GOVERNMENT NAVEEN COLLEGE BORI

BORI, DIST- DURG, [C.G.], INDIA, 491001

NAAC ACCREDITED B GRADE

AFFILIATED TO HEMCHAND YADAV UNIVERSITY, DURG (C.G.)

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College Code - 309

1.2.1.1 Number of Programs in which CBCS/ Elective course system implemented

S.NO.	Programme name	Year of Introduction	Year of i elective course system
	B.Sc. III (Maths)	2018-19	2018-19
	M.Sc.Chemistry	2022-23	2022-23
	B.Com III	2014-15	2014-15
	M.Com.	2018-19	2018-19

Principal
Govt. College, Bori
Dist.-Durg (C.G.)

B.A./B.SC. Part-III

PAPER - III - (OPTIONAL)

(II) DISCRETE MATHEMATICS

UNIT-I **Sets and Propositions** - Cardinality. Mathematical Induction, Principle of inclusion and exclusion. **Computability and Formal Languages** - Ordered Sets. Languages. Phrase Structure Grammars. Types of Grammars and Languages. Permutations. Combinations and Discrete Probability.

UNIT-II **Relations and Functions** - Binary Relations, Equivalence Relations and Partitions. Partial Order Relations and Lattices. Chains and Antichains. Pigeon Hole Principle.

Graphs and Planar Graphs - Basic Terminology. Multigraphs. Weighted Graphs. Paths and Circuits. Shortest Paths. Eulerian Paths and Circuits. Travelling Salesman Problem. Planner Graphs. Trees.

UNIT-III **Finite State Machines** - Equivalent Machines. Finite State Machines as Language Recognizers. **Analysis of Algorithms** - Time Complexity. Complexity of Problems. Discrete Numeric Functions and Generating Functions.

UNIT-IV **Recurrence Relations and Recursive Algorithms** - Linear Recurrence Relations with constant coefficients. Homogeneous Solutions. Particular Solution. Total Solution. Solution by the Method of Generating Functions. Brief review of Groups and Rings.

UNIT-V **Boolean Algebras** - Lattices and Algebraic Structures. Duality, Distributive and Complemented Lattices. Boolean Lattices and Boolean Algebras. Boolean Functions and Expressions. Prepositional Calculus. Design and Implementation of Digital Networks. Switching Circuits.

REFERENCES :

1. C.L. Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, Computer Science Series, 1986

B.A./B.SC. Part-III

PAPER - III - (OPTIONAL)

(III) PROGRAMMING IN C AND NUMERICAL ANALYSIS

(Theory & Practical)

Theory component will have maximum marks 30.

Practical component will have maximum marks 20.

UNIT-I Programmer's model of a computer. Algorithms. Flow Charts. Data Types. Arithmetic and input/output instructions. Decisions control structures. Decision statements. Logical and Conditional operators. Loop. Case control structures. Functions. Recursions. Preprocessors. Arrays. Puppetting of strings. Structures. Pointers. File formatting.

Numerical Analysis

UNIT-II **Solution of Equations:** Bisection, Secant, Regula Falsi, Newton's Method, Roots of Polynomials. **Interpolation:** Lagrange and Hermite Interpolation, Divided Differences, Difference Schemes, Interpolation Formulas using Differences. Numerical Differentiation. Numerical Quadrature: Newton-Cote's Formulas. Gauss Quadrature Formulas, Chebychev's Formulas.

UNIT-III **Linear Equations:** Direct Methods for Solving Systems of Linear Equations (Guass Elimination, LU Decomposition, Cholesky Decomposition), Iterative Methods (Jacobi, GaussSeidel, Relaxation Methods).

The Algebraic Eigenvalue problem: Jacobi's Method, Givens' Method, Householder's Method, Power Method, QR Method, Lanczos' Method.

UNIT-IV **Ordinary Differential Equations:** Euler Method, Single-step Methods, Runge-Kutta's Method, Multi-step Methods, Milne-Simpson Method, Methods Based on Numerical Integration, Methods Based on Numerical Differentiation, Boundary Value Problems, Eigenvalue Problems.

Approximation: Different Types of Approximation, Least Square Polynomial Approximation, Polynomial Approximation using Orthogonal Polynomials, Approximation with Trigonometric Functions, Exponential Functions, Chebychev Polynomials, Rational Functions.

Monte Carlo Methods

Unit-V Random number generation, congruential generators, statistical tests of pseudo-random numbers. Random variate generation, inverse transform method, composition method, acceptance rejection method, generation of exponential, normal variates, binomial and Poisson variates.

Monte Carlo integration, hit or miss Monte Carlo integration, Monte Carlo integration for improper integrals, error analysis for Monte Carlo integration.

