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**MARKS DISTRIBUTION OF B.Sc.-B.Ed. FOUR YEARS INTEGRATED COURSE**  
**B.Sc.-B.Ed. I SEM (CORE COURSE)**

Section	Paper	Subject	Total Marks	External Marks		Exam Pattern	Internal Marks		Marks Distribution	Remark	
				Max	Min		Max	Min			
Foundation part	F-1	Moral Values & Language-I	75	50	20	Written Exam by University	25	10		COLLEGE SEND THIS MARKS DIRECTLY TO UNIVERSITY	
	F-2	Development of Entrepreneurship-I	75	50	20		25	10			
Science part	S-1	Any three subject from given list	100	75	30		25	10			
	S-2		100	75	30		25	10			
	S-3	Phy, Chem., Botany, Zoology, Maths *Subject specified in the scheme by board of studies will only be considered	100	75	30		25	10			
		*Note: in case of mathematics, theory	150	125	<del>40</del> 50		25	10			
Education part	CC-1	Education- Status, Problem and Issues	100	75	30		25	10	Attendance(5 marks) 1 <sup>st</sup> test(5 marks) 2 <sup>nd</sup> test(5marks) Assignment(10marks)		
	CC-2	Childhood & growing	100	75	30		25	10	Attendance(5 marks) 1 <sup>st</sup> test(5 marks) 2 <sup>nd</sup> test(5marks) Assignment(10marks)		
Total			650								

**PRACTICALS**

SCIENCE PART	PS-1/2/3	According to selection of subject in S-1, S-2 & S-3	50 each	Practical Exam by external Appointed by University	Practical Examiners and Internal (who teaches subject) send this marks after Practical exam with total 50 marks
		TOTAL	100/150		
		Theory total	650		
		Practical total	150		
		Total	800		

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**DEVI AHILYA VISHWAVIDYALAYA, INDORE**

**SCHEME OF EXAMINATION FOR B. Sc. B. Ed. (FOUR YEARS)**

- The courses in the prescribed syllabus for B.Sc.-B. Sc.-B.Ed. Four year integrated course will have three components: Foundation component, Science component and Education component.
- Foundation component will have 75 marks weightage, 100 maximum marks are Theory courses including Science and Education component, while the rest are Practical ones having weightage of 50 marks
- A candidate should **pass each Theory and Practical course separately**. To pass a theory/ practical course, a candidate must obtain a minimum of 40% marks in it, with at least 40% in external and 40% in internal evaluation. Internal and external marks obtained in a course will be shown separately in the mark sheet.
- To pass in B.Sc.-B.Ed. program as a whole, the candidate must get an aggregate of 40% marks in both Theory and Practical components taken together.
- Theory and Practical percentages will be shown separately. **Division** will be awarded on the basis of **aggregate marks** in both **Theory and Practical components taken together**. First division will be awarded to those candidates who secure 60% marks and above in aggregate. Second division will be awarded to those who get at least 50% but less than 60% marks. Third division will be awarded to candidates obtaining at least 40% marks but less than 50% marks in aggregate. First division with Distinction will be awarded to those who get 75% marks and above in aggregate.
- Students wishing to appear in a particular semester examination **must have appeared in all previous semester examinations**.
- In case of **Absence** in Semester exam of a course **or Failure**, a candidate will be allowed to carry **any two courses** of a semester. That is, he/she will be Allowed to Keep Term (ATKT) even though he/she has failed in/

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absented from semester exam of two courses. If a candidate fails in or remains absent from more than two courses of a semester the entire semester will have to be repeated. The examination of a Carry course will be held **as and when it is offered** in the subsequent semester. To pass a Carry course a candidate will get **one chance** only.

- A candidate will have to pass two year B.Sc.-B.Ed. program in **at the most five years**.
- In all practical examinations not more than approximately 35 students should be examined in a batch/day. External **marks are to be given only by the External Examiner** directly to the University.
- The **College shall carefully preserve** the record of activities/ practical/ seminar/ workshops/ field visit/ observations in the form of a practical diary/ narrative report/ reflective journal/ field notes etc submitted by the students under the supervision of the college faculty. These will be examined and signed by the respective external examiner appointed by the University.
- In "School Internship" course of *seventh semester* 100 external marks are allotted for final Lesson Planning in two subjects and another 100 marks are for the final teaching of Lessons in two subjects. Remaining 150 marks are for work done during the entire period of internship and will be Internal.

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THEORY EXAMINATION OF BA.B.ED. / BSC.B.ED (Pattern of Q.P.)

Foundation Course I - Part A				Max.Marks: 30
Section	No. of Questions to be Answered	Marks Per Question	Total Marks	Pattern
A	03 Questions out of 06 Questions to be Answered	4	12	Short Answer (Maximum 150 words)
B	03 Questions out of 06 Questions to be Answered	6	18	Long Answer (Maximum 800 words)
Total Que.12 Attempt Que.06			30	

Foundation Course I - Part B				Max.Marks: 20
Section	No. of Questions to be Answered	Marks Per Question	Total Marks	Pattern
A	02 Questions out of 04 Questions to be Answered	4	8	Short Answer (Maximum 150 words)
B	02 Questions out of 04 Questions to be Answered	6	12	Long Answer (Maximum 800 words)
Total Que.08 Attempt Que.04			20	

Foundation Course II				Max.Marks: 50
Section	No. of Questions to be Answered	Marks Per Question	Total Marks	Pattern
A	05 Questions out of 10 Questions to be Answered	4	20	Short Answer (Maximum 150 words)
B	05 Questions out of 10 Questions to be Answered	6	30	Long Answer (Maximum 800 words)
Total Que.20 Attempt Que.10			50	

General Papers (BA/BSC)				Max.Marks: 75
Section	No. of Questions to be Answered	Marks Per Question	Total Marks	Pattern

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A	05 Questions out of 10 Questions to be Answered	5	25	Short Answer (Maximum 150 words)
B	05 Questions out of 10 Questions to be Answered	10	50	Long Answer (Maximum 800 words)
	Total Que.20 Attempt Que.10		75	

Pattern of Education Question paper Max.Marks-75 Min.Marks -30				
Section	No. of Questions to be Answered	Marks Per Question	Total Marks	Nature of Objectives to be Covered
A	7 Questions out of 9 Questions to be Answered (Spread over all units)	5	35	Knowledge/Understanding/Comprehension type questions. Each should answered in not more then 100-150 words.
B	04 Questions out of 08 Questions to be Answered	10	40	Application, Analysis, Synthesis, Evaluation type questions. Each should be answered in about 400-500 words.
	Total Que.17 Attempt Que.11		75	

**Note: Questions will be based on prescribed units with internal choice.**

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B.Sc. B.Ed. Four year  
Integrated course

DEVI AHILYA VISHWAVIDYALAYA, INDORE  
MEMORANDUM OF INSTRUCTIONS FOR EXAMINERS: B. Ed. TWO  
YEARS SEMESTERS

देवी अहिल्या विश्वविद्यालय, इंदौर  
परीक्षकों हेतु आवश्यक निर्देश: बी. एड. दो वर्षीय सेमेस्टर

1. The maximum and minimum marks for each theory paper will be 75 and 26 respectively.

प्रत्येक सैद्धांतिक प्रश्न पत्र हेतु अधिकतम एवं न्यूनतम अंक क्रमशः 75 तथा 26 होंगे.

2. A theory question paper shall consist of two sections- Section A and Section B. Section A will contain 14 short answer questions of 5 marks each, out of which 11 questions are required to be answered in one page or 100- 150 words each. Section B will contain 1 Long answer questions of 10 marks each, out of which 2 questions are required to be answered in 2-3 pages or 400-500 words each.

प्रत्येक सैद्धांतिक प्रश्न पत्र में दो खंड होंगे- खंड अ और खंड ब. खंड अ में 5 अंक वाले 14 प्रश्न होंगे जिनमें से 11 प्रश्नों का उत्तर क्रमशः एक पृष्ठ अथवा 100- 150 शब्दों में देना होगा. खंड ब में 10 अंक वाले कुल 4 प्रश्न होंगे जिनमें से कुल 2 प्रश्नों का उत्तर क्रमशः 2-3 पृष्ठ अथवा 400-500 शब्दों में देना होगा.

