equations: Bisection, Secant, Regula Falsi, Newton- Raphson Method and their order of convergence, Roots of second degree Polynomials, Interpolation: Lagrange interpolation, Divided Differences, Interpolation formulae using Differences and derivations of Interpolation formula.
इकाई–3	सन्निकटन, त्रुटियाँ एवं उसके प्रकार, समीकरणों के हल: द्विभाजन, सीकेन्ट, रेगुला फालसी तथा न्युटन–रॉफसन विधि एवं उसकी अभिसिन्नता की कोटि, द्वितीय घात बहुपदों के मूल । अन्तर्वशन: लग्रांजे अन्तर्वशन, विभाजित अन्तर, अन्तर के उपयोग से अन्तर्वशन सूत्र एवं अन्तर्वशन सूत्रों की उत्पत्ति ।
Unit-4	Linear Equations: Direct Methods for Solving Systems of Linear Equations, Gauss elimination, Gauss Jordan Method, LU Decomposition, Cholesky Decomposition, Iterative Methods: Jacobi Method , Gauss - Seidel Method, Relaxation Method, Methods Based on Numerical Differentiation.
इकाई–4	रैखिक समीकरण : रैखिक समीकरणों के निकाय को हल करने की प्रत्यक्ष विधियां ;गाउस विलोपन, गाउस जार्डन विधि, एल यू वियोजन, चोलेस्की वियोजनद्ध, पुनरावृती विधियां ;जेकोबी विधि, गाउस सिडेल विधि, रिलेक्सेशन विधि, संख्यात्मक अवकलन पर आधारित विधियां ।
Unit-5	Ordinary Differential Equations: Euler Method, Eulers Modified Method, Single-step Methods, Runge-Kutta's Method, Multi-step Methods, Milne Method, Numerical Quadrature, Newton-Cote's Formulae, Gauss Quadrature Formulae, Methods Based on Numerical Integration with their derivation.
इकाई–5	साधारण अवकल समीकरण: आयलर विधि, आयलर संशोधित विधि, एकल चरण विधि, रुंग–कुटटा विधि, बहुचरण विधि, मिलने विधि, संख्यात्मक क्षेत्रकलन, न्युटन कोट्स सूत्र, गाउस क्षेत्रकलन सूत्र, संख्यात्मक समाकलन पर आधारित विधियॉ एवं उनकी उत्पत्ति ।

Text Books :

1. K. Hoffman and R. Kunze, Linear Algebra, 2nd Edition. Prentice Hall Englewood Cliffs, New Jersey.1971.
2. C E Frooerg. Introduction to Numerical Analysis, (Second Edition L Addison-Wesley - 1979,
3. M K Jain, S.R.K. Iyengar, R. K. Jain. Numerical Methods Problems and Solutions, New Age International (P)Ltd. 1996.

Reference Book:-

1. E. Balaguruswamy- Numerical Method Tata Mc Graw_ Hill Pub.Com. New Yark
2. K.B. Datta. Matrix and Linear Algebra, Prentice hall of India Pvt Ltd., New Delhi, 2000.
3. S.K. Jain, A. Gunawardena & P.B. Bhattacharya. Basic Linear Algebra with MATLAB Key college Publishing (Springer-Verlag) 2001
4. S. Kumarsaran, Linear Algebra, A Geometric Approach Prentice – Hall of India, 2000

Department of Higher Education, Govt. of M.P.
Under Graduate Semester wise Syllabus
As recommended by Central Board of Studies and approved by the Governor of M.P.

उच्च शिक्षा विभाग, म.प्र. शासन
स्नातक कक्षाओं के लिए सेमेस्टर अनुसार पाठ्यक्रम
केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित

w.e.f. Session 2016-17

Class	:	B.A./B.Sc./B.Com./B.H.Sc. III Year
Semester	:	V
Subject	:	Foundation Course (आधार पाठ्यक्रम)
Paper	:	I
Title of Paper	:	**नैतिक मूल्य और भाषा** (Moral Values & Language)
Compulsory/ Optional	:	Compulsory
Max. Marks	:	85 (Moral Education- 15, Hindi- 35, English- 35)

Particulars

Part - A

Unit – 1	**नैतिक मूल्य** विश्व के प्रमुख धर्म एवं महत्वपूर्ण विशेषताएं 1. हिन्दू धर्म 2. जैन धर्म 3. बौद्ध धर्म 4. ईसाई धर्म 5. इस्लाम धर्म 6. सिक्ख धर्म	15
Unit – 2	**हिन्दी भाषा** 1. पृथ्वी क्रोध में है (पर्यावरणीय निबंध) – प्रभाकर श्रोत्रिय 2. मेरे सहयात्री (यात्रा वृत्तांत) – अमृतलाल बेगड़ 3. कक्षा और अध्यापक (लेख) – डॉ. विजयबहादुर सिंह 4. दूरदर्शन : अतीत और वर्तमान (संकलित) 5. लोकोक्तियाँ एवं मुहावरें (संकलित)	17
Unit- 3	**हिन्दी भाषा** 1. जनसंचार के माध्यम (प्रिंट, इलेक्ट्रानिक एवं सोशल मीडिया) (संकलित) 2. पत्रकारिता के विविध आयाम (संकलित) 3. कम्प्यूटर – हमारी जरूरत (संकलित) 4. राजभाषा हिन्दी (संकलित) 5. अनुवाद कला (संकलित)	18
	Part - B	
Unit- 4	**English Language** 1. O Captain! My Captain : Walt Whitman 2. The Last Leaf : O Henry 3. The Axe : R.K. Narayan 4. Water : Dr. C.V. Raman	17
Unit- 5	**English Language** Guided composition, Paragraph writing & Article writing on a given topic, Meaning & importance of translation **Basic language skills :** One word substitution, Homonyms, Homophone, words that confuse and punctuation Marks.	18

* सैद्धान्तिक परीक्षा हेतु उपरोक्तानुसार 85 (15+35+35) अंक और आन्तरिक मूल्यांकन (सीसीई) हेतु पृथक से 15 (5+5+5) अंक निर्धारित है।

Department of Higher Education, Government of M.P.
Semester wise syllabus for under graduate classes
As recommended by central board of studies and
Approved by HE the Governor of M.P.
With effect from: **Session 2016-17**

Class	-	**B.A./B.Sc./B.Com./B.H.Sc.**
Subject	-	**Foundation Course**
Paper	-	**Paper-II**
Paper Title	-	**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/Graphic, Sound and Network Interface), Ports (USB, Serial and Parallel, Network), SMPS.

Unit III: STORAGE DEVICES

Magnetic Tape, Cartridge Tape, Data Drives, 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 idea):

(i) ***Windows 7 & 8:*** Desktop, Control Panel; Saving, Renaming, Moving, Copying & Searching files & folders, Restoring from Recycle Bin. Creating Shortcut, Establishing Network Connections.

