

BAOSI BANIKANTA KAKATI COLLEGE

(Affiliated to Gauhati University)

Nagaon, Barpeta

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3rd CYCLE NAAC ACCREDITATION 2024

Criteria 3 - Research, Innovations and Extension

3.3 Research Publication and Awards

3.3.2: Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years



National Assessment and Accreditation Council

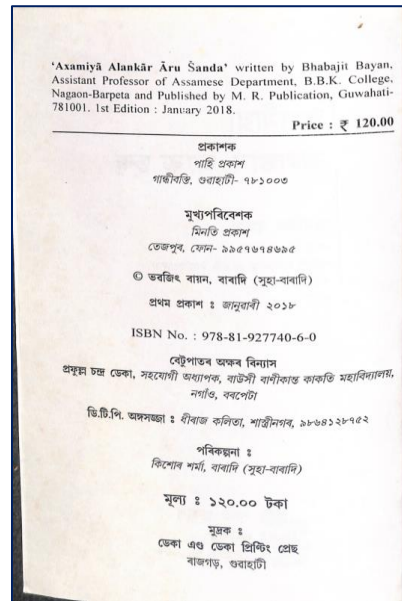
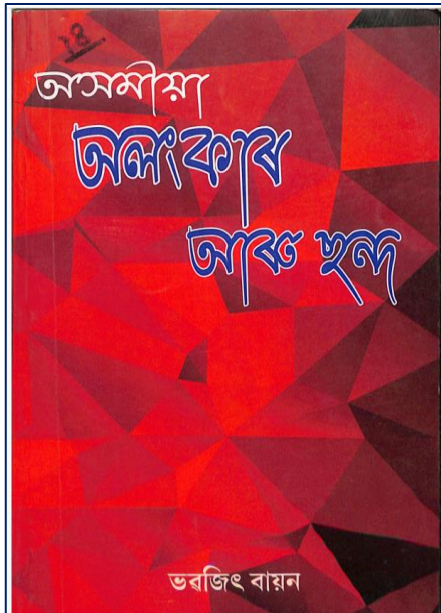
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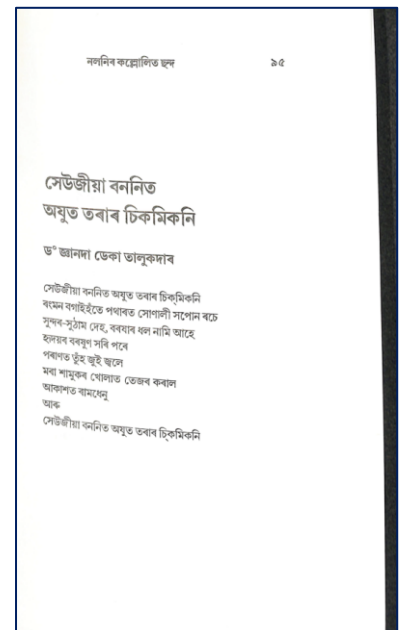
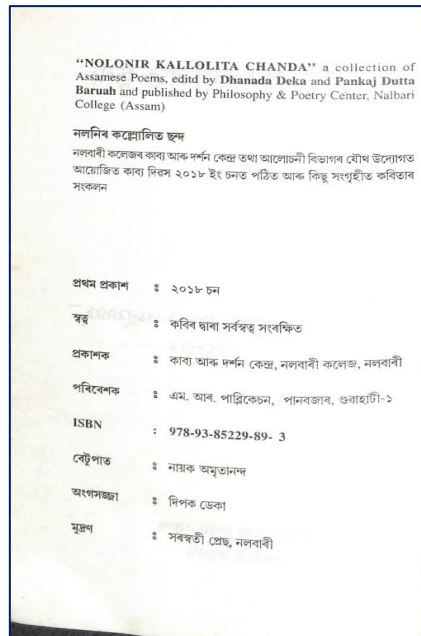
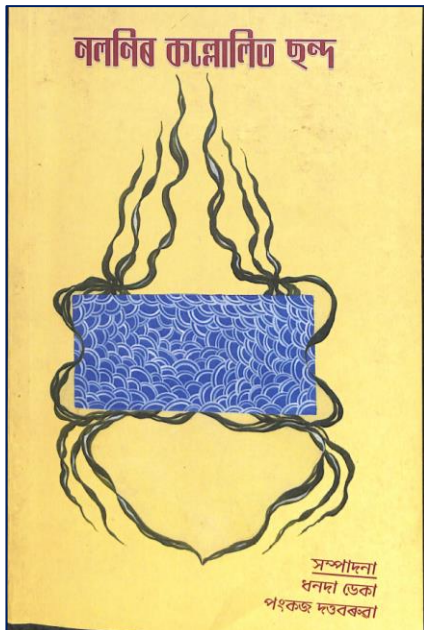
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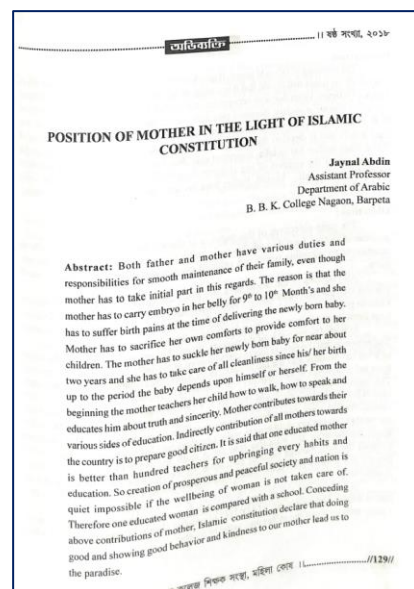
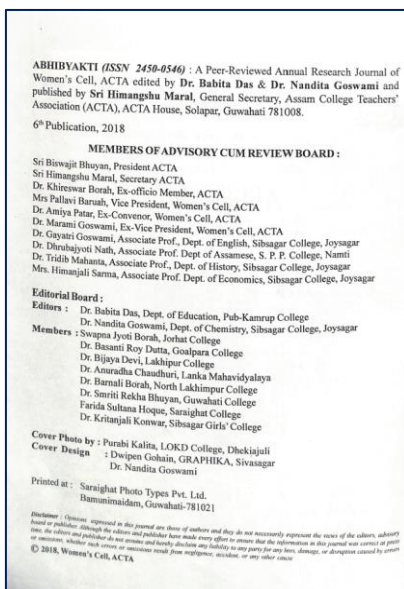
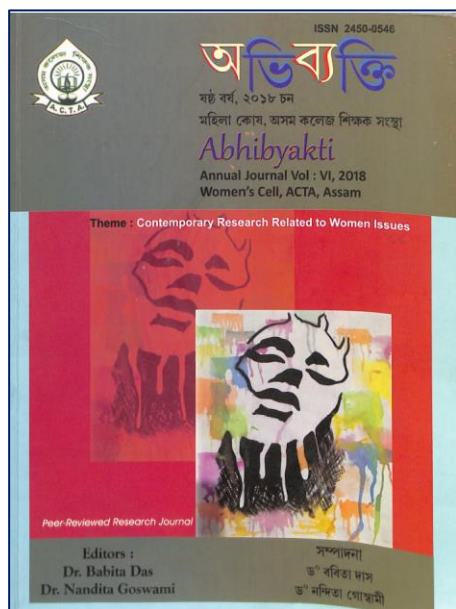
