Govt. M.V.P.G. College, Bhanupratappur

S.NO.	PROGRAMME	PROGRAMME CODE	CLASS	ELECTIVES
1	B.A	UGBA ,	8. A I B. A II B. A III	Any three of the following subjects 1.Hindi literature 2.English literature 3.sociology 4.Economics 5.political science

2. शिक्षण का पार्यक्रम :-

निम्नलिखित विषयों में महाविद्यालय में अध्ययन किया जाता है । पाठ्यक्रम विश्वविद्यालय की परीक्षा के लिए स्वीकृत प्रक्रि 🧍 पर आधारित है । प्रत्येक छात्र ये यह अपेक्षा की जाती है कि वह खयं अपनी पाठय-पुस्तकों की व्यवस्था करें ।

- बी.ए. भाग 1,2 एवं 3 (31)
- बी.एस.सी.भाग 1,2 एवं 3 (व)
- बी कॉम. भाग 1,2 एवं 3 (स)

, अनुदान आयोग निर्घारित त्रिवर्षीय रकीठ बी.कॉम/बी.ए./बी.एस.सी.भाग 1,2 ऐवें 3 के लिए उच्च बिका पार्वचक्रम ।

सभी संकायों के बी.ए./बी.एस.सी./बी.कॉम.कक्षाओं में आधार पाठ्यक्रम अनिदाय दिवयों के रूप में रहेक पहला घटक हिन्दी भाषा तथा दूसरा घटक अंग्रेजी भाषा (संदर्भ भाषा के रूप में रहेगा दिद्यार्थी को तीनों वर्ष ये दोनों भाषा पढनी होगी । प्रत्येक भाषा का प्रतिवर्ध 75 अंको का प्रश्नपत्र होगा । इनके अंक श्रेणी में जुडेंगे । आधार पाठ्यक्रम तथी संकश् के लिए एक समान होंगे । साथ ही इन दोनों विषयों में दिद्यार्थियों को अलग-अलग उत्तीर्ण होना आवस्यक होगा ।

मुख्य विषय किसी संकाय के संदर्भित अध्यादेश के अनुसार घयन होंने । वी.ए./बी.एस.सी. के समूह निर्धासित है। छात्र कोई तीन विषय चयन करेंगे। प्रत्येक 75-75 अंकों के प्रश्न-पत्र होंगे।

नये पाठ्यक्रम को लागू करने पर स्थिति इस प्रकार होगी -

		945
विषय	927-43	75
आधार पाठ्यक्रम	द्विन्दी भागा एक	75
आपार पाठ्यक्रम	ि आजि भाषा एक	75-75 या 50-5
वैकल्पित विषय	र प्रथम दा	75-75 या 50- इ.
वैकल्पित विषय	हि दिताय दा	75-75 या 50-5
वैकल्पित दिषय	ह ततम्य वर	50-50-50
प्रायोगिक यदि हो तो, तीनों विषयों में		450
इस प्रकार कुल अंक संख्या तीनों (प्राय	योगिक याद हा। के मह्या ताल	300
कुल योग		300
यदि प्रायोगिक हो		450
यदि प्रायोगिक न हो	the second se	गानभाक है परीक्षा में क्षेली, प्रयन
N	ें जिसकार में अलग-अलग उत्ताण हागा	PASSAGE AND C

सभी सैद्धांतिक प्रश्न-पत्रों में और प्रायोगिक परीक्षाओं में अलग-द्वितीय एवं तृतीय वर्ष के कुल प्राप्तांको के आधार पर प्रदान की जावेगी ।

(घ) वी.ए.ए.थन, दितीय, ज़तीय भाग हे. विद्यार्थी निम्नांधित पुरुष देमाल्पिल विषयों में कोई तीन विषय वयन कांगे