REFERENCES :

1. Henry Mullish and Herbert L. Cooper, Spirit of C: An Introduction to Modern Programming, Jaico Publishers, Bombay.
2. B.W. Kernighan and D.M. Ritchie. The C Programming Language 2nd Edition, (ANSI features) Prentice Hall, 1989.
3. Peter A Darnel and Philip E. Margolis, C : A Software Engineering Approach, Narosa Publishing House, 1993.
4. Robert C. Hutehisonand Steven B. Just, Programming using C Language, McGraw Hill, 1988.
5. Les Hancock and Morris Krieger, The C Primer, McGraw Hill, 1988.
6. V. Rajaraman, Programming in C, Prentice Hall of India, 1994.
7. Byron S. Gottfried, Theory and Problems of Programming with C, Tata McGraw-Hill Publishing Co. Ltd., 1998.
8. C.E. Froberg, Introduction to Numerical Analysis, (Second Edition), Addison-Wesley, 1979.
9. James B. Scarborough, Numerical Mathematical Analysis, Oxford and IBHPublishing Co. Pvt. Ltd. 1966.
10. Melvin J. Maron, Numerical Analysis A Practical Approach, Macmillan publishing Co., Inc. New York, 1982.
11. M.K. Jain, S.R.K. Iyengar, R.K. Jain, Numerical Methods Problems and Solutions, New Age International (P) Ltd., 1996.

PAPER - III - (OPTIONAL)
(IV) PRACTICAL
PROGRAMMING IN C AND NUMERICAL ANALYSIS

LIST OF PRACTICAL TO BE CONDUCTED...

1. Write a program in C to find out the largest number of three integer numbers.
2. Write a program in C to accept monthly salary from the user, find and display income tax with the help of following rules :

Monthly Salary	Income Tax
9000 or more	40% of monthly salary
7500 or more	30% of monthly salary
7499 or less	20% of monthly salary

3. Write a program in C that reads a year and determine whether it is a leap year or not.
4. Write a program in C to calculate and print the first n terms of fibonacci series using looping statement.
5. Write a program in C that reads in a number and single digit. It determines whether the first number contains the digit or not.
6. Write a program in C to computes the roots of a quadratic equation using case statement.
7. Write a program in C to find out the largest number of four numbers using function.
8. Write a program in C to find the sum of all the digits of a given number using recursion.
9. Write a program in C to calculate the factorial of a given number using recursion.
10. Write a program in C to calculate and print the multiplication of given 2D matrices.
11. Write a program in C to check that whether given string palindrome or not.
12. Write a Program in C to calculate the sum of series:

$$1 + x + \frac{1}{2!}x^2 + \frac{1}{3!}x^3 + \ldots\ldots + \frac{1}{n!}x^n$$

13. Write a program in C to determine the grade of all students in the class using Structure. Where structure having following members - name, age, roll, sub1, sub2, sub3, sub4 and total.
14. Write a program in C to copy one string to another using pointer. (Without using standard library functions).
15. Write a program in C to store the data of five students permanently in a data file using file handling.

M.Sc.-Chemistry

EXAMINATION SCHEME

M.Sc. examination will be conducted in four SEMESTERS. Each semester exam shall consist of FOUR THEORY PAPERS AND TWO LAB COURSES.

SEMESTER –I (20 CREDIT)

THEORY (16 CREDIT)

PAPER	COURSE	CREDIT	DURATION	INTERNAL ASSESSMENT	THEORY MARKS	TOTAL MARKS
CH - 1	GROUP THEORY AND CHEMISTRY OF METAL COMPLEXES	4	3 Hrs	20	80	100
CH - 2	CONCEPTS IN ORGANIC CHEMISTRY	4	3 Hrs	20	80	100
CH - 3	QUANTUM CHEMISTRY, THERMODYNAMICS AND CHEMICAL DYNAMICS - I	4	3 Hrs	20	80	100
CH - 4	THEORY AND APPLICATIONS OF SPECTROS COPY-I	4	3 Hrs	20	80	100

PRACTICAL (4 CREDIT)

PAPER	COURSE	CREDIT	DURATION	MARKS
CH - 5	Lab Course – I	2	8 Hrs	100
CH - 6	Lab Course – II	2	8 Hrs	100

SEMESTER –II (20 CREDIT)

THEORY (16 CREDIT)

PAPER	COURSE	CREDIT	DURATION	INTERNAL ASSESSMENT	THEORY MARKS	TOTAL MARKS
CH - 7	TRANSITION METAL COMPLEXES	4	3 Hrs	20	80	100
CH - 8	REACTION MECHANISM	4	3 Hrs	20	80	100
CH - 9	QUANTUM CHEMISTRY, THERMODYNAMICS AND CHEMICAL DYNAMICS - II	4	3 Hrs	20	80	100
CH - 10	THEORY AND APPLICATIONS OFSPECTROSCOPY-II	4	3 Hrs	20	80	100