*(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: Microsoft Office, 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.

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Department of Higher Education, Government of M.P.
Semester wise syllabus for under graduate classes
As recommended by central board of studies and
Approved by HE the Governor of M.P.
With effect from: **Session 2016-17**

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

Note: ***No separate external practical examination will be conducted.***

Topics to be covered under practical for CCE

Max. Marks: 15

Minimum laboratory timing of two hours per week per batch will be allotted.

a) **Know your computer:**
- Input / Output devices and their connections with CPU.
- Identify different ports.
- Identify types of RAM & its Capacity.
- Identify different types of cards.
- Identify different types of connecting cables and their connections.
- Identification of Network & Wireless devices.

b) **DOS:**
- Internal & external DOS commands.
- Searching files & directories using wildcard characters.
- Creating & editing simple batch (.BAT) file.

c) **Windows 7/8/8.1:**
- Desktop setting: Customizing of Desktop, Screen saver, background settings.
- Creating folder using different options.
- Creating shortcut of files & folders.
- Control panel utility.

d) **MS-Word:**
- **Features of MS Word:** Office Button, Customize Ribbon, Quick Access Toolbar.
- **Creating file:** Save & Save as HTML, Text, Template, RTF format, etc.
- **Page setup:** Margin settings, paper size setting & page layout.
- **Editing:** Use of cut, copy, paste, paste special, undo, redo, find, replace, goto, spellcheck, *etc*.
- **View Menu:** Views (Read Mode, Outline, Print Layout, Web Layout, Draft Layout); Show (Ruler, Gridlines, Navigation Pane); Zoom; Split.
- **Insert:** Page break, page number, symbol, date & time, auto text, object, hyperlink, picture, equation, header, footer, footnote, etc.
- **Format:** Font, Paragraph, Bullets & Numbering, Border & shading, Change case, Columns, text color, Inserting text using IME fonts (Unicode), etc.

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Class – **बी.ए./बी.एस-सी./बी.कॉम./बी.एच.एस-सी.**
Subject – **आधार पाठ्यक्रम**
Paper – **द्वितीय**
Paper Title – **कंप्यूटर के मूल तत्व एवं सूचना प्रौद्योगिकी - प्रथम**
Semester – **पंचम (V)**

अधिकतम अंक **– 35**

इकाई-I: कंप्यूटर का परिचय

कंप्यूटर प्रणाली के मूल संगठन: ब्लॉक आरेख एवं कार्य (केंद्रीय प्रोसेसिंग इकाई, निवेशी/निर्गत इकाई, भण्डारण इकाई); अभिलक्षण; क्षमताएँ एवं सीमाएँ।

कंप्यूटिंग युक्तियों के प्रकार: डेस्कटॉप, लैपटॉप एवं नोटबुक, हैण्डहेल्ड, स्मार्ट-फ़ोन, टेबलेट पीसी, सर्वर, वर्कस्टेशन एवं इनके अभिलक्षण।

प्राथमिक स्मृति एवं उसके प्रकार: RAM (DRAM, SRAM, DDR, RDRAM एवं EDORAM); ROM, PROM, EPROM, EEPROM; कैश स्मृति।

इकाई-II: परिधीय उपकरण (Peripheral Devices)

निवेशी युक्तियाँ: कुंजीपटल, माउॅस, ट्रैकबॉल, जॉयस्टिक, डिजीटाईज़र अथवा ग्राफ़िक टेबलेट, स्कैनर, डिजिटल कैमरा, वेब कैमरा, MICR, OCR, OMR, बारकोड रीडर, ध्वनि अभिज्ञान युक्तियाँ, लाइट-पेन एवं टच-स्क्रीन।

निर्गत युक्तियाँ: प्रदर्शन युक्तियाँ (CRT, TFT, LCD, LED, मल्टीमीडिया प्रोजेक्टर), विडियो मानक: VGA, SVGA, XGA आदि; आघात प्रिंटर (डेज़ीव्हील, डॉट-मैट्रिक्स एवं लाइन प्रिंटर); गैर-आघात प्रिंटर (इंकजेट, लेज़र एवं थर्मल); प्लॉटर्स (ड्रम एवं फ्लैट-बेड); स्पीकर्स।

कार्ड्स, पोर्ट्स एवं एस.एम.पी.एस. का सामान्य परिचय: विस्तार कार्ड (प्रदर्शन/दृश्य/ग्राफिक, ध्वनि एवं नेटवर्क इंटरफ़ेस); पोर्ट्स (यूएसबी, श्रेणीक्रम एवं समानान्तर, नेटवर्क); एस.एम.पी.एस.।

इकाई-III: भण्डारण युक्तियाँ

चुम्बकीय टेप, कार्ट्रिज टेप, डाटा ड्राइव, हार्डडिस्क ड्राइव (आतंरिक एवं बाह्य), फ्लॉपी डिस्क, CD, VCD, CD-R, CD-RW, जिप ड्राइव, DVD, DVD-RW, यूएसबी फ़्लैश ड्राइव, ब्लू रे डिस्क, स्मृति कार्ड।

उपरोक्त संग्रहण युक्तियों की क्षमता एवं गति के प्रारंभिक ज्ञान के साथ इनका संक्षिप्त विवरण।

इकाई-IV: परिचालन प्रणाली (OS)

परिचालन प्रणाली के कार्य, परिचालन प्रणाली के प्रकार। आई-पैड एवं स्मार्ट-फ़ोन के लिए प्रयुक्त परिचालन प्रणालियों से परिचय।

डॉस, विंडोज एवं लिनक्स परिचालन प्रणालियों का प्रारंभिक ज्ञान।

डॉस के मूल तत्व: FAT, फाइल एवं डायरेक्टरी संरचना एवं उनके नामकरण के नियम, बूटिंग प्रक्रिया, डॉस प्रणाली की फाइलें। डॉस के आतंरिक एवं बाह्य निर्देश।

विन्डोज़ के मूल तत्व (केवल प्राथमिक जानकारी)**:**

(1) **विण्डोज 7 एवं 8:** डेस्कटॉप, कण्ट्रोल पैनल; फाइल एवं फोल्डर का नाम-परिवर्तन, स्थानांतरण, प्रतिलिपिकरण और खोज; रीसायकल-बिन से फाइल एवं फोल्डर की पुन: प्राप्ति; शॉर्टकट बनाना; नेटवर्क कनेक्शन की स्थापना।

(2) **विण्डोज 8.1 की विशेषताएँ:** टच स्क्रीन गुण, टाइल्स, चार्म्स, अनुकूलन (Customization) एवं एप्स (Apps)।