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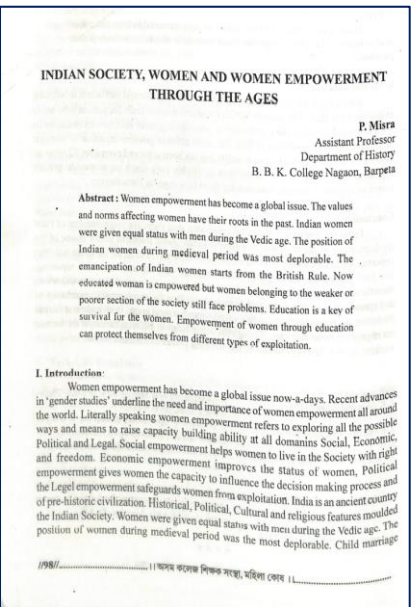
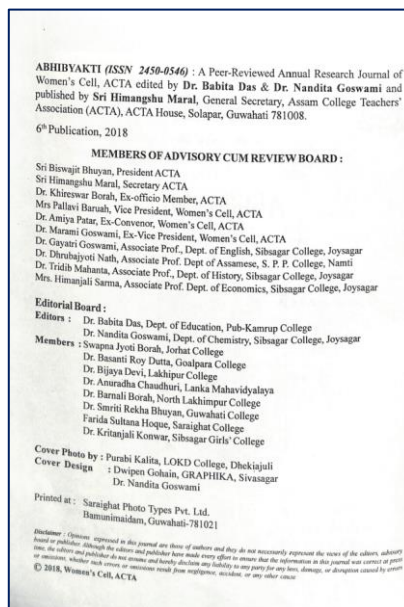
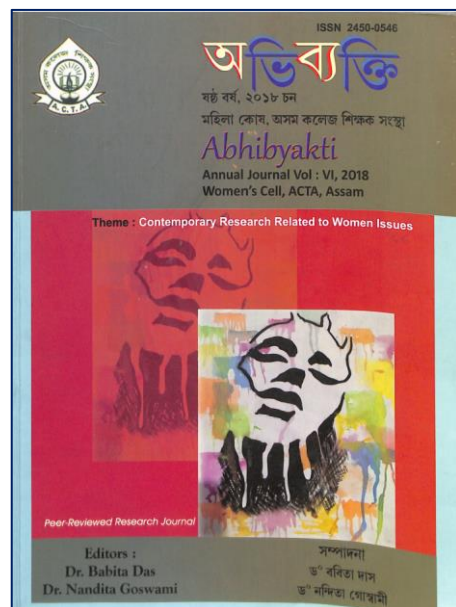
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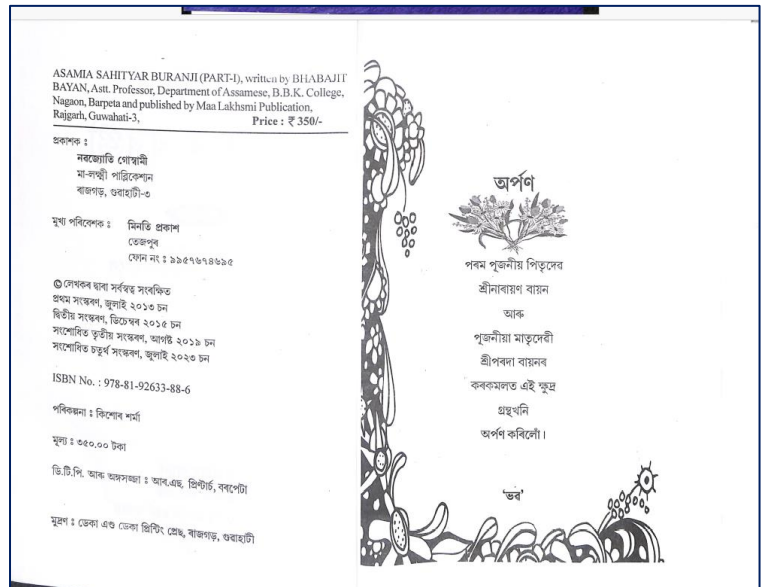
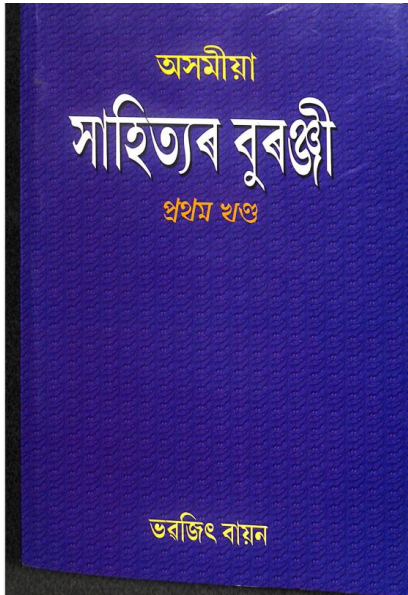
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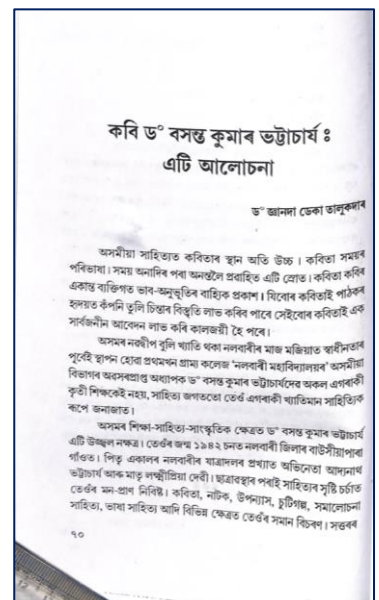
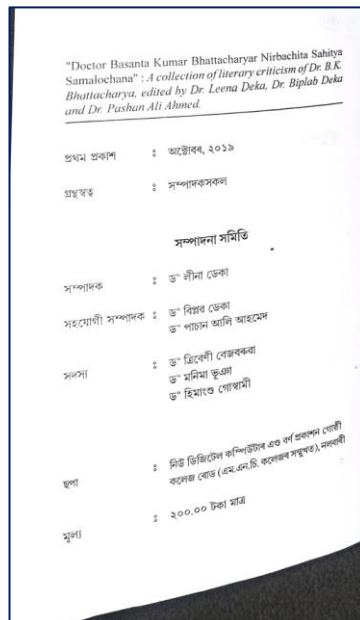
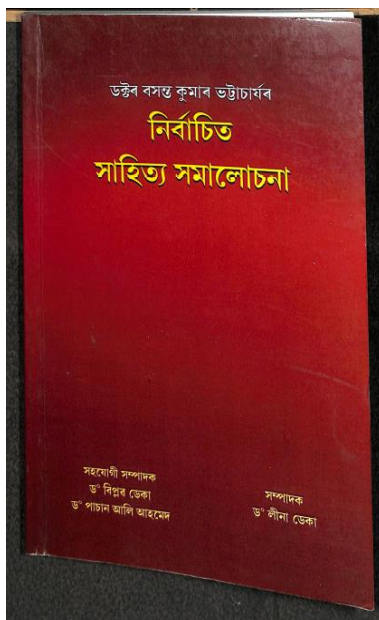
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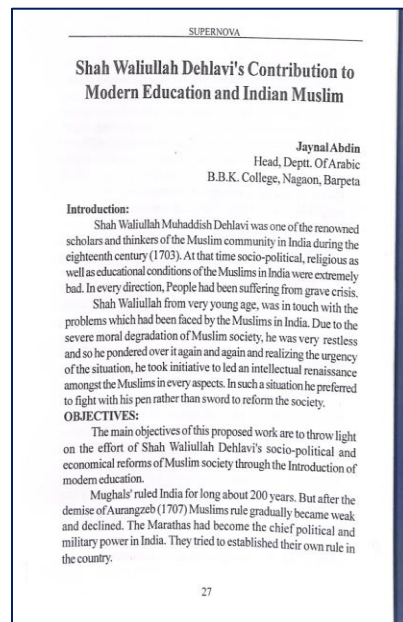
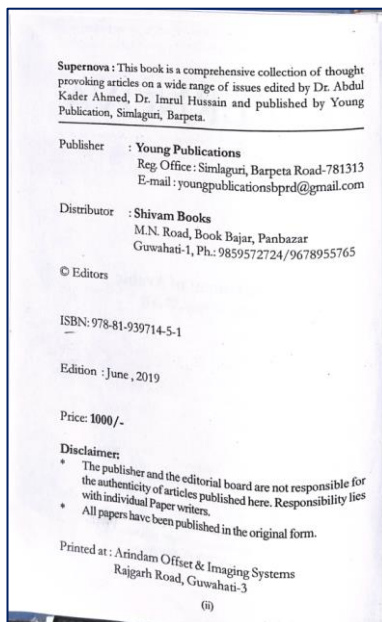
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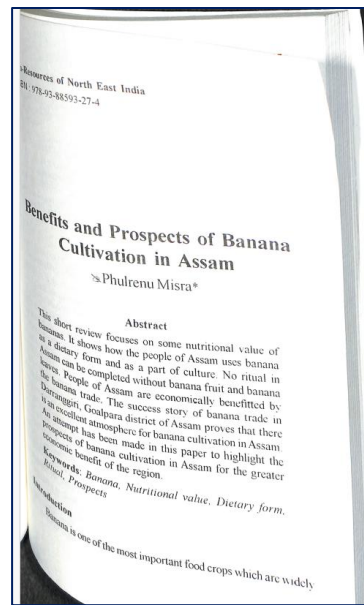
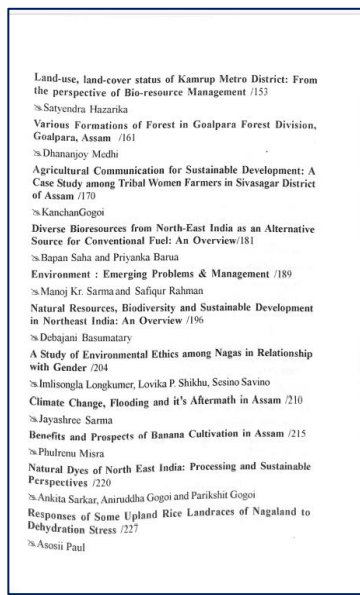
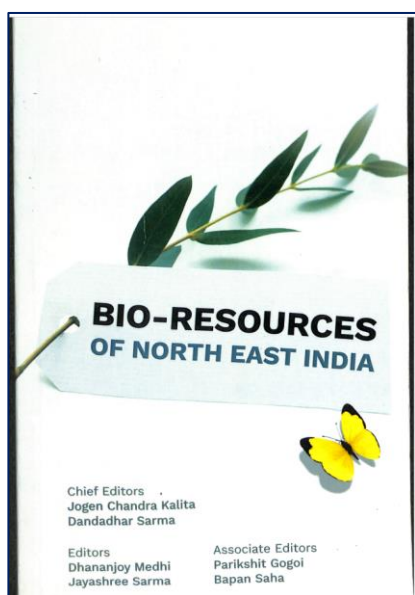