19.06.25

19/6/25

19/06/25

PRACTICAL (4 CREDIT)

PAPER	COURSE	CREDIT	DURATION	MARKS
CH - 11	Lab Course – III	2	8 Hrs.	100
CH - 12	Lab Course – IV	2	8 Hrs.	100

SEMESTER –III (20 CREDIT)
THEORY (16 CREDIT)

PAPER	COURSE	CREDIT	DURATION	INTERNAL ASSESSMEN	THEORY MARKS	TOTAL MARKS
CH – 13	RESONANCE SPECTROSCOPY, PHOTOCHEMISTRY AND ORGANOCATALYSIS	4	3 Hrs	20	80	100
CH – 14	CHEMISTRY OF BIOMOLECULES	4	3 Hrs	20	80	100
CH – 15	CATALYSIS, SOLID STATE AND SURFACE CHEMISTRY	4	3 Hrs	20	80	100
CH – 16	ANALYTICAL TECHNIQUES AND DATA ANALYSIS	4	3 Hrs	20	80	100

PRACTICAL (4 CREDIT)

PAPER	COURSE	CREDIT	DURATION	MARKS
CH – 17	Lab Course - V	2	8 Hrs.	100
CH – 18	Lab Course - VI	2	8 Hrs.	100

SEMESTER –IV (20 CREDIT)

THEORY (16 CREDIT)

PAPER	COURSE	CREDIT	DURATION	INTERNAL ASSESSMENT	THEORY MARKS	TOTAL MARKS
CH – 19	INSTRUMENTAL METHODS OF ANALYSIS	4	3 Hrs	20	80	100
CH – 20	NATURAL PRODUCTS AND MEDICINAL CHEMISTRY	4	3 Hrs	20	80	100
CH – 21	MATERIAL AND NUCLEAR CHEMISTRY	4	3 Hrs	20	80	100
CH - 22	ENVIRONMENTAL & APPLIED CHEMICAL ANALYSIS	4	3 Hrs	20	80	100
	OPTIONAL PAPERS					
	In place of CH 22 students can opt any optional papers CH 22a to CH 22c					
CH – 22 a	CHEMISTRY OF SURFACTANTS	4	3 HRS	20	80	100
22 b	NANOCHEMISTRY	4				
22 c	POLYMERS	4				

PRACTICAL (4 CREDIT)

PAPER	COURSE	CREDIT	DURATION	MARKS
CH - 23	Lab Course - VII	2	8 Hrs.	100
CH - 24	Lab Course - VIII	2	8 Hrs.	100

SCHEME FOR PRACTICAL EXAMINATION

EXPERIMENT	MARKS
Experiments	60
Viva-voce	20
Sessional Marks	20
TOTAL MARKS	**100**

Hemchand Yadav Vishwavidyalaya, Durg (C.G.)

SYLLABUS

B.COM. PART-III

GROUPING OF SUBJECTS AND SCHEME OF EXAMINATION

Subject		Max.	Min.
Foundation Course			
I. Hindi Language		75	26
II. English Language		75	26
Compulsory Groups			
Group-I			
I. Income Tax	75	150	50
II. Auditing	75		
Group-II			
I. Indirect Taxes with GST	75	150	50
II. Management Accounting	75		
Group-III Optional			
Option Group A (Finance Area)			
I. Financial Management	75	150	50
II. Financial Market Operations	75		
Option Group B (Marketing Area)			
I. Principles of Marketing	75	150	50
II. International Marketing	75		
Option Group C (Commercial Area)			
I. Information Technology and its Applications in Business	75	150	50
II. Essential of e-Commerce	75		
Option Group D (Money Banking & Insurance Area)			
I. Fundamental of Insurance	75	150	50
II. Money & Banking System	75		

The objective of this course is to help student understand and conceptual framework of Income tax.

Unit – I	**Law relating to Income tax:** Brief study of the main provisions of the Indian Income Tax Act. Important definitions. Income

M. Com – 2nd Semester

कर नियोजन एवं प्रबन्ध

TAX PLANNING AND MANAGEMENT

(Paper –VIII)

M.M. 0:80

OBJECTIVE –

This course aims at making students conversant with the concept of corporate tax planning and Indian tax laws, as also their implications for corporate management.

Unit – I	Calculation of taxable Income and tax of Firm and Companies.
Unit – II	Return of Income, Provisional Regular, Expert and emergency assessment, Re opening of assessment.
Unit – III	Concept of tax Planning ; Tax avoidance and tax evasions ; Tax planning with reference of location, nature and form of organization of new
Unit – IV	Tax planning to capital structure, decision dividend policy; Inter corporate dividends and bonus shares.
Unit – V	Preparation of income tax returns, Computation of Income tax, Tax deduction at source; Advance payment of tax.