3. All units should be adequately represented and given due weightage in the question paper.

प्रश्न पत्र में सभी इकाइयों को समुचित स्थान और अधिभार प्रदान किया जाना चाहिए.

4. Short answer questions will test knowledge, comprehension and application while the long answer questions will test analysis, synthesis and evaluation level objectives.

लघु उत्तरीय प्रश्न ज्ञान, बोध एवं अनुप्रयोग के परीक्षण हेतु तो दीर्घ उत्तरीय प्रश्न विश्लेषण, संश्लेषण, मूल्यांकन स्तर के उद्देश्यों के परीक्षण हेतु होंगे.

5. In case a question has a number of sub-questions, division of marks allotted to each sub-question should be clearly indicated.

यदि किसी प्रश्न में अनेक उप प्रश्न हों तो प्रत्येक उप प्रश्न हेतु निर्धारित अंक स्पष्ट इंगित किये जाने चाहिए.

6. Question paper will be set in both English and Hindi. The two versions of a question should have compatibility with each other.

प्रश्न पत्र की रचना अंग्रेजी और हिंदी दोनों भाषाओं में होगी. एक प्रश्न के दोनों प्रारूपों में समरूपता सुनिश्चित की जानी चाहिए.

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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

Class	:	सत्र 2018-19
Semester	:	बी.एस.सी. बी.एड
Subject	:	I
Paper	:	Foundation Course (आधार पाठ्यक्रम)
Title of Paper	:	I
Compulsory/ Optional	:	नैतिक मूल्य और भाषा (Moral Values & Language) Compulsory

## 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 हैं।

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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  
सत्र 2018-19

Class : बी.एस.सी. बी.एड  
: I  
Paper : II  
Subject : आधार पाठ्यक्रम  
Title of Paper : उद्यमिता विकास  
Compulsory/ Optional : Compulsory

## Particulars

इकाई - 1	उद्यमिता-परिभाषा, विशेषताएँ एवं महत्त्व, 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 सम्प्रेषण 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, बैंकिंग, वित्तीय योजना, कार्यशील पूंजी-मूल्यांकन तथा प्रबंधन, लागत व मूल्य निर्धारण तथा लाभ कामूल्यांकन, आर्थिक लेखा-जोखा रखना।	

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इकाई - 4	<p>अ) उत्पादन का प्रबंधन, कच्चा माल क्रय करने की प्रक्रिया चल सम्पत्ति/माल का प्रबंधन गुणवत्ता प्रबंधन कर्मचारी प्रबंधन पैकिंग</p> <p>ब) विपणन प्रबंधन बिक्री एवं बेचने की कला बाजार की समझ एवं विपणन नीति उपभोक्ता प्रबंधन समय प्रबंधन</p>	
इकाई - 5	<ol style="list-style-type: none"> <li>नियामक संस्थाओं की भूमिका—जिला उद्योग केन्द्र, प्रदूषण निवारण मंडल, खाद्य एवं औषधि प्रशासन, विद्युत विभाग तथा नगर निगम का विशेषअध्ययन।</li> <li>विकासात्मक संस्थाओं की भूमिका, खादी एवं ग्रामीण आयोग/बोर्ड, मध्यप्रदेश वित्त निगम, अनुसूचित बैंक, मध्य प्रदेश का महिला आर्थिक विकास निगम।</li> <li>स्वरोजगार मूलक योजनाएँ – प्रधानमंत्री रोजगार योजना, स्वर्ण जयंती शहरी रोजगार योजना, रानी दुर्गावती स्वरोजगार योजना, दीनदयाल स्वरोजगार योजना।</li> <li>विभिन्न अनुदान योजनाएँ— लागत पूंजी अनुदान, ब्याज अनुदान, प्रवेश कर से छूट, परियोजना प्रतिवेदन, प्रतिपूर्ति अनुदान आदि।</li> <li>महिला उद्यमियों हेतु विशेष प्रेरणाएँ, संभावनाएँ एवं समस्याएँ।</li> <li>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।</li> </ol>	

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

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उच्च शिक्षा विभाग, मध्य शासन

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

केंद्रीय अध्ययन मॉडल द्वारा अनुशंसित

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

Single Paper System Semester wise syllabus

बी.एस.सी. बी.एड 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)

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उच्च शिक्षा विभाग, म.प्र. शासन

बी.एस.सी./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 2018-19

Class/ कक्षा : बी.एस.सी. बी.एड

Semester/ सेमेस्टर : I

Subject/ विषय : **Mathematics**

Title / शीर्षक : Matrix Theory, Calculus, Geometry

: Particulars/ विवरण :

Unit-1	Rank of a matrix, Eigen value, eigenvector, Characteristic equation of a matrix, Cayley Hamilton theorem and its use in finding inverse of matrix. Application of matrix in 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, कैल-हैमिल्टन प्रमेय एवं आव्यूह का व्युत्क्रम ज्ञात करने में इसका प्रयोग। समीकरणों के निकाय (समघात एवं असमघात) के हल के लिये आव्यूहों का प्रयोग, रेखिक समीकरणों के निकाय की संगतता एवं असंगतता पर प्रमेय, तीन अज्ञात राशियों के रेखिक समीकरणों के हल।

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Unit-2	Relation between the roots and coefficients of a general polynomial equation in one variable. Transformation of equations, Descartes's rule of signs, De Moivre's theorem and its applications. Direct and inverse circular and hyperbolic functions. Expansion of trigonometrical function.
इकाई-2	एक चर के सामान्य बहुपदों के समीकरण के गुणकों एवं मूलों के बीच संबंध, समीकरणों का रूपांतरण, चिन्हां का दिकार्ते नियम, डी-मोवर्स प्रमेय एवं इसके उपयोग, प्रत्यक्ष एवं व्युत्क्रम, वृत्तीय एवं अतिपरवलयीय फलन, त्रिकोणमितीय 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 सातत्य, संतत फलनों के गुणधर्म, एकसमान सातत्य, अवकलनीयता का श्रृंखला का नियम, माध्यमान प्रमेय एवं उनका ज्यामितीय अर्थ, अवकलन के लिए डारबोक्स 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.

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इकाई-5	दिए गए आधार के शक्य का समीकरण शक्य के जनक, तीन परस्पर लम्बवत् जनकों हेतु शर्त, लववृत्तीय शक्य वेलन का समीकरण एवं उसके गुणधर्म, लववृत्तीय वेलन, अन्वलोपिय वेलन एवं उसके गुणधर्म।
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**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, 1991.

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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. स.प्र. हिन्दी ग्रंथ अकादमी की पुस्तकें ।

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उच्च शिक्षा विभाग, मध्यप्रदेश शासन

स्नातक कक्षाओं के लिए सेमेस्टर अनुसार एकत्र प्रश्नपत्र प्रणाली का पाठ्यक्रम केन्द्रीय अध्ययन  
मण्डल द्वारा अनुशंसित तथा मध्यप्रदेश के राज्यपाल द्वारा अनुमोदित

(शैक्षणिक सत्र 2018-19 से लागू)

Class: बी.एस.सी. बी.एड

Semester : I  
Subject : Physics  
Title of Paper : Mechanics and Properties of Matter

Unit-I: Mathematical Physics गणितीय भौतिकी

[15 Lectures]

Addition, subtraction and product of two vectors; Polar and axial vectors and their examples from physics; Triple and quadruple product (without geometrical applications); Scalar and vector fields; Differentiation of a vector, Partial Integral of a function of more than one variable; Unit tangent vector and unit normal vector; Gradient, Divergence and Curl; Laplacian operator; Idea of line, surface and volume integrals; Gauss', Stokes' and Green's Theorems, Jacobian Application.