लिनक्स के मूल तत्व:

लिनक्स की विशेषताएँ, लिनक्स को शुरू एवं बंद करना, लिनक्स फाइल एवं डायरेक्टरी से परिचय; Debian, Ubuntu एवं Fedora जैसे मुख्यधारा के लोकप्रिय लिनक्स वितरण के बारे में सामान्य जानकारियाँ।

इकाई-V: पाठ्य सामग्री वाचन एवं संपादन

पोर्टेबल डॉक्यूमेंट फॉर्मेट (pdf) वाचकों की सामान्य जानकारी: एडोब एक्रोबैट, नाइट्रो, पीडीएफ-Xचेंज, इत्यादि।

एप्लीकेशन पैकेजों की सामान्य जानकारी: माइक्रोसॉफ्ट क्रोसॉफ्ट ऑफिस, ओपन-ऑफिस एवं डब्लूपीएस (WPS) ऑफिस का प्रारंभिक ज्ञान।

वर्ड-2007 एवं आगामी संस्करणों द्वारा पाठ्य सामग्री का संपादन एवं फॉर्मेटिंग: टेम्पलेट द्वारा दस्तावेज बनाना, वर्ड फाइल को विभिन्न फाइल फॉर्मेटों में सुरक्षित (save) करना, दस्तावेज का पूर्वावलोकन (preview), दस्तावेज को फाइल अथवा पेज पर मुद्रित करना; दस्तावेज का संरक्षण, चयनित पाठ्य सामग्री का संपादन; पाठ्य सामग्री को जोड़ना, हटाना एवं स्थानांतरित करना।

दस्तावेजों की फॉर्मेटिंग: पेज लेआउट, पैराग्राफ फॉर्मेट, पाठ्य सामग्री एवं पैराग्राफ का संरेखण, बॉर्डर एवं शेडिंग, हैडर एवं फुटर।

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Department of Higher Education, Government of M.P.
Semester wise syllabus for under graduate classes
As recommended by central board of studies and
Approved by HE the Governor of M.P.
With effect from: **Session 2016-17**

Class	:	**बी.ए./बी.एस-सी./बी.कॉम./बी.एच.एस-सी.**
Subject	:	**आधार पाठ्यक्रम**
Semester	:	**पंचम (V)**
Paper	:	**द्वितीय (कंप्यूटर के मूल तत्व एवं सूचना प्रौद्योगिकी - प्रथम)**

टीप: **कोई बाह्य प्रायोगिक परीक्षा आयोजित नहीं की जावेगी |**

<u>सी.सी.ई. के लिए प्रायोगिक कार्य के अंतर्गत सम्मिलित किये जाने विषय-बिंदु</u>

Max. Marks: 15

प्रत्येक बैच हेतु प्रति सप्ताह 2 घंटे का प्रयोगशाला समय आवंटित किया जाना है |

a) अपने कंप्यूटर को जानिए:

- निवेशी/निर्गत युक्तियाँ एवं सी॰पी॰यू॰ के साथ इनका संयोजन।
- विभिन्न पोर्ट्स की पहचान करना।
- विभिन्न प्रकारों की रैम एवं उनकी स्मृति क्षमता की पहचान करना।
- विभिन्न कार्ड्स की पहचान करना।
- विभिन्न कंप्यूटर केबलों की पहचान करना एवं उनको जोड़ना।
- नेटवर्क एवं वायरलेस युक्तियों की पहचान।

b) डॉस:

- आंतरिक एवं बाह्य डॉस निर्देश।
- वाइल्ड कार्ड चिन्हों का प्रयोग कर फ़ाइल एवं डायरेक्ट्रियों को खोजना।
- सरल बैच फ़ाइलों को बनाना एवं उनका सम्पादन करना।

c) विन्डोज़ 7/8/8.1:

- **डेस्कटॉप सेटिंग:** डेस्कटॉप को अनुकूलित करना, स्क्रीन सेवर, पृष्ठभूमि सेटिंग।
- विभिन्न विकल्पों का प्रयोग करते हुए फोल्डर का निर्माण करना।
- फ़ाइल एवं फोल्डर के शॉर्टकट बनाना।
- कंट्रोल पैनल उपयोगिताएं।

d) एम.एस॰ वर्ड:

- **एम.एस. वर्ड की विशेषताएँ:** ऑफिस बटन, कस्टमाइज रिबन, क्विक एक्सेस टूलबार।
- **फ़ाइल निर्माण:** फाइल सुरक्षण; फाइल का एचटीएमएल, टेक्स्ट, टेम्पलेट, आरटीएफ आदि फॉर्मेट में सुरक्षण।

- **पेज सेटअप:** मार्जिन सेटिंग, पेपर साईज़ सेटिंग एवं पेज लेआउट।
- **संपादन:** कट, कॉपी, पेस्ट, पेस्ट स्पेशल, अन-डू, री-डू, फाईंड, रिप्लेस, गो-टू, स्पेल चेक आदि का प्रयोग करना।
- **व्यू मेनू:** व्यूज, (रीड मोड, आउटलाइन, प्रिंट लेआउट, वेब लेआउट, ड्राफ्ट लेआउट); शो (रूलर, ग्रिड लाइन्स, नेविगेशन पेन); ज़ूम; स्प्लिट।
- इन्सर्ट: पेज ब्रेक, पेज नंबर, प्रतीक (symbol), डेट एवं टाइम, ऑटो-टेक्स्ट, ऑब्जेक्ट, हाइपरलिंक, पिक्चर, समीकरण, हैडर, फूटर, फुटनोट आदि।
- फॉर्मेट: फॉन्ट, पैराग्राफ, बुलेट एवं नंबरिंग, बॉर्डर एवं शेडिंग, चेंजकेस, कॉलम, टेक्स्ट कलर, आईएमई फॉण्ट (यूनिकोड) का प्रयोग कर टेक्स्ट का समावेशन आदि।

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CS-3601 Computer Network
Commencing from 2013-14 onwards

UNIT-I
Computer Network, Goals and Applications, Reference models – OSI and TCP/IP A Comparative study, Network hardware – LAN, MAN and WAN and topologies, LAN components – File server, Workstations, Network Adapter Cards, Connection Oriented and Connection less services.

UNIT-II
Data communication system, data communication links, character codes, digital data rates, serial data formats, encoded data formats, error detection & correction Transmission media- guided and unguided media, Switching Techniques – Circuit Switching, Packet Switching, Message Switching.

UNIT-III
Data link protocol, character oriented protocol & bit oriented protocol, network architecture protocols, Ethernet, token bus & token ring.