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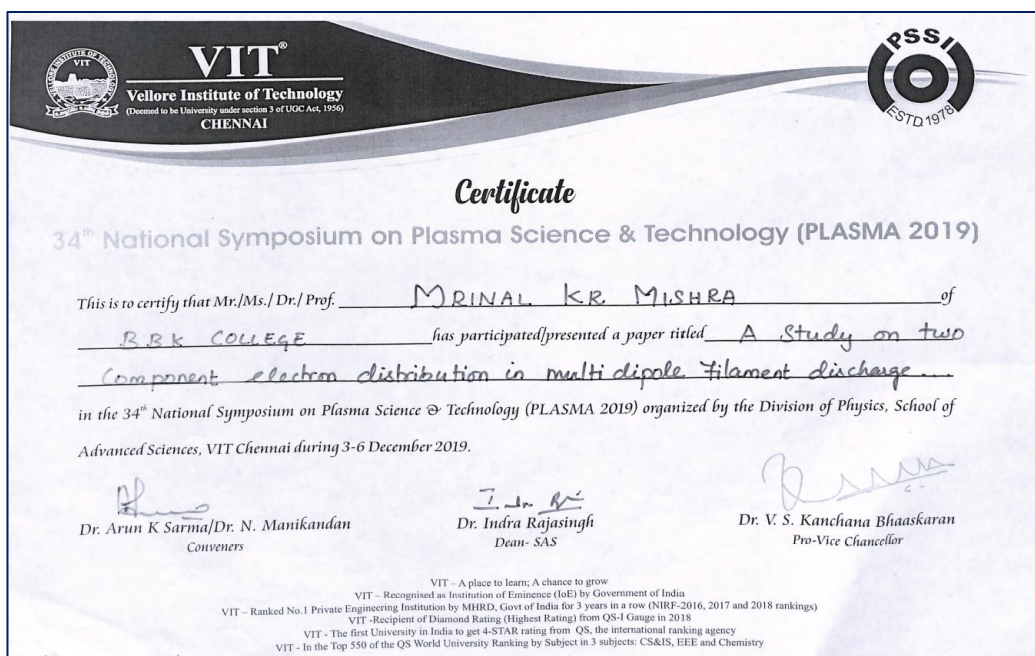
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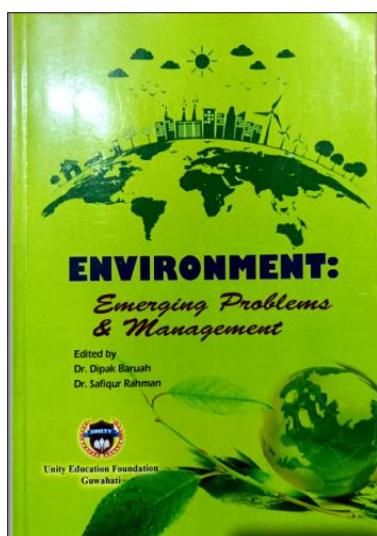
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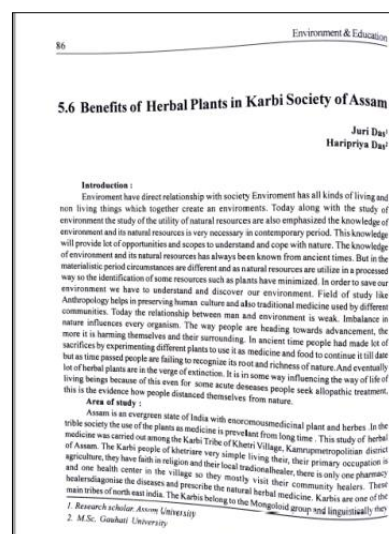
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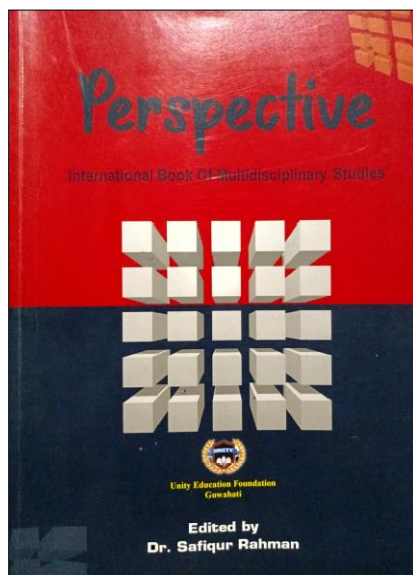
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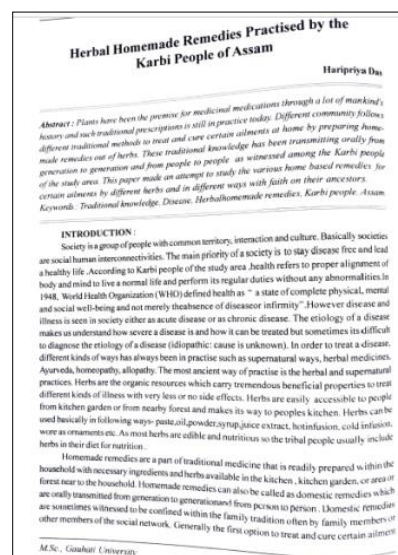
CHAPTER-4 Climate Change	58-67
4.1 Climate Change is The Greatest Threat to The Planet Earth <i>Minakshi Deka Boraiah</i>	58
4.2 Climate Change - Glacier Melting <i>Rashmi Kachari</i>	64
CHAPTER-5 Environment & Education	68-92
5.1 Education on Environment in the Curriculum of Social Sciences <i>Hemobika Talukdar</i>	68