दो सदिश का योग, अंतर व गुणनफल; ध्रुवीय एवं अक्षीय सदिश व उनके भौतिक प्रयोग; त्रि-वैक्टर व चार सदिशों का गुणन (ज्यामितीय अनुप्रयोग के बिना); सदिश का अवकलन एवं से अधिक चरों के फलन का बारम्बार समाकलन; इकाई स्पर्श सदिश व इकाई नार्मल सदिश; सदिश का ग्रेडियन्ट, डायवर्जेंस एवं कर्ल; लाप्लासीयन ऑपरेटर; रेखीय, पृष्ठीय, आयतन समाकलन; गाँस, स्टोक व ग्रीन प्रमेय; जेकोबियन अनुप्रयोग।

Unit-II: Mechanics यांत्रिकी

[12 Lectures]

Kinematics:

Displacement, Time and Average Velocity (x-t graph illustrations to be included); Instantaneous Velocity (Finding of velocity on an x-t graph); Average and Instantaneous Acceleration (Illustration with v-t and a-t graph); Motion with Constant Acceleration (Illustration with a-t and v-t graph); Freely Falling Bodies (Up and down motion in fall with y-t and v<sub>y</sub>-t graph); Velocity and Position by Integration, Position and Velocity Vectors, Acceleration Vector, Components of velocity and acceleration in different coordinate systems.

Newton's Laws of motion and its explanation with problems, various types of forces in nature (explanation), Pseudo Forces (e.g. Centrifugal Force), Coriolis force and its applications. Motion under a central force. Derivation of Kepler's laws. Gravitational law and field. Potential due to a spherical body. Gauss & Poisson's equation of Gravitational self-energy. System of particles. Centre of mass and reduced Mass.

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स्नातक कक्षाओं के लिए सेमेस्टर अनुसार एकत्र प्रश्नपत्र प्रणाली का पाठ्यक्रम केन्द्रीय अध्ययन  
मण्डल द्वारा अनुशंसित तथा मध्यप्रदेश के राज्यपाल द्वारा अनुमोदित  
(शैक्षणिक सत्र 2018-19 से लागू)

Class: बी.एस.सी. बी.एड

विस्थापन, समय और औसत वेग (x-t ग्राफ उदाहरण);  
तात्कालिक वेग (x-t ग्राफ पर वेग निकालना);  
औसत और तत्क्षणिक त्वरण (a-t और v-t ग्राफ);  
मुक्त गिरते हुए पिण्ड का ग्राफीय प्रदर्शन (अप व डाउन गति का y-t और v<sub>y</sub>-t ग्राफ);  
समाकलन द्वारा वेग व स्थिति, स्थिति व वेग सदिश; त्वरण सदिश, गति व त्वरण के विभिन्न दिशांक  
पद्धतियों में घटक।  
न्यूटन के गति के नियम व इसकी व्याख्या, प्रकृति में विभिन्न बल व व्याख्या, उदाहरण (उदाहरण  
अभिकेंद्रीय बल) कोरियालिस बल व इसके उदाहरण, केंद्रीय बल के अन्तर्गत गति, गुरुत्वाकर्षण का नियमों  
की निष्पत्ति, गुरुत्वाकर्षण का नियम व क्षेत्र, गोलाकार पिण्ड का गुरुत्वीय विभव, गोलाकार पिण्ड की  
गुरुत्वीय स्व उर्जा की समीकरण; कणों का निकाय, द्रव्यमान केंद्र व समानीत द्रव्यमान, प्रत्यास्था व  
अप्रत्यास्था टक्कर।

Unit-III: General Properties of Matter द्रव्य के सामान्य गुण

[12 lectures]

Elasticity: Hook's law and coefficient of elasticity; Young's modulus, Bulk modulus and Modulus of rigidity; Work done during longitudinal strain, volume strain and shearing strain; Poisson's ratio; Relation between three elastic moduli (Y, η, K); Determination of Y of rectangular thin bar loaded at the centre; Torsional oscillations, Torsional rigidity of a wire, to determine η by torsional oscillations.

Surface Tension: Surface Tension, Angle of Contact, Capillary Rise Method, Energy required to raise a liquid in capillary tube; Factors affecting surface tension; Jeaeger's method for Determination of surface tension; Applications of Surface Tension.

Viscosity and Fluid Mechanics: Concept of Viscous Forces and Viscosity, Steady and Turbulent Flow, Reynolds's number; Equation of Continuity; Bernoulli's Principle; Application of Bernoulli's equation - (i) Speed of Efflux (ii) Venturimeter (iii) Aspirator Pump(iv) Change of plane of motion of a spinning ball.

प्रत्यास्था: हुक का नियम एवं प्रत्यास्था गुणांक; यंग प्रत्यास्था गुणांक; आयतन प्रत्यास्था गुणांक एवं दृढ़ता गुणांक; अनुदैर्घ्य विकृति, आयतन विकृति एवं ऐटन विकृति में किया गया कार्य; पायसन निष्पत्ति, समदैशिक ठोस के तीन प्रत्यास्था गुणांकों में संबंध (Y, η, K); मध्य में भारित पतली आयताकार छड (कैन्टिलीवर) के Y का निर्धारण; ऐटन दोलन; किसी तार की ऐटन दृढ़ता, व इसका ऐटन दोलन विधि से निर्धारण।

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उच्च शिक्षा विभाग, मध्यप्रदेश शासन

स्नातक कक्षाओं के लिए सेमेस्टर अनुसार एकल प्रश्नपत्र प्रणाली का पाठ्यक्रम केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा मध्यप्रदेश के राज्यपाल द्वारा अनुमोदित

(शैक्षणिक सत्र 2018-19 से लागू)

Class: बी.एस.सी. बी.एड

पृष्ठ तनाव: पृष्ठ तनाव, स्पर्श कोण, केशिका उन्नयन विधि, केशिका में द्रव चढ़ाने में आवश्यक उर्जा, पृष्ठ तनाव को प्रभावित करने वाले कारक, जेगर की विधि से पृष्ठ तनाव का निर्धारण, पृष्ठ तनाव के अनुप्रयोग।

श्यानता एवं तरल यांत्रिकी: श्यान बल की संकल्पना व श्यानता गुणांक, धारारेखीय व विनाश प्रवाह, रेनॉल्ड संख्या, सातत्य समीकरण, बरनॉली का सिद्धांत, बरनॉली प्रमेय के अनुप्रयोग।

1. एपलक्स की चाल
2. वेन्चुरीमीटर
3. एस्पिरेटर पम्प
4. स्पिनिंग बॉल के तल का परिवर्तन

Unit-IV: Oscillations दोलन

Concept of Simple, Periodic & Harmonic Oscillation with illustrations, Potential equation of harmonic oscillator; Kinetic and potential energy of Harmonic Oscillator; Oscillations of two masses connected by a spring; Translational and Rotational motion; Moment of Inertia and their Product, Principal moments and axes, Motion of Rigid Body, Euler's equation.

सरल, आवर्ती व हार्मोनिक गति की सचित्र संकल्पना, आवर्ती दोलन का समीकरण, दो पिंडों का दोलन, स्थानांतरण व घूर्णन गति, जड़त्व आघूर्ण व उनका गुणन, मुख्य आघूर्ण एवं अक्ष, दृढ़ पिण्ड की गति, यूलर समीकरण।

P. S. M.

Unit-V:

Relativistic Mechanics: Michelson-Morley experiment and its outcome; Postulates of Special Theory of Relativity; Lorentz Transformations. Simultaneity and order of events; Lorentz contraction; Time dilation; Relativistic transformation of velocity, frequency and wave number; Relativistic addition of velocities; Variation of mass with velocity.

19/3/18  
P. S. M.

Earlier Developments in Physics up to 18th Century: Contributions of Aryabhata, Archimedes, Nicolus Copernicus, Galileo Galilei, Huygens, Robert Hooke, Torricelli, Vernier, Pascal, Kepler, Newton, Boyle, Young, Thompson, Coulomb, Amperes, Gauss, Biot-Savarts, Cavendish, Galvani, Franklin and Bernoulli.