अग्रेजी, हिन्दी, राजनीति शाख, भगाजशास्त्र, अपर्शित्व, हिन्दी रेसहित्य । (व) वी.एस.सी.प्रथम द्वितीय एवं तृतीय भाग के विद्यार्थी निम्नोकित मुख्य वेकल्पिक विषयों में कोई तीन दिषय करन करेंगे

भौतिकी, रसीयन, गणित, वनस्पति शास्त्र, प्राणी-शास्त्र । (छ) वी.कॉम.प्रयम भाग एव द्वितीय भाग के विद्यार्थियों को सी अनिवार्य विषय पढ़ने होंगें।

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SYLLABUS B.COM. PART-III

GROUPING OF SUBJECTS AND SCHEME OF EXAMINATION

			Max.	Min.
Subject			alan kara tan kanala kanala salampa kara kara kara ka	A to a first the the strenger of the general of an and the strenger of the str
Fo	undation Course		75	26
١.	Hindi Language		75	26
11.	English Language		an an an tag in a second s	and an
Co	mpulsory Groups			
Group-I				
١.	Income Tax	/5	150	50
11.	Auditing	75)		an a
Group-II	and an and the second se]		
í.	Indirect Taxes with GST	75	150	50
11.	Management Accounting	75 J	an der menskapt det ein an daten in daten in der der eine ster der der der der der der der der der d	
Group-III	Optional			
Option G	roup A (Finance Area)			
-, .	Financial Management	75	150	50
П.	Financial Market Operations	75 」		
Ontion Gr	oup B (Marketing Area)			
option of	Principles of Marketing	75	150	50
	International Marketing	75 」	200	
n. Oution Gr	oun C (Commercial Area)			•
Option Gr	Information Technology and	75		50
1.	its Applications in Business	Y	150	20
	Eccontial of e-Commerce	75		
11.	Essential of C comment			
Option G	roup D (woney Duming			
insu	rance Area)	75	450	50
1.	Fundamental of insurance	75	150	
11.	Money & Banking System	ر د ر	•	\bigcirc
				PX
				Po

Govt. M.V.P.G. College, Bhanupratappur

S.NO.	PROGRAMME NAME	PROGRAMME CODE	CLASS ES	ELECTIVES
1	B.SC	UGBS .	B. SC I B. SC II B. SC III	Any three of the following subjects 1.botany 2.chemistry 3.zoology 4.physics 5.maths
2.	B. SC	UGBS	2. B.SC UGBS B. SC III	Maths (for paper III) Anyone of the following four optional paper 1.principles of computer science 2.discrete mathematics 3.application of mathematics in finance and insurance 4.programming in C and numerical analysis . 5.mathematical modeling

LIST OF ELECTIVES

2. शिक्षण का पार्यक्रम :--

निम्नलिखित विषयों में महाविद्यालय में अध्ययन किया जाता है । पाठधक्रम विश्वविद्यालय की परीक्षा के लिए स्वीकृत पत्रिक्त 🖣 पर आधारित है । प्रत्येक छात्र ये यह अपेक्षा की जाती है कि वह स्वयं अपनी पाठच-पुस्तकों की व्यवस्था करें ।

- (31) बी.ए. भाग 1,2 एवं 3
- बी.एस.सी.भाग 1,2 एवं 3 (頁)
- बी कॉम. भाग 1,2 एवं 3 (स)

वी.कॉम/बी.ए./बी.एस.सी.भाग 1,2 एवं 3 के लिए उच्च किंका अनुदान आयोग निर्धारित त्रिवर्षीय रकीकृ पाठयकम्।

सभी संकायों के बी.ए./बी.एस.सी./बी.कॉम.कक्षाओं में आधार पाठ्यक्रम अनिवार्य दिवयों के रूप में रहेन पहला घटक हिन्दी भाषा तथा दूसरा घटक अंग्रेजी भाषा (संदर्भ भाषा के रूप में रहेगा दिद्यार्थी को तीनों दर्ब वे दोनों माक पढनी होगी। प्रत्येक भाषा का प्रतिवर्ध 75 अंको का प्रश्नपत्र होगा। इनके अंक श्रेणी में जुडेंने। आधार पाठ्यक्रम सभी संकल के लिए एक समान होंगे । साथ ही इन दोनों विषयों में विद्यार्थियों को अलग-अलग उत्तीर्ण होना आवश्यक होगा ।