UNIT-IV
Internet basics: - Elements of the web, viewing web pages with a browser, using a browser for a mail, News and chat, security and privacy issues. Internet: advantage and disadvantage. Internet Services
Web server and proxy server, Web caches, Web browser like Internet Explorer, Netscape Navigator, and Communication Suit, Internet Security issues, Embedded and Software based firewall, Data encryption and Digital Signature and Certificates

UNIT-V
The art of creating the website and home page, The HTML programming basics, Syntax and rules, Tables, Frames, Forms, Example of HTML page, Choice of colour, banners, Linking with HTML page, Div, Span, met tags, span, Introduction to DHTML, JavaScript, Use of JavaScript, JavaScript Syntax, Data type, Variable , Array , Operator and Expressions.

Text Books:

1. Data & Network Communication by Michael A. Miller

Reference Books:

2. Deitel & Deitel, Goldberg, "Internet and World Wide Web – How to Program", Pearson Education Asia, 2001.

3. Computer Networks – A.S. Tanenbaum

(Effective from July 2011 session for 2011-14 batch onwards)

CS-3601P (Practical Exercise on Computer Network)
Commencing from 2013-14 onwards

1. Create a webpage that prints your name to the screen.
2. Create a webpage that print the numbers 1 - 10, each number being a different colour.
3. Print a paragraph with 4 - 5 sentences. Each sentence should be a different font.
4. Print two lists with any information you want. One list should be an ordered list, the other list should be an unordered list.
5. Print a paragraph that is a description of a book, include the title of the book as well as its Author. Names and titles should be underlined, adjectives should be italicized and bolded
6. Print some preformatted text of your choosing
7. Create a page with a link at the top of it that when clicked will jump all the way to the bottom of the page. At the bottom of the page there should be a link to jump back to the top of the page
8. Display an image that has a border of size 2, a width of 200, and a height of 200.
9. Display five different images. Skip two lines between each image. Each image should have a title
10. Display an image that when clicked will link to a search engine of your choice
11. Add a simple table to for storing Train information (Train No, Name, Source, Destination, Time) without borders. Do the following
    1. Add border value of 1, save and view.
    2. Add a border value of 5, save and view.
    3. Make the top row a table header, save and view.
    4. Align all data elements to the middle of their cells, save and view.
    5. Divide Time into Departure Time, Arrival Time.
12. Write a JavaScript, which calculate sum or product depending on the drop down menu selection of two numbers, accepted using textbox and display the result in the third textbox. The action performs on click event on button.
13. Write a JavaScript which displays current date and time when page loads.
14. Write a JavaScript that prompts the user for his or her name as the page load (via dialog box) and then welcome the user by name in the body of the page.
15. Create a Webpage using two image files, which switch between one another as mouse pointer mover over the images.
16. Write a JavaScript, which calculate factorial a number, accepted using textbox and display the result in second textbox. The action performs on click event on button.
17. Write a JavaScript which reverse the number accepted in textbox.
18. Create a HTML form that has number of textboxes like First Name, Last Name, Address and Pincode. Write a JavaScript code to verify following on click event of a button:
    1. Pop Up an alert indicating which textbox has left empty and set focus on that specific textbox.
    2. Give message "Thank You" if all text boxes are filled
    3. Pop Up an alert message if text within Pin code is not numeric value and greater than 6 digits and set focus on it till it is given proper value.

(Effective from July 2011 session for 2011-14 batch onwards)

SEMESTER VI

EL -3201: ELECTRONICS COMMUNICATION & INSTRUMENTATION

Maximum Marks: 85 **Min Pass Marks: 28**

Unit I : Measuring Instruments

Measurement and Error Definition, accuracy and precision, Types of errors, probability of errors, limiting errors. PMMC mechanism, DC Voltmeter, Ammeter sensitivity, series and shunt type ohm meter, multimeter or VOM.

True RMS voltmeter Digital voltmeter: Rectifier – amplifier and amplifier – Rectifier type.

Unit II: Bridges & Transducers

DC and AC Bridges, Wheat stone Bridge, Kelvin Bridge, Maxwell Hay, Schering, Wien Bridges, Cathode ray oscilloscope, Block diagram, Basic operation, Transducers and their classification, strain gauge and displacement transducer.

Unit III: Amplitude Modulation and Demodulation

Definition of AM and Detection of AM, Modulation index, power in AM wave, linear and square law modulation technique, Numerical problems.

Definition of Amplitude Demodulation Generation and detection of amplitude demodulation, linear diode detection, choice of RC, Numerical problems

Unit IV: Frequency Modulation and Demodulation

Definition of frequency modulation, modulation index, frequency spectrum of frequency, frequency modulation wave, direct and indirect method of FM, Pre-emphasis and de-emphasis.

Frequency demodulation: Foster seeley and phase locked loop. Numerical problem related to FM demodulation.

Unit V: Digital Modulation

Pulse code modulation (PCM), Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK)

BOOKS RECOMMENDED :

1) B.P. Lathi : Modern Digital and Analog Communication Systems.
2) Schaum Series: Analog and Digital Communication
3) A.K. Sawhney: Electrical and Electronic Measurements and Instrumentation.

w.e.f. 2011-14 Batch Onwards

SEMESTER - VI

EL 3202 : Practical

1. Study of AM Modulation and Demodulation.
2. Study of FM Modulation and Demodulation.
3. Study of PCM Modulation and Demodulation.
4. Study of Phase Locked Loops 565 and 566.
5. Study of CRO(Block Diagram of Internal Circuit of CRO, Measurement of Phase Difference between two waveforms , Frequency , Average DC and Peak Voltage Measurements for Sine, Triangular and Square Waves).
6. Study of Strain Gauge Characteristics
7. Study of LVDT Characteristics.
8. Study of Kelvin Bridge.
9. Study of Maxwell Bridge.
10. Study of Wien Bridge.

उच्च शिक्षा विभाग, म.प्र. शासन

बी.एससी / बी.ए. कक्षाओं के लिये एकल प्रश्नपत्र प्रणाली सेमेस्टर के अनुसार पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित

Department of Higher Education, Govt. of M.P.

Single Paper System Semester wise syllabus

B.Sc./ B.A. VI Semester

Recommended by central Board of studies

Name of the Paper	Theory (M.M.)	Minimum Passing Marks in Theory	C.C.E. (M.M.)	Minimum Passing Marks in C.C.E.	Practical MM	Minimum Passing Marks	Total
Real Analysis, Discrete Mathematics and Optionals	125	42	25	8	---	---	150

Note: There will be three sections in the question paper. All questions from each section will be compulsory.

Section –A (20 marks.) will contain 10 objective type questions, two from each unit, with the weightage of 2 marks.

Section –B (35 marks.) will contain 5 short answer type questions (each having internal choice), one from each unit having 7 marks.

Section –C (70 marks.) will contain 5 long answer type questions (each having internal choice), one from each unit, having 14 marks.