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उच्च शिक्षा विभाग, मध्यप्रदेश शासन  
स्नातक कक्षाओं के लिए सेमेस्टर अनुसार एकत्र प्रश्नपत्र प्रणाली का पाठ्यक्रम केन्द्रीय अध्ययन  
मण्डल द्वारा अनुशंसित तथा मध्यप्रदेश के राज्यपाल द्वारा अनुमोदित

(शैक्षणिक सत्र 2018-19 से लागू)

Class: बी.एस.सी. बी.एड

सापेक्षकीय यांत्रिकी: माइकल्सन व मोरले का प्रयोग एवं इसके निष्कर्ष, विशिष्ट सापेक्षिकता के सिद्धांत की अवधारणाएं, लॉरेंज रूपांतरण, समकालिक घटना एवं घटनाओं के क्रम, लॉरेंज संकुचन, समय विस्तारण; वेग, आवृत्ति तथा वेव नम्बर का सापेक्षकीय रूपान्तरण; वेगों का सापेक्षकीय योग; वेग के साथ द्रव्यमान परिवर्तन।

भौतिकी का प्रारंभिक विकास 18वीं सदी तक:

आर्थरभट्ट, आर्कमिडिज, निकोलस कोपरनिकस, गैलिलीओ गैलिली, हॉयगन, राबर्ट हुक, डारसेली, वर्नियर, पास्कल, टैम्प्लर, न्यूटन, बॉयल, यंग, थॉमसन, कुलॉम्ब, एम्पीयर, गॉस, प्रोथियॉ-सेवर्ट, कैवेंडिश, गैल्वानी, फ्रैकलीन और बरनॉली।

Useful links:

1. [http://en.wikipedia.org/wiki/History\\_of\\_Physics](http://en.wikipedia.org/wiki/History_of_Physics)
2. [http://en.wikipedia.org/wiki/Nobel\\_Prizes\\_in\\_Physics](http://en.wikipedia.org/wiki/Nobel_Prizes_in_Physics)

Reference Books:

1. University Physics: Sears and Zeemansky, XI<sup>th</sup> edition, Pearson Education
2. Concepts of Physics: H.C. Varma, Bharati Bhavan Publishers
3. Problems in Physics: P.K. Srivastava, Wiley Eastern Ltd.
4. Applied Fluid Mechanics: Mott Robert, Pearson Benjamin Cummir, VIII Edition, Pearson Education/Prentice Hall International, New Delhi
5. Properties of Matter: D.S. Mathur, Shamlal Chritable Trust, New Delhi
6. Mechanics: D.S. Mathur, S Chand and Company, New Delhi-5.

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मण्डल द्वारा अनुशंसित तथा मध्यप्रदेश के राज्यपाल द्वारा अनुमोदित  
(शैक्षणिक सत्र : 2018-19 ; से लागू)

Class: बी.एस.सी. बी.एड

Semester : I  
Subject : Physics

List of Practicals

**For Regular Students**

Practical	Sessional	Viva	Total
25	10	15	50

**For Ex - Student**

Practical	Sessional	Viva	Total
35	00	15	50

- To verify laws of parallel and perpendicular axes for moment of inertia.
- To determine acceleration due to gravity using compound pendulum.
- To determine damping coefficient using a bar pendulum.
- To determine Young's Modulus by bending of beam method.
- To determine Young's Modulus using Cantilever method.
- To determine coefficient of rigidity by static method.
- To determine coefficient of rigidity by dynamic method.
- To determine Surface Tension by Jaegar's method.
- To determine Surface Tension of a liquid by capillary rise method.
- To determine Viscosity of fluid using Poiseuille's method.
- To plot displacement/velocity/acceleration as a function of time using M.S. Excel or C++.
- To plot gravitational energy as a function of distance between two particles with different masses using M.S. Excel or C++.

Chit

Agar. K. Rajeswar

Signature

19/12/18  
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Department of Higher Education, Govt. of M.P.  
B.Sc. 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  
बी.एस.सी. स्नातक कक्षाओं के लिए पाठ्यक्रम  
केन्द्रीय अध्ययन मंडल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित  
Session / सत्र - 2018-19

Class	बी.एस.सी. बी.एड	
Semester	I	
Subject	(English)	Chemistry
	हिन्दी	रसायन शास्त्र
Paper	-H2/022/2018	

Unit	Syllabus	Periods
(English)	<p><b>A. Mathematical Concepts:</b> Logarithmic relations (rules and types), use of log table and antilog table in calculations, curves sketching, straight line and linear graphs, calculation of slopes, Differentiation of functions like <math>Kx</math>, <math>e^x</math>, <math>x^n</math>, <math>\sin x</math>, <math>\log x</math>; multiplication and division in differentiation, maxima and minima, partial differentiation and reciprocity relations, Integration of some useful/relevant functions: Factorials, Probability.</p> <p><b>B. Gaseous States and Molecular Velocities:</b> Critical phenomenon : PV isotherms of ideal gases, Andriess experiment, continuity of states, the isotherms of van der Waals equations, relationship between critical constants and van der Waals constants, Root mean square, average and most probable velocities, Qualitative discussion of the Maxwell's distribution of molecular velocities, collision numbers, mean free path and collision diameter.</p>	
(हिन्दी)	<p>अ. गणितीय अवधारणाएँ - लघुगणकीय संबंध (सूत्र, नियम तथा प्रकार), लघुगणक तालिका तथा अन्तिलघुगणक तालिका का गणना में अनुप्रयोग, वक्र आरेखन, सीधे तथा रेखीय ग्राफ एवं ढाल की गणनाएँ <math>Kx</math>, <math>e^x</math>, <math>x^n</math>, <math>\sin x</math>, <math>\log x</math>; जैसे फलनों का अवकलन, दो फलनों का गुणन तथा भाग का अवकलन, उच्चतम एवं निम्नतम अवकलन एवं अन्वोन्यता संबंध। कुछ उपयोगी फलनों का समाकलन, क्रमगुणित (फेक्टोरियल्स), प्रायिकता। ब. गैसीय अवस्था तथा आणविक गतियाँ - ब्राउनिन परिघटनाएँ - वास्तविक गैसों के PV समतापीय वक्र, वेग का प्रयोग, अवस्था का सातत्य, वाण्डर वाल्स समतापी वक्र, वाण्डर वाल स्थिरांक एवं क्रांतिक स्थिरांक संबंध। वर्गमाध्य मूल वेग, औसत वेग, प्रायिकतम वेग, आणविक वेगों के मैक्सवेल वितरण की गुणात्मक विवेचना, संघट्टन संख्या, माध्य मुक्त पथ, संघट्टन व्यास।</p>	