मुख्य विषय किसी संकाय के संदर्भित अध्यादेश के अनुसार वयन होंगे। बी.ए. / बी.एस.सी. के समूह निर्धारित है। छात्र कोई तीन विषय चयन करेंगे । प्रत्येक 75-75 अंकों के प्रश्न-पत्र होंगे ।

नये पाठ्यक्रम को लागू करने पर स्थिति इस प्रकार होगी --

विषय	प्रश्न-पत्र	जंक
आधार पाठ्यक्रम	हिन्दी भाषा एक	75
आधार पाठ्यक्रम	- आंजी भाषा एक	75
वैकल्पित विषय	र्रि प्रयंग दो	75-75 या 50-5
वैकल्पित विषय	दितीय दो	75-75 या 50-5
वैकल्पित विषय	हि ततीय दो	75-75 या 50-5
प्रायोगिक यदि हो तो, तीनों विषयों में		50-50-50
इस प्रकार कुल अंक संख्या तीनों (प्रायोगिव	क यदि हो। ?	450
कुल योग	Security Comments	300
यदि प्रायोगिक हो		300
यदि प्रायोगिक न हो		450

सभी सैद्धांतिक प्रश्न-पत्रों में और प्रायोगिक परीक्षाओं में अलग-अलग उत्तीर्ण होना आवश्यक है परीक्षा में क्षेणी, प्रवन द्वितीय एवं तृतीय वर्ष के कुल प्राप्तांको के आधार पर प्रदान की जावेगी ।

- (घ) बी.ए.प्रथम, द्वितीय, तृतीय भाग के विद्यार्थी निम्नांकित मुख्य वैकल्पिक विषयों में कोई तीन विषय चयन करेंगे अग्रेजी,हिन्दी,राजनीति शास्त्र,समाजशास्त्र,अर्थशास्त्र,हिन्दी साहित्य।
- (च) बी.एस.सी.प्रथम द्वितीय एवं तृतीय भाग के विद्यार्थी निम्नाकित मुख्य वेडात्मिक विषयों में कोई तीन विषय घटन करने भौतिकी, रसीयन, गणित, वनस्पति शास्त्र, प्राणी-शास्त्र।

(छ) बी.कॉम.प्रयम माग एवं द्वितीय भाग के विद्यार्थियों को सी अनिवार्य विषय पढ़ने होंगें।

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MATHEMATIS

There shall be three theory papers. Two compulsory and one optional Each paper carrying 50 marks is divided into five units and each unit carry equal marks.

PAPER - I (Paper Code-0898) ANALYSIS

REAL ANALYSIS

UNIT-I Series of arbitrary terms. Convergence, divergence and Oscillation. Abel's and Dirichlet's test. Multiplication of series. Double series.

Partial derivation and differentiability of real-valued functions of two variables. Schwarz and Young's theorem. Implicit function theorem.

Fourier series. Fourier expansion of piecewise monotonic functions, UNIT-II Riemann integral Intergrability of continuous and response to the series of the

IIT-II Riemann integral. Intergrability of continuous and monotonic functions. The fundamental theorem of integral calculus. Mean value theorems of integral calculus.

Improper integrals and their convergence, Comparison tests. Abel's and Dirichlet's tests. Frullani's integral. Integral as a function of a parameter. Continuity, derivability and integrability of an integral of a function of a parameter.

COMPLEX ANALYSIS

- UNIT-III Complex numbers as ordered pairs. Geometric representation of Complex numbers. Stereographic projection.
 - Continuity and differentiability of Complex functions. Analytic functions. Cauchy-Riemann equations. Harmonic functions.