There should be 12 teaching periods per week for Mathematics like other Science Subject

(6 Period Theory + 6 Period Practical)

Optional unit should be different from the main subject/paper studied during Semester I to Semester VI.

उच्च शिक्षा विभाग, म.प्र. शासन

बी.एससी./बी.ए. कक्षाओं के लिये एकल प्रश्नपत्र प्रणाली सेमेस्टर के अनुसार पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित

Department of Higher Education , Govt. of M.P.

B.Sc./ B.A. Single Paper System Semester wise syllabus

Recommended by central Board of studies

सत्र / Session : 2016-17

Max. Marks/ अधिकतम अंक	:	125
Class/ कक्षा	:	B.Sc. /B.A.
Semester/ सेमेस्टर	:	VI
Subject / विषय	:	Mathematics
Title / शीर्षक	:	Real Analysis, Discrete Mathematics and Optionals
Compulsory / अनिवार्य या Optional /वैकल्पिक	:	Compulsory/Optional

: Particulars/ विवरण :

Unit-I	Riemann integral, Algebra of Riemann integrable functions, Integrability of continuous and monotonic functions, The fundamental theorem of integral calculus, Mean value theorems of integral calculus
इकाई–1	रीमान समाकल, रीमान समाकलनीय फलनों का बीज गणित, सतत एवं एकदिष्ट फलनों की समाकलनीयता, समाकलन का मूलभूत प्रमेय, समाकलनों के माध्यमान प्रमेय।
Unit-2	Definition and examples of metric spaces, Neighbourhoods, Limit points, Interior points, Open and closed sets, Closure and interior, Boundary points, Subspace of a metric space, Cauchy sequences, Completeness, Cantor's intersection theorem, Contraction principle, Real numbers as a complete ordered field, Definition of Continuous functions and its illustrations.
इकाई–2	दूरीक समष्टि की परिभाषा एवं उदाहरण, सामीप्य, सीमा बिन्दु, अंतः बिन्दु, विवृत्त एवं संवृत समुच्चय, संवरणक एवं अभ्यंतर, परिसीमा बिन्दु, दूरीक समष्टि की उप समष्टि, कौशी अनुक्रम, पूर्णता, केन्टर का सर्वनिष्ठ प्रमेय, संकुचन सिद्धांत, पूर्ण क्रमित क्षेत्र के रूप में वास्तविक संख्यायें,

	सतत फलन की परिभाषा एवं उसके उदाहरण।
Unit-3	Algebra of Logic, Tautologies and Contradictions, logical equivalence, Algebra of propositions, Quantifiers: Universal and Existential Quantifiers, Boolean Algebra and its properties, Demorgan's law, Algebra of Electric circuits and its applications.
इकाई–3	तर्क का बीज गणित, पुनरूक्तियों तथा विरोध का पुनरावलोकन, तार्किक तुल्यता, साध्यों का बीजगणित, प्रमात्रीकारक: आस्तित्व प्रमात्रीकारक एवं सार्व प्रमात्रीकारक, बूलीय बीजगणित एवं उसके गुणधर्म, डी–मार्गन नियम, वैद्युत परिपथों का बीजगणित एवं उनके अनुप्रयोग।
Unit-4	Boolean Function, Disjunction and Conjunction Normal Forms, Bools Expansion Theorem. Binary Relations, Equivalence Relations, Partitions and Partial Order Relation.
इकाई–4	बूलीय फलन, वियोजनीय एवं संयोजनीय प्रसामान्य रूप, बूल का प्रसार प्रमेय द्विचर संबध, तुल्यता संबध, विभाजन एवं आंशिक क्रम संबधं।
	Optional **This unit should be different from the main subject/paper studied during Semester I to Semester VI.**
	Graph Theory
Unit-5	Graphs, Multigraphs, Weighted Graphs, Paths and Circuits, Shortest Paths: Dijkstra's Algorithm, Matrix Representation of Graph: Incidence and Adjacency Matrix, Trees and its simple properties.
इकाई–5	ग्राफ, बहुग्राफ, भारित ग्राफ, पथ एवं परिपथ, लघुतम पथ : डाइजक्स्त्रा एल्गोरिथम, ग्राफ का आव्यूह निरूपण: इन्सीडेंस एवं एडजेसेन्सी आव्यूह, वृक्ष एवं उसके सामान्य गुणधर्म।
	Or/ अथवा
	Elementary Statistics
Unit-5	Probability, Continuous probability, probability density function and its applications (for finding the mean, mode, median and standard deviation of various continuous probability distributions) Mathematical expectation, expectation of sum and product of random variables, Moment generating functions, Theoretical distribution: Binomial, Poisson distributions and their properties and uses.

इकाई–5	प्रायिकता, सतत प्रायिकता, प्रायिकता घनत्व फलन तथा उनके अनुपयोग (सतत प्रायिकता बंटन के लिये माध्य, बहुलक,माध्यिका तथा मानक विचलन ज्ञात करने के लिये) गणितीय प्रत्याशा, यादृच्छिक चरों के योग एवं गुणन की प्रत्याशा, आघूर्ण जनक फलन, सैद्धांतिक बंटनः द्विपद, पॉयज़न बंटन तथा उसके गुणधर्म एवं उपयोग ।
Or/ अथवा	
PRINCIPLES OF COMPUTER SCIENCE	
Unit-5	Data Storage of bits Ram Memory. Mass storage. Coding Information of Storage. The Binary System Storing integers fractions, communication errors. Data Manipulation – The Central Processing Unit The Store Program concept. Programme Execution, Anthmetic/Logic Instruction. Computer-Peripheral Communication. Operation System : The Evolution of Operating System. (Dos, Window) Operating System Architecture. Coordinating the Machine's Activities. Other Architectures.
इकाई–5	बीटों का डेडास्टोरेज , रेम स्मृति। वृहद भण्डारण की कटू कृत सूचना। बायनरी सिस्टम। पूर्णांक, भिन्नाक का भण्डारण, संचारण त्रुटियां डाटा मेन्यूपूलेशन – सेन्ट्रल प्रोसेसिंग यूनिट, भण्डारित प्रोग्राम अभिधारणा। प्रोग्राम का संचालन। गणितीय/तार्किक निर्देश। कम्प्यूटर–सह उपकरण (पेरीफेरल्स) के मध्य संचार। ऑपरेटिंग सिस्टमः का उद्भव (Dos, Window) आपरेटिंग सिस्टम आर्किटेक्चर कम्प्यूटर मशीन की गतिविधियों का समन्वयन। अन्य आर्किटेक्चर।
Or/ अथवा	
MATHEMATICAL MODELING	
Unit-5	The process of Applied Mathematics. Setting up first order differential equations. Qualitative solution sketching. Stability of solutions. Difference and differential equation models of growth and decay. Single species population model, Exponential and logistic population models.
इकाई–5	प्रयुक्त गणित की विधि। प्रथम कोटि अवकल समीकरण की स्थापना। गुणात्मक हल चित्रण। हलो का स्थायित्व। अंतर एवं अवकल समीकरण मॉडल विकास एवं श्रय। एकल एपाइसेस पॉपूलेशन मॉडल, एक्सापोनेंशियल एवं लॉजिस्टिक पापूलेशन मॉडल्स

Text Books :

1. R.R Goldberg, Real Analysis, Oxford & IBH Publishing Co., New Delhi, 1970.
2. G.F. Simmons. Introduction to Topology and Modem Analysis. McGraw-Hill, 1963.