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<p>UNIT II</p>	<p>(English)</p>	<p>A. <b>Liquid State</b> : Intermolecular forces, structure of Liquids (a qualitative description) Liquid crystals: Difference between liquid crystal, solid and liquid. Classification, structure of nematic and cholesteric phases. Thermography and seven segment cell.</p> <p>B. <b>Solid State</b>: Definition of space lattice, Unit cell. Laws of crystallography - (i) Law of constancy of interfacial angles (ii) Law of rationality of indices (iii) Laws of symmetry, Symmetry elements in crystals, Ionic solid structures, radius ratio, radius ratio effect and coordination number, limitations of radius rule, lattice defects.</p>
<p>UNIT III</p>	<p>(English)</p>	<p>A. <b>Elementary Quantum Mechanics</b>: Schrodinger wave equation, significance of <math>\psi</math> and <math>\psi^2</math>, radial and angular wave functions and probability distribution curves, effective nuclear charge.</p> <p>B. <b>Periodic Properties</b> : Definition, application and periodicity of Atomic and ionic radii, ionization energy, electron affinity and electronegativity.</p> <p>C. <b>Chemical Bonding</b>: Covalent bonding as applied to valence bond theory and its limitations, directional characteristic of covalent bond, Hybridization and shapes of simple molecules and ions. Valence Shell Electron Pair Repulsion (VSEPR) theory to <math>NH_3</math>, <math>SF_4</math>, <math>ClF_3</math>, <math>ICl_2</math>, <math>H_2O</math>.</p>
	<p>(हिन्दी)</p>	<p>अ. द्रव अवस्था - अंतरा अणुक बल, द्रवों की संरचना (गुणात्मक विवरण) द्रव क्रिस्टल : द्रव क्रिस्टल, टोस एवं उच्च में अंतर, वर्गीकरण, नेमेटिक एवं कोलिस्ट्रिक प्रावस्थाओं की संरचना, उष्माग्राफी और सात खण्डीय सेल।</p> <p>अ. ठोस अवस्था - त्रिविम जालक तथा ईकाई सेल की परिभाषा क्रिस्टलोग्राफी के नियम (i) अंतराफलक कोणों का स्थिरता का नियम (ii) परिमेय घातांक का नियम (iii) सहसंयोजकता का नियम। क्रिस्टल में सममिति तत्व। आयनिक ठोस संरचना, त्रिज्या अनुपात, त्रिज्या अनुपात का और उच्च सहसंयोजक संख्या। त्रिज्या अनुपात की कमियाँ और जालक दोष।</p>
	<p>(हिन्दी)</p>	<p>अ. प्रारंभिक क्वाण्टम यांत्रिकी - श्रोडिंजर तरंग समीकरण और <math>\psi^2</math> का महत्व, रेडियल एवं कोणीय तरंग फलनों का सम्भावित वितरण वक्र, प्रभावी नाभिकीय आवेश।</p> <p>ब. आवर्ती गुण - परमाणवीय एवं आयनिक त्रिज्या, आयनिक ऊर्जा, इलेक्ट्रॉन बन्धुता एवं ऋण विद्युतता की परिभाषा अनुप्रयोग तथा आवर्तीता।</p> <p>स. रासायनिक बंध - सहसंयोजकता, सहसंयोजकता का सिद्धांत और उसकी कमियाँ, सहसंयोजक बंध का दिशात्मक गुण, संकरण के विभिन्न प्रकार, सरल अणुओं एवं आयनों के आकार। सयोजकता कोश इलेक्ट्रॉन युग्म प्रतिकर्षण सिद्धांत - <math>NH_3</math>, <math>SF_4</math>, <math>ClF_3</math>, <math>ICl_2</math>, <math>H_2O</math> के लिए।</p>

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UNIT IV	(English)	<p>A. <b>s-Block Elements:</b> Comparative study, diagonal relationship, salient features of hydrides, solvation and complexation tendencies including their function in bio systems an introduction to alkyls and aryl complexes.</p> <p>B. <b>p-Block Elements :</b> Comparative study (including diagonal relationship) of groups 13-17 elements, compounds like hydrides, oxides, oxyacids and halides of groups 13-16. Hydrides of boron-diborane and higher boranes, Borazine, borohydrides.</p> <p>अ. s-ब्लॉक तत्व - तुलनात्मक अध्ययन, विकर्ण संबंध, हाइड्राइड के विशिष्ट गुण, विलायकन और संकुलन प्रवृत्ति तथा जैविक प्रणाली में इनके कार्य, एल्किल और एरिल संकुलो का परिचय।</p> <p>ब. p-ब्लॉक तत्व - समूह 13-17 के तत्वों का तुलनात्मक अध्ययन (विकर्ण संबंध भी) समूह 13-16 के तत्वों के यौगिक जैसे हाइड्राइड, अक्साइड, आक्सीएसिड्स और हैलाइड। बोरोन के हाइड्राइड डायबोरेन और उच्च बोरेन, बोराजीन, बोरोहाइड्राइड।</p>	18 Lec.
UNIT V	(Hindi)	<p>A. <b>Bond Parameters Bond lengths and bond angles, bond energy:</b> Localized and delocalized chemical bond, Vander Waal interactions, with reference to supramolecular chemistry, resonance, hyperconjugation, inductive and field effects, hydrogen bonding.</p> <p>B. <b>Types of Reagents:</b> Electrophiles and nucleophiles, Types of organic reactions, Energy consideration, Homolytic and heterolytic cleavage Reactive intermediates, carbocations, carbanions, free radicals and carbenes, benzyne.</p> <p>C. <b>Stereochemistry:</b> Concept of Stereoisomerism, types of Stereoisomerism, elements of symmetry Chiral and achiral compounds, Fischer projection formulae; optical isomerism of lactic and tartaric acids, enantiomerism and diastereoisomerism; configuration (relative and absolute) conformations of ethane and n-butane and cyclohexane.</p> <p>D. L- and R, S-notations of compounds containing chiral centers; projection formulae -Fischer, Newman and Sawhorse of compounds containing two adjacent chiral centers; meso and dl-isomers, erythro and threo isomers; racemization and resolution; geometrical isomers: E and Z notations.</p>	
	(English)		

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<p>(हिन्दी)</p>	<p>अ. आबंध के प्राचल बंध कोण, बंध ऊर्जा, बंध लंबाई - स्थानित एवं विस्थानित रासायनिक बंध, रासायनिक बंध, वाण्डरवाल्स अंतर समिक्रिया आवेश स्थानान्तरण, संकुल अनुनाद, अतिसंयुग्मन, ऐरोमेटिकता, प्रेरणिक एवं क्षेत्र प्रभाव हाइड्रोजन बंध। ब. अभिकर्मकों के प्रकार - अभिकर्मकों के प्रकार इलेक्ट्रॉन स्नेही, नाभिकीय स्नेही। कार्बनिक अभिक्रिया के प्रकार (ऊर्जा की धारणा सहित)। सक्रिय मध्यवर्ती उत्पाद (कार्बोकैटायन, कार्बेनआयन, मुक्त, मूलक, कार्बीन्स, उदाहरण सहित)। स. त्रिविम रसायन - त्रिविम समावयवता की अवधारणा, त्रिविम समावयवता के प्रकार, सममिति के तत्व, आणविक किरैलिटी, कीरल एवं अकीरल अणु, फिशर प्रोजेक्शन सूत्र लेखितक तथा टार्टरिक अम्लों की प्रकाशिक समावयवता, दर्पण प्रतिबिम्बरूपता तथा द्विस्टीरियोरूपता विन्यास (आपेक्षिक एवं निरपेक्ष विन्यास), संरूपण, ईथेन एन-ब्यूटेन तथा साइक्लोहेक्सेन के संरूपण, कीरल केन्द्र वाले यौगिकों के L, R तथा S नामकरण, प्रोजेक्शन सूत्र, दो निरपेक्ष कीरल केन्द्र वाले कार्बनिक यौगिकों के लिए फिशर तथा सॉहॉर्स, मेसो तथा all-समावयी, इरीथ्रो एवं समावयी, रेसिमिकरण एवं उनका वियोजन, समावयी, नामकरण की E एवं Z पद्धति।</p>
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Department of Higher Education, Govt. of M.P.  
B.Sc. Under Graduate Semester wise Syllabus  
List of Books recommended by Central Board of Studies  
as approved by Governor of M.P.