Elementary functions. Mapping by elementary functions.

Mobius transformations. Fixedpoints, Cross ratio. Inverse points and critical mappings.

METRIC SPACES

UNIT-IV Definition and examples of metric spaces. Neighbourhoods, Limit points, Interior points, Open and closed sets, Closure and interior. Boundary points, Sub-space of a metric space. Cauchy sequences, Completeness, Cantor's Intersection theorem. Contraction principle, Construction of real numbers as the completion of the incomplete metric space of rationals. Real numbers as a complete ordered field.

UNIT-V Dense subsets. Baire Category theorem, Separable, second countable and first countable spaces. Continuous functions, Extension theorem. Uniform continuity, Isometry and homeomorphism. Equivalent metrics. Compactness, Sequential compactness. Totally bounded spaces. Finite intersection property. Continuous functions and compact sets, Connectedness, Components, Continuous functions and connected sets.

REFERENCES:

- 1. T.M. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
- 2. R.R. Goldberg, Real Analysis, Oxford & IBH publishing Co., New Delhi, 1970.
- 3. S. Lang, Undergraduate Analysis, Springer-Verlag, New York, 1983.
- 4. D. Somasundaram and B. Choudhary, A First Coarse in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997.
- 5. Shanti Narayan, A Course of Mathematical Analysis, S. Chand & Co. New Delhi.

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- PK. Jain and S.K. Kaushik, An introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.
- R.v. Churchill & J.W. Brown, Complex Variables and Applications, 5* Edition, McGraw-Hill, NewYork, 1990.
- MarkJ. Ablowitz & A.S.Fokas, Complex Variables : Introduction and Applications, 8. Cambridge University Press, South Asian Edition, 1998.
- Shanti Narayan, Theory of Functions of a Complex Variable, S. Chand & Co., New Delhi 10. E.t. Copson, Metric Spaces, Cambridge University Press, 1968.
- 11. P.K. Jain and K. Ahmad, Metric Spaces, Narosa Publishing House, New Delhi, 1996.
- 12. G.F. Simmons, Inroductin to Topology and Modern Analysis, McGraw-Hill, 1963.

PART - II (Paper Code-0899) ABSTRACT ALGEBRA

- Group-Automorphisms, inner automorphism. Automorphism groups and their compu-UNIT-I tations, Conjugacy relation, Normaliser, Counting principle and the class equation of a finite group. Center for Group of prime-order, Abelianizing of a group and its universal property. Sylow's theorems, Sylow subgroup, Structure theorem for finite Abelian groups.
- Ring theory-Ring homomorphism. Ideals and Quotient Rings. Field of Quotients of an UNIT-II Integral Domain, Euclidean Rings, Polynomial Rings, Polynomials over the Rational Field. The Eisenstien Criterion, Polynomial Rings over Commutative Rings, Unique factorization domain. R unique factorisation domain implies so is R [x1, x2 xn] Modules, Submodules, Quotient modules, Homomorphism and Isomorphism theorems.
- UNIT-III 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 theoremfor bases. Invariance of the number of elements of a basis set. Dimension. Existence of complementary subspace of a subspace of a finite dimensional vector space. Dimension of sums of subspaces. Quotient space and its dimension.
- UNIT-IV Linear transformations and their representation as matrices. The Algebra of linear transformations. The rank nullity theorem. Change of basis. Dual space. Bidual space and natural isomorphism. Adjoint of a linear transformation, Eigenvalues and eigenvectors of a linear transformation. Diagonalisation. Annihilator of a subspace. Bilinear, Quadratic and Hermitian forms.
- Inner Product Spaces-Cauchy-Schwarz inequality. Orthogonal vectors. Orthogonal UNIT-V Complements. Orthonormal sets and bases. Bessel's inequality for finite dimensional spaces. Gram-Schmidt Orthogonalization process.