3. T.M Apostol, Mathematical Analysis. Norosa Publishing House. New Delhi, 1
4. C.L. Liu,Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, Computer Science series 1986.
5. म.प्र हिन्दी ग्रंथ अकादमी की पुस्तकें ।

Reference Books:

1. T.M Apostol, Mathematical Analysis. Norosa Publishing House. New Delhi, 1985.
2. S. Lang. Undergraduate Analysis, Springer-Veriag, New York, 1983.
3. D. Somasundaram and B. Choudhary, A first Course in Mathematical Analysis. Narosa Publishing House, New Delhi 1997.
4. Shanti Narayan, A Course of Mathematical Analysis. S. Chand & Co. Delhi.
5. RK. Jain and S.K. Kaushik, An introduction to Real Analysis, S. Chand & Co., New Delhi 2000.
6. P.K. Jain and K. Ahmed Metric Spaces, Narosa Publishing House, New Delhi, 1996.
7. S. Lang, Undergraduate Analysis, Springer-Verlag, New York 1983.
8. E.T. Copson, Metric Spaces, Cambridge University Press, 1968
9. S. Lang. Undergraduate Analysis, Springer-Veriag, New York, 1983.

Optional Papers

1. Graph Theory

Text Book:

1. Narsingh Deo : Graph Theory, McGraw Hill.
2. म.प्र हिन्दी ग्रंथ अकादमी की पुस्तकें ।

2.Elementary Statistics

Text Book:

1. Statistics by M. Ray
2. Mathematical Statistics by J.N Kapoor, H.C Saxena (S. Chand)
3. म.प्र. हिन्दी ग्रंथ अकादमी की पुस्तकें।

References Book:

1. Fundamentals of Mathematical Statistics, Kapooor and Gupta

3.Principles of Computer Science

Text Book:

1. J. Glen Brokkshear, Computer Science: An Overview, Addition- Wesley.
2. Stanley B. Lippman, Josee Jojoie. C++ Primer)3rd Edition), Addision- Wesley

Total at least ten practicals

3. म.प्र. हिन्दी ग्रंथ अकादमी की पुस्तकें।

4. Mathemetical Modeling

Text Book:

1. Kapoor, J.N. : Mathematical models in Biology and Medicine. EWP (1985)
2. SAXENA V.P. : Bio-Mathematical an introduction, M.P. Hindu Growth Aradamy 1993
3. Martin Braun C.S. Coleman, DA Drew (Eds.) Differential Equation Models.
4. Steven J.B. Lucas W.P., Straffin B.D. (Eds.) Political and Related Models, Vol. 2
5. म.प्र. हिन्दी ग्रंथ अकादमी की पुस्तकें।

Reference Book:

1. Cullen Linen Models in Biology.
2. Rubinoe, SI : Introduction yo Mathematical Biology. John Wiley and Sons 1975.

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Department of Higher Education, Govt. of M.P.
Under Graduate Semester wise Syllabus
As recommended by Central Board of Studies and approved by the Governor of M.P.

उच्च शिक्षा विभाग, म.प्र. शासन
स्नातक कक्षाओं के लिए सेमेस्टर अनुसार पाठ्यक्रम
केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित

w.e.f. Session 2016-17

Class	:	B.A./B.Sc./B.Com./B.H.Sc.III Year
Semester	:	VI
Subject	:	Foundation Course (आधार पाठ्यक्रम)
Paper	:	I
Title of Paper	:	**नैतिक मूल्य और भाषा** (Moral Values & Language)
Compulsory/ Optional	:	Compulsory
Max. Marks	:	85 (Moral Education- 15, Hindi- 35, English- 35)

Particulars

Part - A

Unit – 1	**नैतिक मूल्य** 1. सत्य के साथ मेरे प्रयोग (महात्मा गांधी की आत्मकथा का संक्षिप्त संस्करण)	15
Unit – 2	**हिन्दी भाषा** 1. आत्म निर्भरता (वैचारिक निबंध) – पंडित बालकृष्ण भट्ट 2. गूलर का फूल (एक अरण्य कथा) – कुबेरनाथ राय 3. मध्यप्रदेश की लोक कलाएँ (संकलित) 4. मध्यप्रदेश का लोक साहित्य (संकलित) 5. पत्र लेखन – प्रारूपण, टिप्पण, आदेश, परिपत्र, ज्ञापन, अनुस्मारक (संकलित)	17
Unit- 3	**हिन्दी भाषा** 1. पूछो न प्रात की बात आज (चिंतनपरक) – रमेशचन्द्र शाह 2. गेहूँ और गुलाब (वैचारिक निबंध) – रामवृक्ष बैनीपुरी 3. दूरभाष और मोबाइल (संकलित) 4. मध्यप्रदेश की चित्रकला, मूर्तिकला एवं स्थापत्य कला (संकलित) 5. हिन्दी की शब्द सम्पदा (संकलित)	18
	Part - B	
Unit- 4	**English Language** 1. Stopping by Woods On a Snowy Evening : Robert Frost 2. Communication Education and Information Technology : K. Adudiopillai 3. The Gift of Magi : O Henry 4. The Cherry Tree : Ruskin Bond	17
Unit- 5	**English Language** Translation of a short passage from Hindi to English and English to Hindi Communication through social media Preparation of power point presentation **Basic language skills :** Correction of common errors in the sentence structure, use of tense, prepositions, verbs, adverbs, nouns, pronouns and articles. Short essay on a given topic. Expansion of idea and summary writing.	18

* सैद्धान्तिक परीक्षा हेतु उपरोक्तानुसार 85 (15+35+35) अंक और आन्तरिक मूल्यांकन (सीसीई) हेतु पृथक से 15 (5+5+5) अंक निर्धारित है।

Class – **B.A./B.Sc./B.Com./B.H.Sc.**
Subject – **Foundation Course**
Paper – **Paper - II**
Paper Title – **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 & Variants.
- *Working with slides:* New slide, move, copy, delete, duplicate, slide layouts, Presentation views.
- *Format Menu:* Font, Paragraph, Drawing & 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 old 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.