उच्च शिक्षा विभाग, म.प्र. शासन  
बी.एससी. स्नातक कक्षाओं के लिए पाठ्यक्रम के लिए केन्द्रीय अध्ययन मंडल द्वारा अनुशंसित  
एवं म.प्र. के राज्यपाल द्वारा अनुमोदित पुस्तकों की सूची

Recommended Books	List of Books
	1. Physical Chemistry Puri, Sharma and Pathania, Vikas Publications, New Delhi
	2. Physical Chemistry G.M. Barlow, International Student Edition, McGraw Hill.
	3. The Elements of Physical Chemistry, P.W. Atkins, Oxford University Press
	4. Physical Chemistry, R.A. Alberty, Wiley Eastern Ltd.
	5. Physical Chemistry Through problems, S.K. Dogra and S. Dogra, Wiley Eastern
	6. Organic Chemistry, Morrison and Boyd, Prentice Hall.
	7. Organic Chemistry, L.G. Wade Jr, Prentice Hall
	8. Fundamentals of Organic Chemistry Solomons, John Wiley.
	9. Organic Chemistry, Vol. I, II, III, S.M. Mukherji, S.P. Singh and R.P. Kapoor.
	10. Organic Chemistry, F.A. Carey, McGraw-Hill Inc.
	11. Introduction to Organic Chemistry, Streitwieser, Heathcock and Kosower, Macmillan
	12. Vogel's Qualitative & quantitative Analysis Vol. 1, 2, 3, ELBS.
	13. Advanced Organic chemistry, I, L. Finar, ELBS.
	14. Basic Concepts of Analytical chemistry, S.M. Khosker, New Age International Publishers
	15. Analytical Chemistry, R.M. Verma, CBS Publication.
	16. Analytical Chemistry, Skoog & West, Wiley International.
	17. Essentials of Physical Chemistry, B.S. Bahl, Arun Bahl & G.D. Tuli, S. Chand & Company Ltd
	18. Atomic structure and Molecular spectroscopy, Manas Chandra, New Age International Publishers.
	19. Molecular Spectroscopy, Sukumar, MJP Publishers.
	20. Organic Chemistry, Mac Murrey, Pearson Education.
	21. Inorganic Chemistry - J.D. Lee, John Wiley
	22. Inorganic Chemistry - Cotton and Wilkinson, John Wiley
	23. Inorganic Chemistry - Huheey, Harper Collins Pub. USA
	24. Inorganic Polymer - G.R. Chhatwal, Himalaya Pub. House
	25. मध्य प्रदेश हिन्दी ग्रन्थ अकादमी भोपाल द्वारा प्रकाशित रसायन विज्ञान की प्रारम्भिक
	26. मध्य प्रदेश हिन्दी ग्रन्थ अकादमी भोपाल द्वारा प्रकाशित प्रायोगिक रसायन का पाठ्यक्रम

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Department of Higher Education, Govt. of M.P.  
Under Graduate Semester wise Syllabus  
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**Practical**

Session 2018-19

बी.एस.सी. बी.एड Semester I

Subject : Chemistry

Paper : Practical

Max Marks : 50

Duration of practical during the semester examination : 4 hours

**Physical Chemistry**

**(A).Any one experiment**

1. Calibration of thermometer
2. Determination of melting point
3. Determination of boiling point
4. Preparation of solutions of various concentration, NaOH, HCl, H<sub>2</sub>SO<sub>4</sub>

12 Marks

**(B).Any one experiment**

1. Determination of surface tension/percentage composition of a mixture using surface-tension method
2. Determination of viscosity / percentage composition of a mixture using viscosity method.

12 Marks

**Organic chemistry**

1. Distillation
2. Crystallization
3. Decolourisation and crystallization using charcoal
4. Sublimation
5. Detection of elements and functional groups
6. Organic molecules through models with special reference to optical and Geometrical isomerism.

12 Marks

Viva : 6 marks  
Records : 8 marks

*K. R. Jaiswal*

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*J. S.*

*P. Sen*

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उच्च शिक्षा विभाग, म.प्र. शासन  
स्नातक कक्षाओं के लिये सेमेस्टर अनुसार पाठ्यक्रम  
केंद्रीय अध्ययन मण्डल द्वारा अनुशासित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित।

**Practical**

सत्र 2018-19

बी.एस.सी. बी.एड Semester I

Subject : रसायन शास्त्र

Paper Title : प्रायोगिक रसायन

भौतिक रसायन

समय : 4 घंटे

(अ) कोई एक प्रयोग

अंक 12

1. थर्मामीटर का कैलीब्रेशन
2. गलनांक ज्ञात करना।
3. क्वथनांक ज्ञात करना।
4. विभिन्न सान्द्रता के विलयनों का बनाना NaOH, HCl, H<sub>2</sub>SO<sub>4</sub>.

(ब) कोई एक प्रयोग

अंक 12

1. द्रव का पृष्ठ तनाव/प्रतिशत संघटन ज्ञात करना।
2. द्रव का श्यानता गुणांक/प्रतिशत संघटन ज्ञात करना।

कार्बनिक रसायन

अंक 12

1. आसवन
2. क्रिस्टलीकरण
3. चारकोल का उपयोग कर विरंजनीकरण एवं क्रिस्टलीकरण
4. उर्ध्वपातन
5. तत्वों एवं क्रियात्मक समूहों का परीक्षण
6. मॉडल द्वारा कार्बनिक अणुओं में प्रकाशीय एवं ज्यामितिय समावयवता

मौखिकी अंक - 6

रिकार्ड अंक - 8

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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 लिये सेमेस्टर अनुसार पाठ्यक्रम  
केंद्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित  
Session (सत्र) 2018-19

Class / कक्षा	: बी.एस.सी. बी.एड
Semester / सेमेस्टर	: I Semester
Subject / विषय	: Botany
Title of Subject Group	: DIVERSITY OF MICROBES AND CRYPTOGAMS
विषय समूह का शीर्षक	: सूक्ष्मजीवियों एवं क्रिप्टोगेम्स में विविधता

## Particulars / विवरण

Unit-1	<p><b>Prokaryotes:</b> characteristics of Viruses, general account of TMV and T4 bacteriophage. Bacterial structure, nutrition, reproduction and economic importance; General account of Mycoplasma Cynobacteria and Actinomycetes.</p> <p>प्रोकैरियोट : विषाणुओं के सामान्य लक्षण, टी एम.वी विषाणु एवं टी फोर बैक्टीरियोफेज का सामान्य विवरण। जीवाणु की संरचना, पोषण, प्रजनन एवं आर्थिक महत्व, माइक्रोप्लाज्मा सायनो-बैक्टीरिया एवं एक्टिनोमाइसीटीज का सामान्य विवरण।</p>
Unit-2	<p><b>Algae :</b> General characters, classification and economic importance, important features and life history of Chlorophyceae- <i>Volvox</i>, <i>Oedogonium</i>, Charophyceae- <i>Chara</i> Xanthophyceae - <i>Vaucheria</i>, Phaeophyceae - <i>Ectocarpus</i>, Rhodophyceae - <i>Polysiphonia</i>.</p> <p>शैवाल : शैवालों के सामान्य लक्षण, वर्गीकरण एवं आर्थिक महत्व, मुख्य लक्षण एवं जीवन चक्र क्लोरोफायसी-वॉल्वॉक्स, ऊडोगोनियम, कैरोफायसी-कारा, जैन्थोफायसी-वाचरिया, फियोफायसी-एक्टोकार्पस, रोडोफायसी-पोलीसाइफोनिया।</p>
Unit-3	<p><b>Fungi:</b> General characters, classification and economic importance, important features and life history of Mastigomycotina- <i>Phytophthora</i>, <i>Zygomycotina</i> <i>Mucor</i>, Ascomycotina : <i>Aspergillus</i>, <i>Peziza</i>, Basidiomycotina - <i>Tricopha</i>, Deuteromycotina <i>Cercospora</i>. General account of Lichens.</p> <p>कवक : कवकों के सामान्य लक्षण एवं वर्गीकरण एवं आर्थिक महत्व। प्रमुख कवकों एवं जीवन इतिहास का अध्ययन, मेस्टोगोमायकोटिना-फायटोफथोरा, जायगोमायकोटिना-मुकोर। एस्कोमायकोटिना-एस्पेरजिलस, पेजाइजा, बेसिडियोमायकोटिना, पक्सीडिना, ड्यूटेरोमायकोटिना-सर्कोस्पोरा, लाइकेन्स का सामान्य विवरण।</p>
Unit-4	<p><b>Bryophyta :</b> Classification, study of morphology, anatomy, reproduction of Hepaticopsida : <i>Riccia</i>, <i>Marchantia</i> ; Anthocerotopsida: <i>Anthoceros</i>, <i>Bryophyta</i>, <i>Polytrichum</i></p> <p>त्रायाफोइटा : बाह्य आकारिकी, आंतरिक संरचना एवं प्रजनन : हेपेटिकोप्सिडा-रिक्सिया, मार्कोन्शिया, एन्थोसिरोटोप्सिडा-एन्थोसिरोस, ब्रायोप्सिडा-पॉलीट्राइकम</p>