M. Com. IIIrd Semester

(Compulsory Papers)

प्रश्न पत्र	प्रश्नपत्र का नाम	पूर्णांक	क्रेडिट
Paper – I प्रश्नपत्र –I	प्रबन्ध की अवधारणा (Management Concept)	80+20	04
Paper – II प्रश्नपत्र –II	संगठनात्मक व्यवहार (Organisational Behaviour)	80+20	04
Paper – III प्रश्नपत्र –III	उच्चत्तर लागत लेखांकन (Advance Cost Accounting)	80+20	04
Paper – IV प्रश्नपत्र –IV	प्रबंधकीय लेखांकन (Management Accounting)	80+20	04
Paper – V प्रश्नपत्र –V	प्रबंधकीय निर्णय के लिए लेखांकन (Accounting for managerial decision)	80+20	04

M.Com IVth Semester

Special attention to the Students. Students are required to select any one Specialization out of four suggested below.

Optional – Specialization

Optional Group	–	(A)	Marketing
Optional Group	–	(B)	Management
Optional Group	–	(C)	Banking and Insurance
Optional Group	–	(D)	Taxation and Accounting
Optional Group	–	(E)	Business Environment & Finance and Research

Optional Group – (A) विपणन (Marketing)

प्रश्न पत्र	प्रश्नपत्र का नाम	पूर्णांक	क्रेडिट
Paper – A I प्रश्न पत्र–A I	विपणन के सिद्धान्त (Principle of Marketing)	80+20	04
Paper – A II प्रश्न पत्र–A II	विज्ञापन एवं विक्रय प्रबन्ध (Advertising & Sales Management)	80+20	04
Paper – A III प्रश्नपत्र–A III	विपणन अनुसन्धान (Marketing Research)	80+20	04
Paper – A IV प्रश्नपत्र –A IV	अन्तर्राष्ट्रीय विपणन (International Marketing)	80+20	04

Optional Group– (B)

प्रबन्ध (Management)

प्रश्न पत्र	प्रश्नपत्र का नाम	पूर्णांक	क्रेडिट
Paper – B I प्रश्न पत्र –B I	वित्तीय प्रबन्ध (Financial Management)	80+20	04
Paper – B II प्रश्न पत्र –B II	कार्मिक प्रबन्ध (Personnel Management)	80+20	04
Paper – B III प्रश्न पत्र–B III	उत्पादन प्रबन्ध (Production Management)	80+20	04
Paper – B IV प्रश्न पत्र–B IV	व्यूहरचना प्रबन्ध (Strategic Management)	80+20	04

Optional Group–(C)

बैंकिंग एवं बीमा (Banking and Insurance)

प्रश्न पत्र	प्रश्नपत्र का नाम	पूर्णांक	क्रेडिट
Paper – C I प्रश्न पत्र–C I	बैंकिंग व्यवहार (Banking Practices)	80+20	04
Paper – C II प्रश्न पत्र–C II	भारत में बैंकिंग संस्थाएं (Banking Institution in India)	80+20	04
Paper – C III प्रश्न पत्र–C III	जीवन बीमा (Life Insurance)	80+20	04
Paper – C IV प्रश्न पत्र–C IV	सामान्य बीमा (General Insurance)	80+20	04

Optional Group–(D)

करारोपण एवं लेखांकन

(Taxation and Accounting)

प्रश्न पत्र	प्रश्नपत्र का नाम	पूर्णांक	क्रेडिट
Paper – D I प्रश्न पत्र–D I	भारत में प्रत्यक्ष कर (Direct Tax in India)	80+20	04
Paper – D II प्रश्न पत्र–D II	अप्रत्यक्ष कर (Indirect Tax)	80+20	04
Paper – D III प्रश्न पत्र–D III	सेवा के क्षेत्र में लेखांकन (Accounting in Service Sector)	80+20	04
Paper – D IV प्रश्न पत्र–D IV	लेखांकन पद्धतियाँ (Accounting Methods)	80+20	04

Optional Group–(E)

व्यसायिक वातावरण एवं वित तथा शोध

(Business Environment & Finance and Research)

प्रश्न पत्र	प्रश्नपत्र का नाम	पूर्णांक	क्रेडिट
Paper – E I प्रश्न पत्र– E I	व्यसायिक वातावरण (Business Environment)	80+20	04
Paper – E II प्रश्न पत्र– E II	वित्तीय संस्थाएं (Financial Institutions)	80+20	04
Paper – E III प्रश्न पत्र– E III	शोध प्रविधि (Research Methodology)	80+20	04
Paper – E IV प्रश्न पत्र–E IV	प्रतिभूति विश्लेषण (Security Analysis)	80+20	04