Unit-III: MS Excel

- *Workbook & Worksheet Fundamentals:* Concept of Row, Column & Cell; Creating a new workbook through blank & template.
- *Working with worksheet:* Entering data into worksheet (General, Number, Currency, Date, Time, Text, Accounting, etc); Renaming, Copying, Inserting, deleting & protecting worksheet.
- Working with Row & Column (Inserting, Deleting, Pasting, Resizing & Hiding), Cell & Cell formatting, Concept of Range.
- *Charts:* Preparing & editing different types of Charts, Inserting trendline, Backward & forward forecasting.
- *Working with formulas:* Formula bar; Types of functions; Syntax & uses of the following functions: SUM, TOTAL, COUNT, AVERAGE, MAX, MIN, ROUND & IF.

Unit-IV: Internet & Web Services

- *Internet:* World Wide Web, Dial-up connectivity, leased line, VSAT, Broad band, Wi-Fi, URL, Domain name, Web Browser (Internet Explorer, Firefox, Google Chrome, Opera, UC browser, *etc.*); Search Engine (Google, Bing, Ask, *etc*.); *Website:* Static & Dynamic; Difference between Website & Portal.
- *E-mail:* Account Opening, Sending & Receiving Mails, Managing Contacts & Folders.
- *Basics of Networking:* Types of Networks (LAN, WAN, MAN); Network Topologies (Star, Ring, Bus, Hybrid).
- Elementary idea of - Cloud Computing & Office Web Apps, Mobile Computing & Mobile Apps.

Unit-V: Cyber Ethics, Security & Privacy

- Email, Internet & Social Networking Ethics
- Types of viruses & antivirus
- Computer security issues & its protection through Firewall & antivirus
- Cyber Policies, Intellectual Property Rights (IPR), Violation of Copyright & Redressal.
- Making secured online transactions.

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Department of Higher Education, Government of M.P.
Semester wise syllabus for under graduate classes
As recommended by central board of studies and
Approved by HE the Governor of M.P.
With effect from: **Session 2016-17**

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

Note: ***No separate external practical examination will be conducted.***

Topics to be covered under practical for CCE

Max. Marks: 15

Minimum laboratory timing of two hours per week per batch will be allotted.

(a) MS-Excel:

- *Features of MS Excel:* Office Button, Customize Ribbon, Quick Access Toolbar.
- Creating new workbook using blank & template format; inserting new sheet in a workbook; renaming of sheet, move, copy & protect sheet.
- Page layout: Margins, Orientation, Size, Print area, Print titles.
- Format Cell: Number, Alignment, Font, Border, Fill & Protection.
- Charts: Column, Bar, Pie, Line, Area, X-Y (scatter), Stock. Use of Trendline & Forecasting in charts.
- Data: Sorting and Filter.
- Functions: SUM, TOTAL, COUNT, AVERAGE, MAX, MIN, ROUND, IF, *etc.*

(b) MS-PowerPoint:

- *Features of MS PowerPoint:* Office Button, Customize Ribbon, Quick Access Toolbar.
- Creating new slide, formatting slide layout, Slide Show & Slide Sorter, Inserting new slide, slide number, date, time, chart, formatting slide.
- Use of transition & animation in presentation.
- Setup slide show and use of rehearse timing.

(c) Internet & Email:

- Understanding of a dial-up/broadband connection.
- Opening new e-mail account (Gmail, Yahoo, Rediffmail, *etc*).
- Understanding of e-mail structure.
- Managing contacts and folders of an e-mail account.
- Send and receive e-mail (Downloading/Uploading of attachments).
- Sharing of files, Images & Videos through e-mail, Skype, Skydrive & Cloud.
- Managing safe email account through mobile/smartphone.
- Normal and advanced searching, use of filters in searching of any content on Internet.

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Class	–	**बी.ए./बी.एस-सी./बी.कॉम./बी.एच.एस-सी.**
Subject	–	**आधार पाठ्यक्रम**
Paper	–	**द्वितीय**
Paper Title	–	**कंप्यूटर के मूल तत्व एवं सूचना प्रौद्योगिकी - द्वितीय**
Semester	–	**षष्ठ (VI)**

अधिकतम अंक — **35**

इकाई-I: माइक्रोसॉफ्ट पॉवरपॉइंट-I

- स्लाइड मास्टर और टेम्पलेट का उपयोग करते हुए विभिन्न थीम्स और वैरिएंटस् में प्रस्तुति बनाना.
- **स्लाइड के साथ कार्य करना:** नई-स्लाइड बनाना, मूव करना, प्रतिलिपि बनाना, डिलीट करना, डुप्लीकेट बनाना, स्लाइड ले-आउट, प्रेजेंटेशन व्यूज.
- **फोर्मेट मेनू:** फ़ॉन्ट, पैराग्राफ, ड्राइंग और संपादन.
- **प्रस्तुति का मुद्रण:** स्लाइड्स, नोट्स पेजेस, हैंडआउट्स और रूपरेखा की प्रिंटिंग.
- विभिन्न फ़ाइल स्वरूपों में प्रस्तुति का सुरक्षण.

इकाई-II: माइक्रोसॉफ्ट पॉवरपॉइंट-II

- स्मार्ट-आर्ट ग्राफ़िक्स, स्मार्ट-आर्ट द्वारा टेक्सट/डाटा डालना, स्मार्ट-आर्ट की सहायता से पुराने प्रस्तुति को नयी प्रस्तुति में बदलना.
- ऑब्जेक्ट्स (विडियो, ऑडियो, प्रतीक, समीकरण, इत्यादि), सारणी, एक्सेल शीट, चित्र, चार्ट, फोटो एल्बम, आकार एवं स्मार्ट-आर्ट को प्रस्तुति में डालना, ऑडियो/विडियो को काटना/छाटना.
- हाइपरलिंक और एक्शन बटन की सहायता से स्लाइड्स को जोड़ना.
- स्लाइड सॉर्टर, स्लाइड ट्रांजीशन एवं एनीमेशन प्रभाव.
- **स्लाइड शो को प्रस्तुत करना:** सेटअप स्लाइड शो एवं रीहर्स-टाइमिंग.