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<b>Unit-5</b>	<p><b>Pteridophyta</b> : Important characters and classification. Stelar organization. Morphology and anatomy of <i>Rhynia</i>. Structure, anatomy and reproduction in <i>Lycopodium</i>, <i>Selaginella</i>, <i>Equisetum</i> and <i>Marsilea</i>.</p> <p>टेरिडोफाइटा : प्रमुख लक्षण एवं वर्गीकरण। स्टीलर संगठन, राहिनिया की बाह्य एवं आंतरिक संरचना। लाइकोपोडियम, सिलेजिनेला, इक्वीसिटम एवं मारसीलिया की बाह्य तथा आंतरिक संरचना एवं प्रजनन।</p>
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**Suggested Books :**

1. G.M. Smith 1971 Cryptogamic Botany. Vol - I Algae & Fungi Tata McGraw Hill Pub. Co. NewDelhi.
2. G.M. Smith 1971 Cryptogamic Botany. Vol -II Bryophytes & Pteridophytes. Tata McGraw Hill Pub. Co. New Delhi.
3. O.P.Sharma,1992. Text book of Thallophyta McGraw Hill Pub. Co.
4. O.P.Sharma,1990. Text book of Pteridophyta McMillan india Ltd .
5. P.D.Sharma 1991. The Fungi. rastogi & Co. Meerut.
6. H.C. Dubey.1990. an introduction of Fungi.Vikas Pub. house pvt.ltd.
7. P.Puri 1980. Bryophyta Atma ram & Sons, Delhi.
8. A.Clifton.1958. Introduction to the Bacteria. McGrew Hillpub. Co.New delhi.

**Practical**

**Objectives :**

- i) To develop the skills of staining and observation of lower organism.
- ii) To impart the skills of temporary and permanent slide preparations.
- iii) To enhance ability to identify the lower organisms using microscope.
- iv) To familiarize the students with diseases and their causative agents.

**Scheme of practical examination**

Time: 4 hrs

Algae / Fungi	05
Bryophyta	10
Pteridophyta	10
Plant disease	05
Spotting (1-5)	10
Viva	05
Sessional	05
<b>Total :</b>	<b>50</b>

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Department of Higher Education, Govt. of M.P.  
Under Graduate Semester wise Syllabus  
as recommended by Central Board of Studies in Zoology

उच्च शिक्षा विभाग, म.प्र. शासन  
स्नातक कक्षाओं के लिये समेस्टर अनुसार पाठ्यक्रम  
केन्द्रीय अध्ययन मण्डल प्राणीशास्त्र द्वारा अनुशंसित

Class / कक्षा	:	बी.एस.सी. बी.एड
Semester / समेस्टर	:	I
Subject / विषय	:	Zoology (प्राणीशास्त्र)
Title of Paper	:	Invertebrate

**Unit-I**

1. Elementary Knowledge of Zoological Nomenclature and International Code.
2. Classification of Lower Invertebrates (According to Parker and Haswell 7<sup>th</sup> edition)
3. Classification of Higher Invertebrates (According to Parker and Haswell 7<sup>th</sup> edition)
4. Protozoa- Type Study of Plasmodium.
5. Protozoa and Diseases.

**Unit-II**

1. Porifera- Type study of Sycon.
2. Types of Canal system.
3. Coelenterata- Type study of Obelia
4. Corals and Coral Reef formation.

**Unit-III**

1. Helminthes- Type study of Liver Fluke.
2. Nematodes and diseases.
3. Annelida- Type study of earthworm , metamerism.
4. Type Study of Hirudinaria.
5. Structure and significance of Trochophore larva.

**Unit-IV**

1. Arthropoda- Type study of Prawn.
2. Types study of Periplanata.
3. Larval forms of Crustacea.
4. Insect as Vectors of human diseases.

**Unit-V**

1. Mollusca- Type study of Pila
2. Echinodermata- External features and water vascular system of Star fish.
3. Larval forms of Echinoderms.
4. Minor Phyla – Ectoprocta & Rotifera.

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Department of Higher Education, Govt. of M.P.  
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उच्च शिक्षा विभाग, म.प्र. शासन  
स्नातक कक्षाओं के लिये समेस्टर अनुसार पाठ्यक्रम  
केन्द्रीय अध्ययन मण्डल प्राणीशास्त्र द्वारा अनुशंसित

Class / कक्षा : बी.एस.सी. बी.एड  
Semester / समेस्टर : I  
Subject / विषय : Zoology (प्राणीशास्त्र)

PRACTICAL

The Practical's work will be based on theory syllabus and the candidates will be required

to show knowledge of the following -

1. Study of Museum Specimens, slides relevant to the type study in theory
2. Mounting ( Temporary)
  - a. Mouth parts of insects
  - b. Statocyst of Prawn
  - c. Ctenidium and Osphradium of Pila
  - d. Mounting Material
3. Major Dissection
  - a. Earthworm: Digestive system, nervous system and reproductive system
  - b. Cockroach : Digestive system, Nervous system,
  - c. Prawn : Nervous system, Appendages.
  - d. Pila: Nervous system
- 4 Minor Dissection
  - a. Hastate plate and appendages of Prawn.
  - b. Salivary glands of Cockroach.
  - c. Radula of Pila.
  - d. Earthworm: Typhlosole

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Distribution of Marks

Time 3 hours

Maximum Marks: 50

	Marks Allotted
1. Major Dissection	10
2. Minor Dissection	05
3. Temporary Mounting	04
4. Spotting (Specimens + Larva + Slides) Representative of Each phylum	16
5. Collection	05
6. Viva voce	05
7. Practical Record	05
Total	50

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**SYLLABUS**

**B.Sc.B.Ed**

**SEMESTER - I**

**CC 1. EDUCATION IN INDIA- STATUS, PROBLEMS AND ISSUES**

**Objectives:**

- To develop perception of the role and functions of a teacher as envisaged in the NPE 1986 and to familiarize the Student Teacher with the different projects and schemes at Secondary level in M.P.
- To develop an understanding of the brief historical background of Indian Education with special reference to Secondary Education.
- To develop an understanding of the objectives and scope of Secondary Education.
- To develop an awareness of the professional ethics.

**CONTENT**

**UNIT 1: Concept of Education –**

- Indian and Western. Aims of Education; Functions of Education.
- Education as an instrument of Social Control, Social Change,
- Preservation of Cultural Heritage and Values.
- School and the society, Culture and Education, School as a Social System. Agencies of Education – Informal, Formal and Non-formal.

**UNIT 2: Salient Features of Ancient Indian Education –**

- Vedic, Buddhist, Islamic Tradition in Education.
- Major landmarks of British System of Education in Colonial India particularly from the viewpoint of Aims, Structure, Curricula and Methods of Education.
- Efforts towards evolving a national system of Education.

**Unit -3: Secondary Education**

- General Aims and Objectives of Secondary Education and Structure. Education during Post Independence Period. Constitutional provisions for education Secondary Education commission 1952-53, Education Commission 1964-66, New Education Policy 1986 with Programme of Action 1992,

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- Different streams of Secondary Education 1) C.B.S.E. 2) I.C.S.E. and 3) KSEEB with respect to curriculum. 4) Examination System etc.,
- Secondary School Teacher – Qualifications, Competences, Job Profile, Professional Code of Ethical conduct.
- Role of Secondary school teacher in Emerging India.

#### Unit - 4 : Teacher Education and Secondary School Curriculum

- Status, Aims and Objectives of Teacher Education in India.
- Role and Responsibilities of NCTE NCERT, DSERT, CTE, IASE
- Professional organisation in the field of Teacher education
- Rastriya Madhyamika Shikshana Abiyana (RMSA), NCF-2005
- Programmes for enhancing efficiency and productivity of school teachers- Inservice training – orientation and content enrichment programmes.