UNIT-

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REFERENCES :

- I.N. Herstein, Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.
- N. Jacobson, Basic Algebra, Vols. I & II. W.H. Freeman, 1980 (also published by Hindustan 1. 2.
- Publishing Company). Shanti Narayan, A Text Book of Modern Abstract Algebra, S.Chand & Co. New Delhi.
- K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd., New Delhi, 2000. REFER 3.
- P.B. Bhattacharya, S.K. Jain and S.R. Nagpal, Basic Abstract Algebra (2"" Edition) 1. 4.
- 5. Cambridge University Press, Indian Edition, 1997.

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- K. Hoffman and R. Kunze, Linear Algebra, 2"" Editon, Prentice Hall. Englewood Cliffs, New S.K. Jain, A. Gunawardena & P.B. Bhattacharya, Basic Linear Algebra with MATLAB. Key 7. S. Kumaresan, Linear Algebra, A.Geometric Approach, Prentice-Hall of India, 2000. 8. Vivek Sahai and Vikas Bist, Algebra, Norosa Publishing House, 1997. 9. 10. I.S. Luther and I.B.S.Possi, Algebra, Vol. I-Groups, Vol. II-Rings. Narosa Publishing House 11. D.S. Malik, J.N. Mordeson, and M.K. Sen, Fundamentals of Abstract Algebra, McGraw-(I) PRINCIPLES OF COMPUTER SCIENCE (Paper Code=0900) PAPER - III - (OPTIONAL) Data Storage - Storage of bits. Main Memory. Mass Storage. Coding Information of UNIT-I Storage. The Binary System. Storing Integers, storing fractions, communication errors. Data Manipulation - The Central Processing Unit. The Stored-Program Concept. Programme Execution. Other Architectures. Arithmetic/Logic Instructions. Computer-UNIT-II Operating System and Networks - The Evolution of Operating System Operating System Architecture. Coordinating the Machine's Activities, Handling Competition Among Process: Networks. Networks Protocol, Software Engineering - The Software Engineering Discipline: The Software Life Cycle. Modularity. Development Tools and Techniques. Documentation: Software Ownership UNIT-III Algorithms - The Concept of an Algorithm, Algorithm Representation Algorithm Discovery. Iterative Structures, Recursive Structures, Efficiency and Correctness. (Algorithms to be implemented in C++). Programming Languages Historical Perspective. Traditional Programming Concepts. Program Units. Language Implementation. Parallel Computing. Declarative Computing. UNIT-IV Data Structures - Atrays. Lists. Stacks. Queues. Trees. Customised Data Types. File Structure - Sequential Files. Text Files. Indexed Files. Hashed Files. The Role Database Structure - General Issues. The Layered Approach to Database Implementation. The Relational Model, Object-Oriented Database. Maintaining Database Integrity, E-R models, UNIT-V Artifical Intelligence - Some Philosophical Issues. Image Analysis, Reasoning, Control System Activities: Using Heuristics: Artificial Neural Networks: Application of Artificial Intelligence. Theory of Computation - Turning Machines, Computable functions, A Non computable Function. Complexity and its Measures. Problem Classification. REFERENCES : 2.8 J. Glen Brookshear, Computer Science : An Overview, Addition -Wesley
- Stanley B. Lippman, Josee Lojoie, C*+ Primer (3rd Edition), Addison-Wesley. 2.

B.Sc.-111

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(21)

Application of Mathematics in Insurance

UNIT-IV Insurance Fundamentals - Insurance defined. Meaning of loss. Chances of loss, peril; hazard, and proximate cause in insurance. Costs and benefits of insurance to the society and branches of insurance-life insurance and various types of general insurance. Insurable loss exposuresfeature of a loss that is ideal for insurance. Life Insurance Mathematics - Construction of Mortality Tables. Computation of Premium of Life Insurance for a fixed duration and for the whole life.