इकाई-III: माइक्रोसॉफ्ट एक्सेल (MS Excel)

- **वर्कबुक और वर्कशीट के मूल तत्व:** पंक्ति, स्तम्भ और सेल की अवधारणा; नई वर्कबुक को ब्लेंक और टेम्पलेट की सहायता से बनाना.
- **वर्कशीट में कार्य:** वर्कशीट में डाटा (सामान्य, नंबर, करन्सी, डेट, टाइम, टेक्स्ट, एकाउंटिंग, इत्यादि) प्रविष्ट करना; वर्कशीट का नाम बदलना, प्रतिलिपि बनाना, प्रविष्ट करना, हटाना तथा रक्षित करना.
- **पंक्ति और स्तम्भ के साथ कार्य** (डालना, हटाना, पेस्ट करना, आकार बदलना और छुपाना), सेल और सेल फॉमेटिंग, रेंज की अवधारणा.
- **चार्ट:** विभिन्न प्रकार के चार्ट्स बनाना और उनका संपादन करना; ट्रेंड-लाइन डालना, पीछे एवं आगे का पूर्वानुमान लगाना.
- **फार्मूले के साथ कार्य:** फार्मूला बार; फंक्शन के प्रकार, निम्न फंक्शन्स के सिंटेक्स और उपयोग: SUM, TOTAL, COUNT, AVERAGE, MAX, MIN, ROUND एवं IF.

इकाई-IV: इंटरनेट एवं वेब सेवाएं

इंटरनेट: वर्ल्ड-वाइड-वेब, डायलअप कनेक्टिविटी, लीज्ड लाइन, व्ही.सेट, ब्रॉडबैंड, वाय-फाई, यूआरएल, डोमेन नेम, वेब-ब्राउज़र (इंटरनेट एक्स्प्लोरर, फायरफॉक्स, गूगल क्रोम, ऑपेरा, यूसी ब्राउज़र, इत्यादि); सर्च इंजन (गूगल, बिंग, Ask, इत्यादि); **वेबसाइट:** स्थैतिक व गतिकीय; पोर्टल और वेबसाइट में अंतर.

इमेल: खाता खोलना, मेल को भेजना एवं प्राप्त करना, कॉन्टेक्ट्स एवं फ़ोल्डर्स को मैनेज करना.

नेटवर्किंग के मूल तत्व: नेटवर्क के प्रकार (LAN, WAN, MAN); नेटवर्क टोपोलॉजी (स्टार, रिंग, बस, हाइब्रिड).

क्लाउड कंप्यूटिंग व ऑफिस वेब एप्स और मोबाइल कंप्यूटिंग व मोबाइल एप्स का प्राथमिक ज्ञान.

इकाई-V: साइबर शिष्टाचार, सुरक्षा और गोपनीयता

इमेल, इंटरनेट एवं सोशल नेटवर्किंग शिष्टाचार.

वायरस और एंटीवायरस के प्रकार.

कंप्यूटर सुरक्षा के मुद्दे और फायरवाल व एंटीवायरस के माध्यम से सुरक्षा.

साइबर नीतियाँ, बौद्धिक सम्पदा अधिकार (आई.पी.आर), कॉपीराइट का उल्लंघन और निवारण.

सुरक्षित तरीके से ऑनलाइन लेन-देन का निष्पादन करना.

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Department of Higher Education, Government of M.P.
Semester wise syllabus for under graduate classes
As recommended by central board of studies and
Approved by HE the Governor of M.P.
With effect from: **Session 2016-17**

Class : **बी.ए./बी.एस-सी./बी.कॉम./बी.एच.एस-सी.**
Subject : **आधार पाठ्यक्रम**
Semester : **षष्ट** (VI)
Paper : **द्वितीय (कंप्यूटर के मूल तत्व एवं सूचना प्रौद्योगिकी - द्वितीय)**

टीप: **कोई बाह्य प्रायोगिक परीक्षा आयोजित नहीं की जावेगी |**

<u>सी.सी.ई. के लिए प्रायोगिक कार्य के अंतर्गत सम्मिलित किये जाने विषय-बिंदु</u>

Max. Marks: 15

प्रत्येक बैच हेतु प्रति सप्ताह 2 घंटे का प्रयोगशाला समय आवंटित किया जाना है |

(a) एम.एस. एक्सेल:

- एम.एस. एक्सेल की विशेषताएँ: ऑफिस बटन, कस्टमाइज रिबन, क्विक एक्सेस टूलबार।
- ब्लेंक एवं टेम्पलेट फॉर्मेट से नयी वर्कबुक का निर्माण; नयी शीट को वर्कबुक में जोड़ना; शीट का नाम परिवर्तित करना, प्रतिलिपि बनाना एवं संरक्षित करना।
- पेज ले-आउट: मार्जिन, ओरिएंटेशन, साइज, प्रिंट एरिया, प्रिंट टाइटल्स।
- फॉर्मेट सेल: नंबर, एलाइनमेंट, फॉण्ट, बॉर्डर, फिल एवं प्रोटेक्शन।
- चार्ट्स: कॉलम, बार, पाई, लाइन, एरिया, X-Y (स्कैटर), स्टॉक; ट्रेंडलाइन एवं फॉरकास्टिंग का चार्ट में उपयोग।
- **डाटा:** सोर्टिंग एवं फ़िल्टर.
- फंक्शन: SUM, TOTAL, COUNT, AVERAGE, MAX, MIN, ROUND, IF, *etc.*

(b) एम.एस. पॉवरपॉइंट:

- एम.एस. पॉवरपॉइंट की विशेषताएँ: ऑफिस बटन, कस्टमाइज रिबन, क्विक एक्सेस टूलबार।
- स्लाइड बनाना, स्लाइड लेआउट की फॉर्मेटिंग, स्लाइड शो एवं स्लाइड सोर्टर, नयी स्लाइड डालना, स्लाइड नंबर, डेट, टाइम, चार्ट, स्लाइड फॉर्मेटिंग।
- ट्रांजीशन और एनीमेशन का प्रस्तुति में उपयोग।
- स्लाइड शो का सेटअप करना; रीहर्स-टाइमिंग का उपयोग.

(c) इंटरनेट एवं ईमेल:

- डायल-अप/ब्रॉड-बैंड कनेक्शन को समझना.
- नया ई-मेल खाता खोलना (Gmail, Yahoo, Rediffmail, etc.)
- ई-मेल की संरचना समझना.
- ई-मेल खाते के कॉन्टेक्ट्स एवं फ़ोल्डर्स का प्रबंधन करना.
- ई-मेल भेजना एवं प्राप्त करना (संलग्नक को डाउनलोड / अपलोड करना).
- ई-मेल, स्काईप, स्काईड्राइव एवं क्लाउड द्वारा फाइल, इमेज तथा विडियो का आदान-प्रदान.
- मोबाइल / स्मार्टफ़ोन द्वारा ई-मेल खाते का सुरक्षित रूप से संचालन करना.
- इंटरनेट पर किसी टेक्सट को ढूढ़ने के लिए सामान्य एवं उच्च स्तरीय खोज, सही खोज के लिए फ़िल्टर का उपयोग करना. **********