5.2 Methods of Inculcation of Environmental Education in School <i>Jayaraj Saikia</i>	72
5.3 Role of Education in Environmental Awareness <i>Anugam Ray</i>	75
5.4 Environmental Education in Context to Assam <i>Tridisha Borgohain</i>	79
5.5 Education for Sustainable Development <i>Anjam Sahidullah</i>	82
5.6 Benefits of Herbal Plants in Karbi Society of Assam <i>Juri Das/ Haripriya Das</i>	86
5.7 The Environmental Awareness in Abhijanasakuntalam <i>Chandranila Upamanyu</i>	89
CHAPTER-6 Environment & Economy	93-111
6.1 Economic Development and Environmental Degradation <i>Alok Regon</i>	93
6.2 Greening the Global Economy: Need and Way Forward <i>Neha Kar</i>	97
6.3 Environmental Accounting Practice in India <i>Sabitri Bhagabati</i>	102
6.4 Deforestation-Conservation Trade-off: Political Economy of Forest Conservation Discourse in Assam <i>Bondita Deka</i>	106



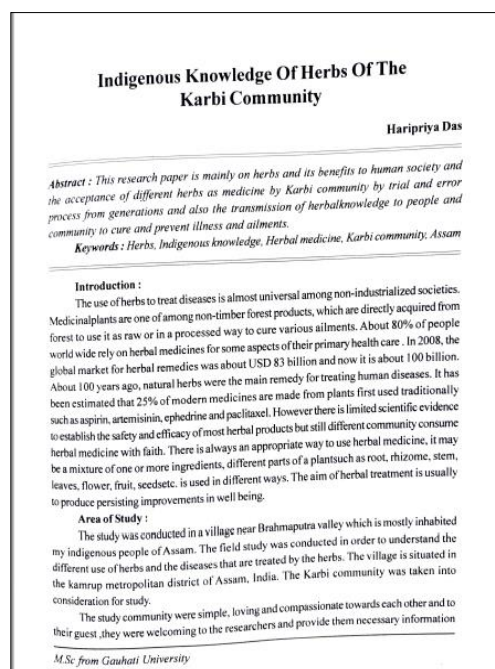
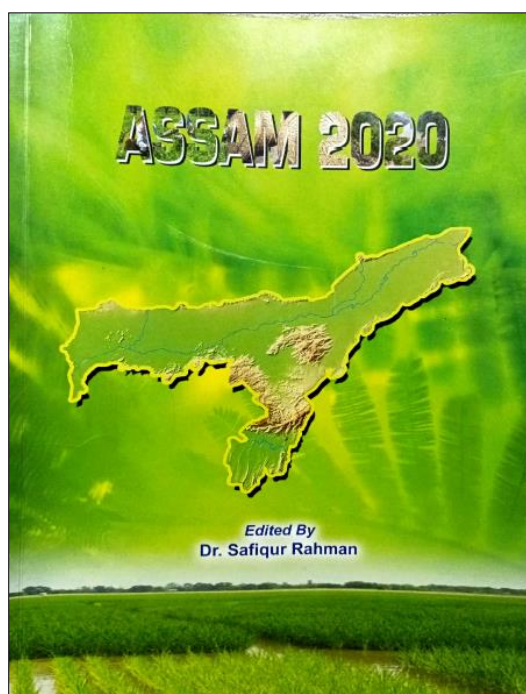
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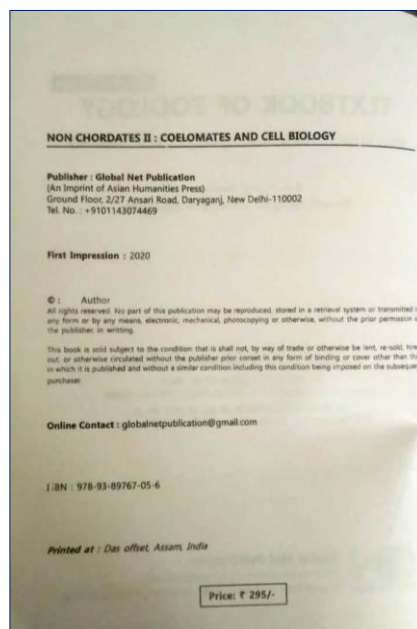
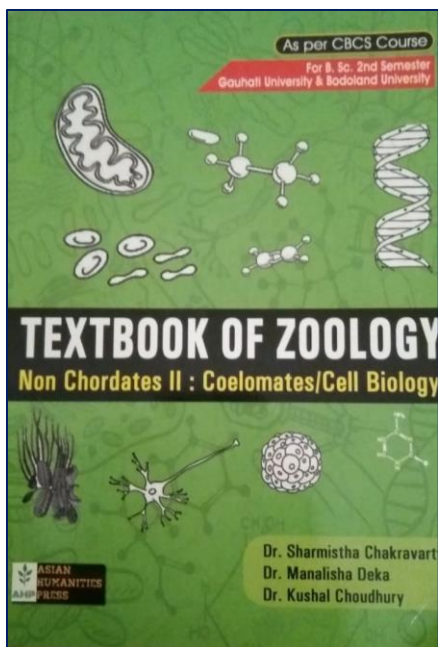
Contents	
1. Impact of Covid-19 on Indian masses: Challenges and Opportunities	1
2. Important Indigenous Industries of Barak Valley During the Colonial Period	6
3. The Concept of Globalisation: An Analysis	11
4. Status of Elementary Education in Assam	14
5. Social Benefits and Rapid Urbanisation: A Study in Guwahati City	19
6. The Politics of Difference and Cultural Hybridity in terms of Nation and Identity with reference to Conrad's 'Heart of Darkness' and Hossein's 'The Kite Runner'	26
7. Market and Competition: A Brief Analysis	33