Determination of claims for General Insurance - Using Poisson Distribution and UNIT-V Negative Binomial Distribution-the Polya Case. Determination of the amount of Claims in General Insurance - Compound Aggregate

claim model and its properties, and claims of reinsurance. Calculation of a compound claim density function. E-recursive and approximate formulae for E.

REFERENCES:

- 1.
- Aswath Damodaran, Corporate Finance Theory and Practice, John Wiley & Sons Inc. John C. Hull, Options, Futures, and Other Derivatives, Prentice-Hall of Indian Private 2. 3.
- 4
- Sheldon M. Ross, An Introduction to Mathematical Finance, Cambridge University Press. Mark S. Dorfman, Introduction to Risk Management and Insurance, Prentice Hall, Englwood 5.
- C.D. Daykin, T. Pentikainen and M. Pesonen, Practical Bisk Theoryfor Actuaries, Chapman

PAPER - III - (OPTIONAL) Theory component will have maximum marks 30. Practical component will have maximum marks 20.

(IV) PROGRAMMING IN C AND NUMERICAL ANALYSIS (Thoury & Practical) (Paper Code-0903)

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 Formulasusing 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, Lanezos' Method.

Ordinary Differential Equations : Euler Method, Single-step Methods, Runge-Kutta's UNIT-IV Method, Multi-step Methods, Milne-Simpson Method, Methods Based on Numerical

8 Sc.-III

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	Integration, Methods Based on Numerical Differentiation, Boundary Value Problems,	
P	Eigenvalue Problems.	
1 Juli	Approximation ,: Different Types of Approximation, Least Square Polynomial	
	Approximation, Polynomial Approximation using Orthogonal Polynomials, Approximation	
	with Trigonometric Functions, Exponential Functions, Chebychev Polynomials,	3.
	Pational Functions.	4.
ป	nit-V Monte Carlo Methods Random number generation, congruential generators, statistical	
	tests of pseudo-random numbers.	5.
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	acceptancerejection method, generation of exponential, normal variates, binomial and	6.
	Poisson variates.	7.
	Monte Carlo integration, hit or miss Monte Carlo integration. Monte Carlo integration	8.
	for improper integrals, error analysis for Monte Carlo intergration.	9.
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14	D.J. Yakowitz Computational Probability and Simulation, reasonable and Simulation, reasonable and second second	
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o white a program in	C to find the largest pure	scher the
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and differential equa	tion growth models	Difference
UNII-II Single-species popu	lation models Population are with	
spread of Technologi	cal innovation	odel. The
UNIT-III Higher-order linear n	100 Plss A model for the day	
Traffic models - Car-	allowing models. Easily a	t modes.
UNIT-IV Nonlinear population	rowth models. Equilibrium speed distributions.	
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comparison voting	science - Proportional representation-cumulative	voting,
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Life Science Models Util	s, w.r. Lucas, F.S. Roberts, R.M. Thrall.	
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LIST OF ELECTIVES

S.NO.	PROGRAMME	PROGRAMME CODE	CLASS	ELECTIVES
4.	M.Sc ZOOLOGY	MSLZ ,	M.Sc. ZOOLOGY IV SEMESTER	Any one of the following papers: Elective A Fish and fisheries and aquaculture Elective B insect biology and physiology Elective C neurophysiology and molecular endocrinology

SYLLABUS FOR 2015-16

BASTAR VISHWAVIDYALAYA, JAGDALPUR

			M	arks
FIRST	Paper	Title of Paper	/External)	(Internal)
SEMESTER	No. *		80	20
why - Dec.		Biosystematics and Taxonomy	80	20
bot C	11	Structure and Function of Invertebrates	80	20
2013	1)1	Population Genetics and Evolution	80	. 20
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	1V	1001s & rote 1 (Based on paper 1 & II)	12	25
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	LC-II	Lab Course II (=	(Externa:)	20
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THIRD	No	Anatomy of Vertebrates		20
SEMESTER		Comparative Anatomy	80	20
July - Dec.			80	20
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		Population Ecology & Immunology	75	25
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