#### Assignments: (Any two of the following.)

- Prepare and execute a plan for making at least two children and one adult literate from the community.
- Plan and organize a field trip/excursion to a nearby area of educational importance and submit a report.
- Visit to block or district and divisional educational offices and study their educational management pattern and submit the report.
- Prepare one project for institutional planning.
- Critically Study the working of the one of the parent teacher association in any two secondary schools.
- A critical survey of co-curricular activities in secondary schools.

#### Reference:

- Anand C. L. et al., (1993) Teacher and Education in the emerging Indian society NCERT New Delhi.
- Coombs Philips H (1985) The World Crisis in Education. New York. Oxford University Press, New York
- Delors, Jaques (1996) Learning the Treasure within Report to UNESCO of the Internal Commission on Education for Twenty First Century UNESCO.

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- Dewey I (1952) Experience in Education, Collier Macmillan.
- Dewey S (1956) Democracy in Education New York: Macmillan.
- Gandhi M. K. (1956) Basic Education, Ahmedabad Nalijiban.
- Government of India (1952) Report of the Secondary Education Commission, New Delhi:- Ministry of Education.
- Government of India (1966) Report of Education Commission Ministry of Education, New Delhi.
- Government of India MHRD (1986) (Revised 1992) National Policy of Education. New Delhi.
- Government of India (1992) Report of Core Group on Value Orientation of Education Planning Commission.
- Kneller G. F. (1978) Foundation of Education. New York: Johri Willy and Sons.
- Kneller George (1978) Introduction to Philosophy of Education, New York: John Willey and Sons INC.
- Mani R S. (1964) Educational Ideas and Ideals of Gandhi and Tagore, New Book Society, New Delhi.
- Mathur S.S. (1988) A Sociological Approach to Indian Education, Agra. Vindo Prakashan.
- Mookherjee K.K. (1972) Some Great Educators of the World. Fas Gupta & Ce Put Ltd. Calcutta.
- Mukherjee S. N. (1966) History of Education in India, Baroda. Acharya Book Depot.
- Naik J. P. and Syed N (1974) A Student's History of Education in India, New Delhi. Macmillan Co.
- Naik J. P. (1975) Equality, Quality & Quantity: The Elusive Tringle of Indian Education Bombay : Allied Publishers.
- NCTE (1988) Gandhi on Education , New Delhi
- Salamaliha(1979) Education in Social Context. New Delhi. NCERT.

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## CC 2: CHILDHOOD & GROWING UP

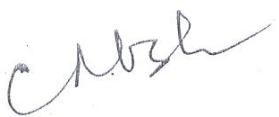


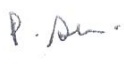
### Objectives:

- To develop an understanding of different aspects of a child's physical, motor, social and emotional development.
- To understand the developmental process of children with diverse abilities in social, cultural and political context.
- To build sensitivity towards children's developmental needs and capabilities, within their socio-cultural context.
- To develop a sensitive and critical understanding of the different social/educational/cultural/political realities at the core of the exploration into childhood.
- To build an interdisciplinary frame work to interpret, analyse observations and interactions from cross culture psychology.
- To develop critical deconstruction of significant events that media highlights and creates during childhood
- To provide hands-on experiences to interact with children, and learning in methods to understand aspects of the development of children.
- To develop the power to interpret how gender caste and social class may impact the lived experience of children.

### CONTENT

#### Unit 1: Perspectives in Development

- Concept , Meaning ,Scope and Function and Educational Psychology
- Introduction to development: concept and introduction to perspectives in development, humanistic psychology and developmental theory
- Enduring themes in the study of development: development as multidimensional and plural; Development as continuing through the life span; ways in which development is continuous/discontinuous? ; Socio cultural contexts influencing development
- Gathering data about children from different contexts: naturalistic observations; interviews; reflective journals about children; anecdotal records and narratives; clinical methods with reference to Piaget
- Method: Longitudinal, Cross Sectional, Sequential, Cohort studies; Biographical, Case study and Observational method.

**Unit 2: Stages of Human Development**

- Child as a developing individual; a psycho-social entity; stages of development
- Developmental characteristics of a child and an adolescent: physical, cognitive, social, emotional, moral and language; their interrelationships
- Developmental tasks of childhood and adolescence and their implications
- Factors influencing development such as heredity & environment, media, nutrition, child-rearing practices, siblings and peers
- Commonalities and diversities within the notion of childhood and how multiple childhoods are constructed with particular reference to the Indian context-Living in an urban Slum, Growing girl, and Growing up in dalit household

**Unit 3: Social and Emotional Development**

- Basic understanding of emotions, how differential gender socialization occurs
- Personality development: Freud; psycho-social development-Erikson; influence of early childhood experiences on later personality.
- Social theories and gender development: meaning of gender roles; influences on gender roles, stereotypes, gender in the playground.
- Development of emotions: functions of emotions, attachment-Bowlby.

**Unit 4: Contexts of Socialization**

- Concept of socialization: family and child relationships; parenting, child rearing practices
- Schooling: peer influences, school culture, relationships with teachers, teacher expectations and school achievement; being out of school, overage learner
- Relationships with peers: friendships and gender; competition and cooperation, competition and conflict; aggression and bullying from early childhood to adolescence.
- Social, economic and cultural differences in socialization: implications for inclusion.

**Essential Readings**

- Cole, M., Cole, S. R. and Lightfoot, C. (2004). The Development of Children. New York: Worth Publishers. Chapter 1: The study of Human Development.

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- Newman, B. M. and Newman, P.H. (2007). Theories of Human Development. London: Lawrence Erlbaum Associates, publishers. Chapter 1: Introduction.
- Papalia, D. E. and Olds, S. W. (2003). Human Development. New York: McGraw Hill Higher Education. Chapter 1: The Study of Human Development, Chapter 2: Theory and Research, Chapter 4: Physical Development During the First Three Years, Chapter 7: Physical Development in Early Childhood, Chapter 9: Physical Development in Middle Childhood.
- Saraswathi, T.S. (Ed.) (1999). Culture, Socialization and Human Development: Theory, Research and Applications in India. Sage publications. Chapter 4: Theoretical Frameworks in Cross-cultural Psychology, Chapter 6: Individualism in a Collective Culture: A Case of Co-existence of Opposites.
- Vasanta, D. (2004). Childhood, Work and Schooling: Some Reflections. Contemporary Education Dialogue, Vol. 2(1), 5-29. 6. Mukunda, K. V. (2009). What Did You Ask in School Today? A Handbook on Child Learning. Nojda: Harper Collins. Chapter 4: Child Development, 79-96.
- Readings for Discussion 1. Aries, P. (1965). Centuries of Childhood-A social history of the family life. Random House Inc. Chapter 1: The Ages of Life, Chapter 2: The Discovery of Childhood, and Conclusion - The two concepts of childhood. 2. Harris, M. and Butterworth, G. (2002). Developmental Psychology: a student's handbook. New York: Taylor & Francis. Chapter 1: A Brief History of Developmental Psychology.

Advanced readings

- Kakkar, S. (1978). Indian Childhood: Cultural Ideas, And Social Reality. New Delhi: Oxford.
- Nambissan, G. (2010). Exclusion and Discrimination in Schools: Experiences of Dalit Children; Working paper series Volume 01, Number 01, Indian Institute of Dalit Studies and UNICEF.
- Kakkar S. (1991). The Inner World: A Psycho-analytic study of childhood and society in India. Delhi: Oxford University Press.
- Sandra, L. Bem (1987). Gender Schema Theory and its Implications for Child Development: raising gender a schematic children in a gender schematic society, in M.R. Walsh, (ed). The Psychology of Women. Harvard University Press Cambridge, 206-226.
- Weiner, M. (1991). The State and the Child in India: Child Labour and Education Policy in Comparative Perspective. Princeton: Princeton University Press.

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