8. Gender Stereotypes and Mental Health	38
9. Attitude of Undergraduate Students towards Semester System in Relation to their Academic Achievement	41
10. Forest Resources of Assam: Economic Perspective	47
11. Herbal Homemade Remedies Practised by the Karbi People of Assam	56
12. Aspects of the Folklore, Ancient Indian Literary Sources and Epics in Modern Bodo Poetry	60
13. Study of Diversity of Ethnobotanical Plants Commonly Used in the Villages of Dibrugarh District, Assam, NE, India	68
14. Srimanta Sankardeva and William Shakespeare's drama: A comparative study	74
15. Epidemiology of Cardiovascular Disease in Dibrugarh town of Assam	77
16. Linkage Between Environment and Ecology	85
17. Level of Conflict Between Private and Public Sector Banks in Diphu, Assam	87
18. Doodhani Dance Associated with The Mousam Cult Among The Rabhas of Assam	91



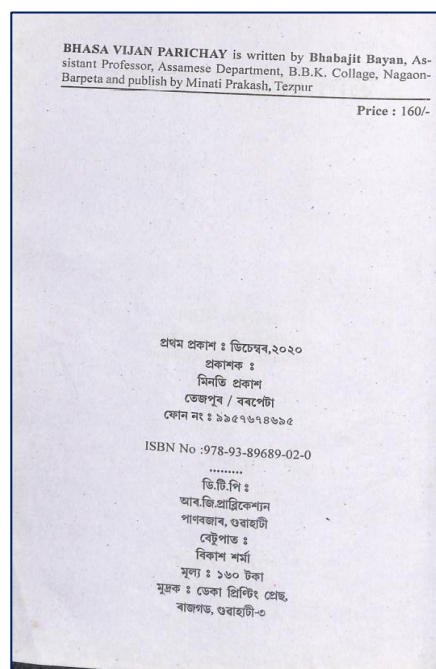
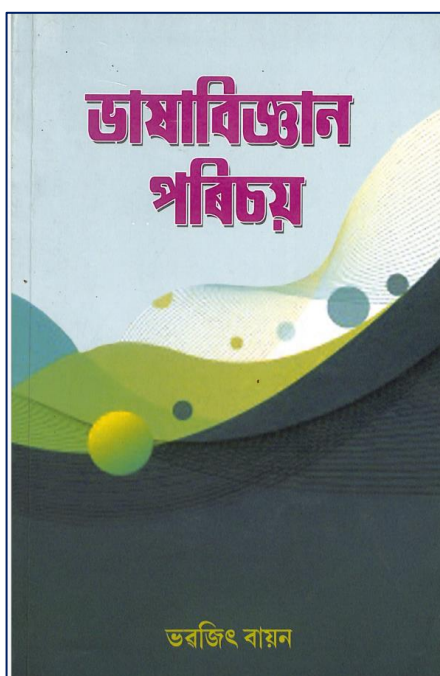
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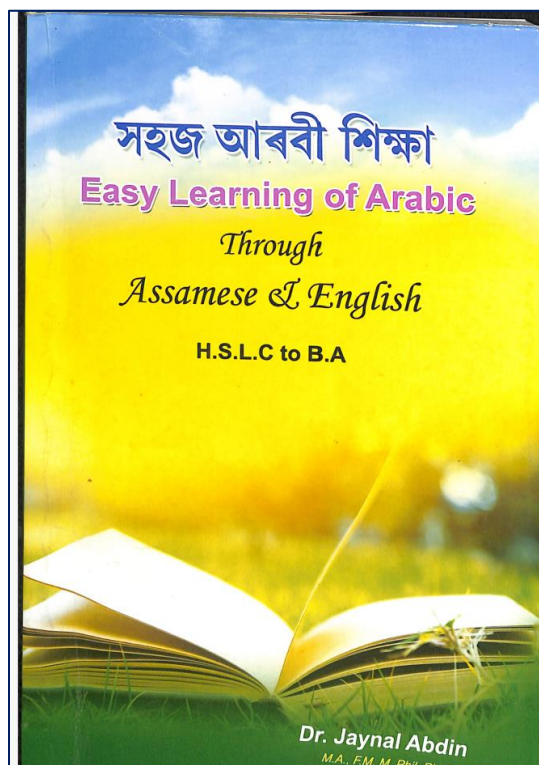
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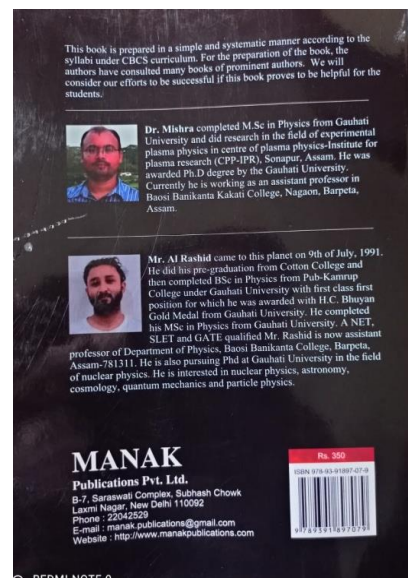
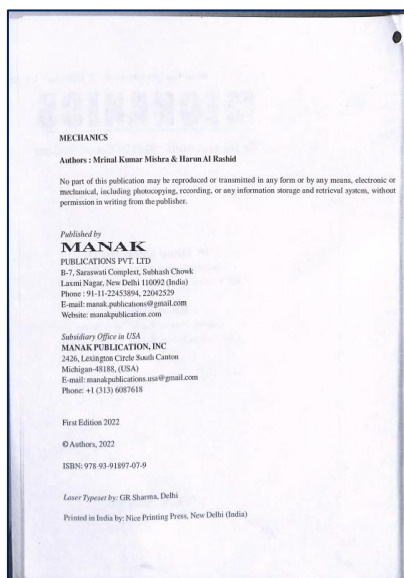
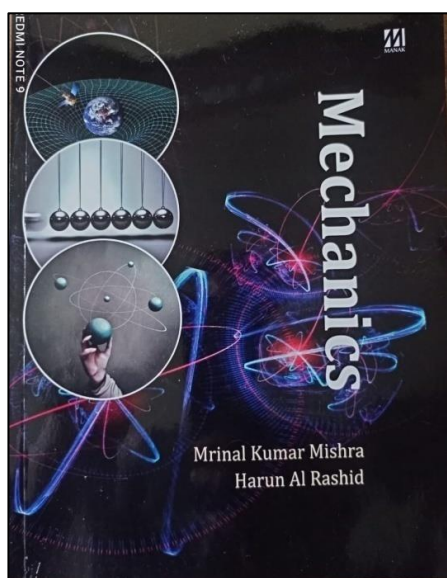
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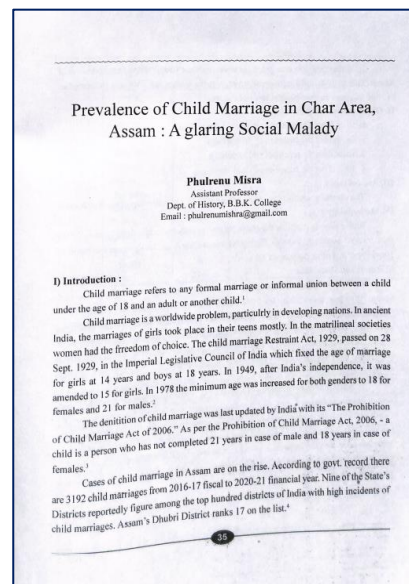
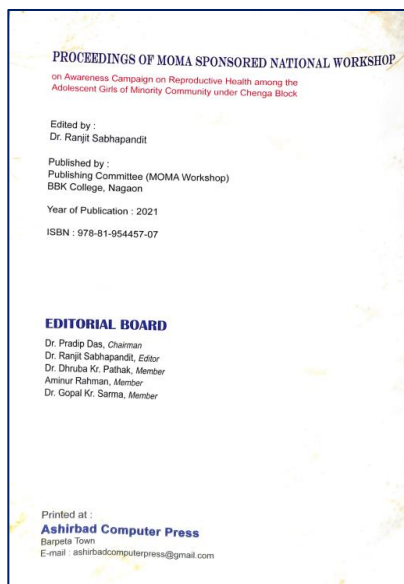
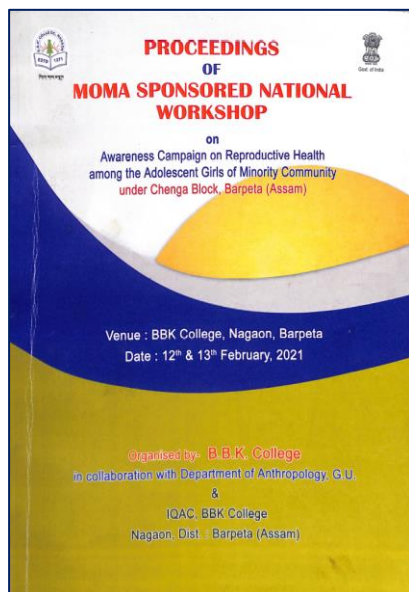


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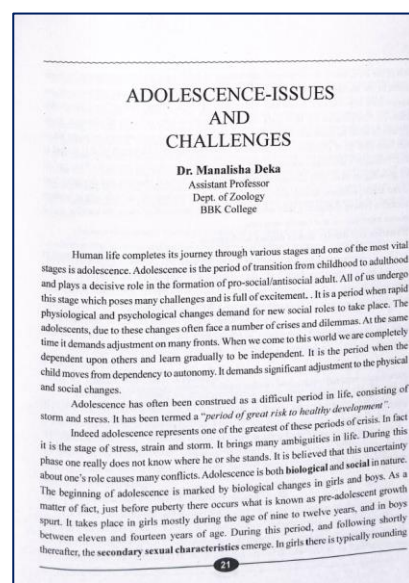
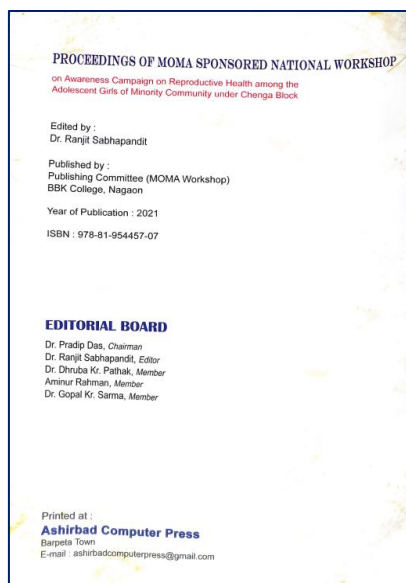
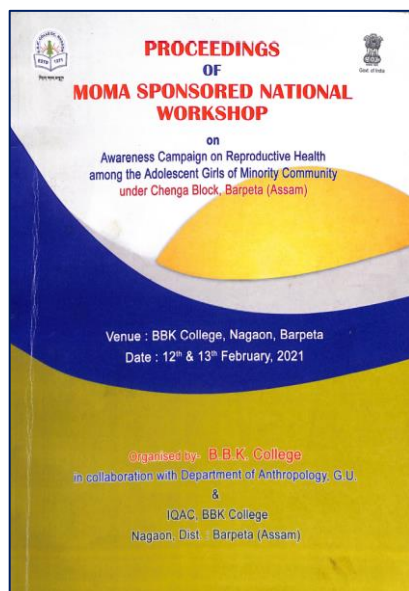
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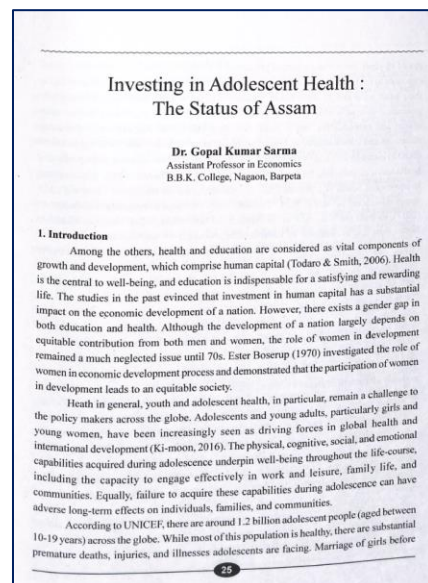
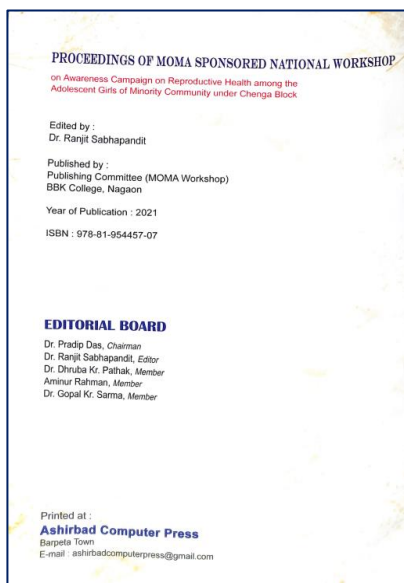
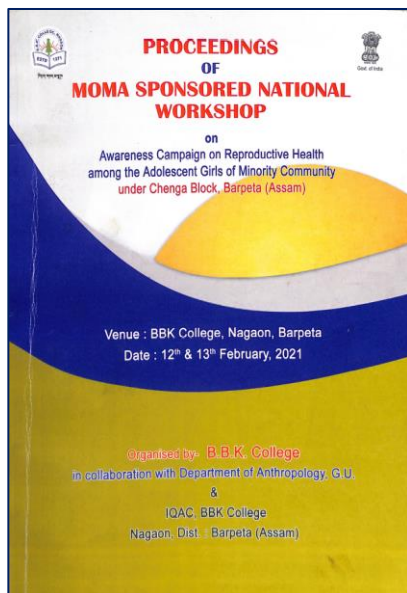


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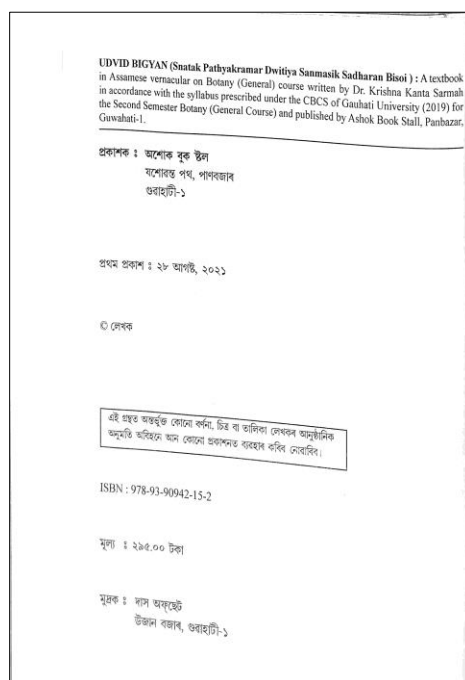
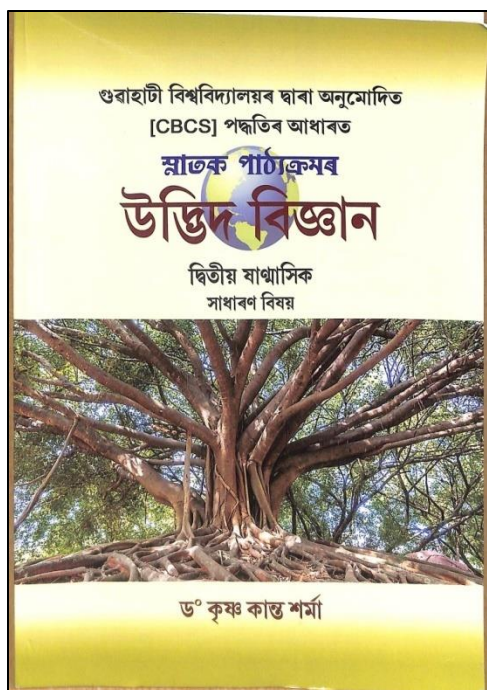
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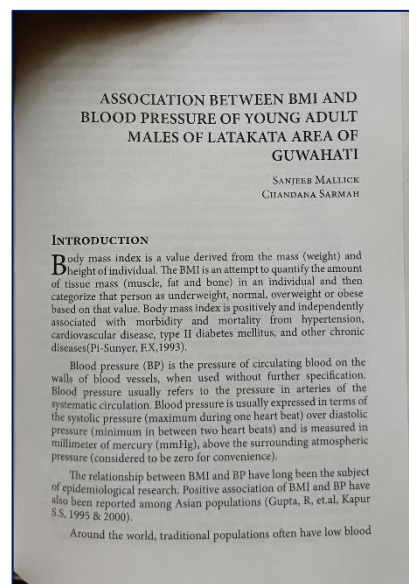
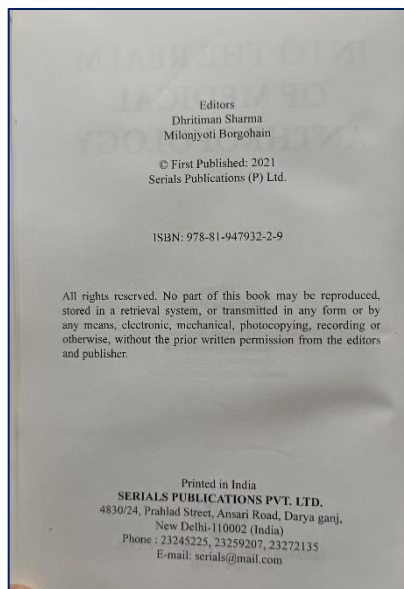
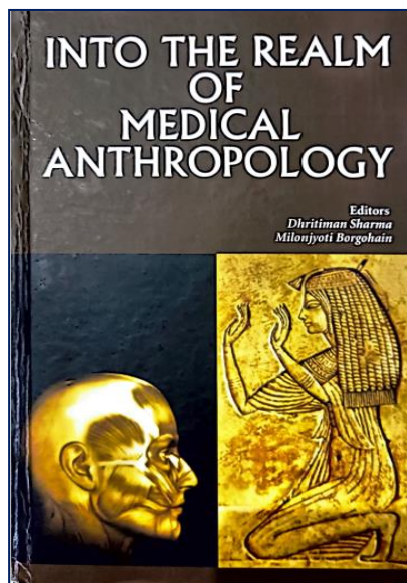
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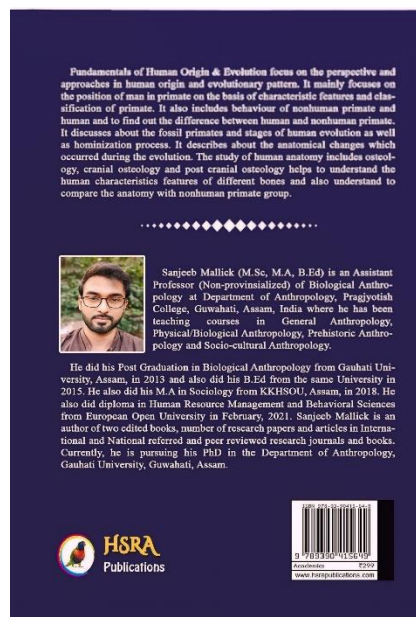
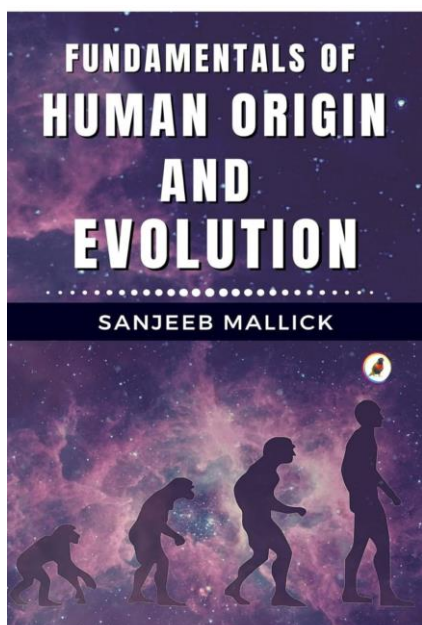
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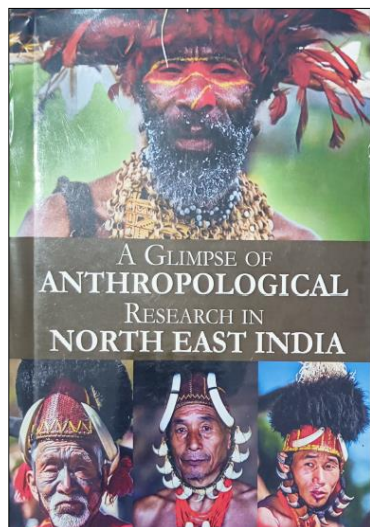
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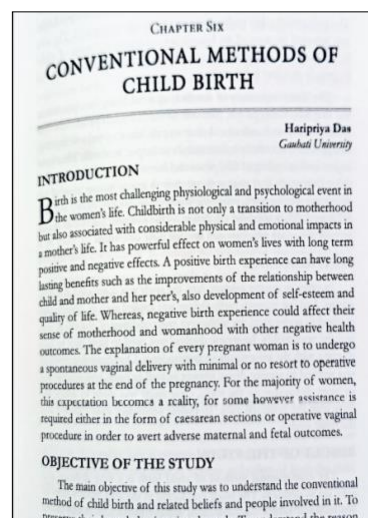
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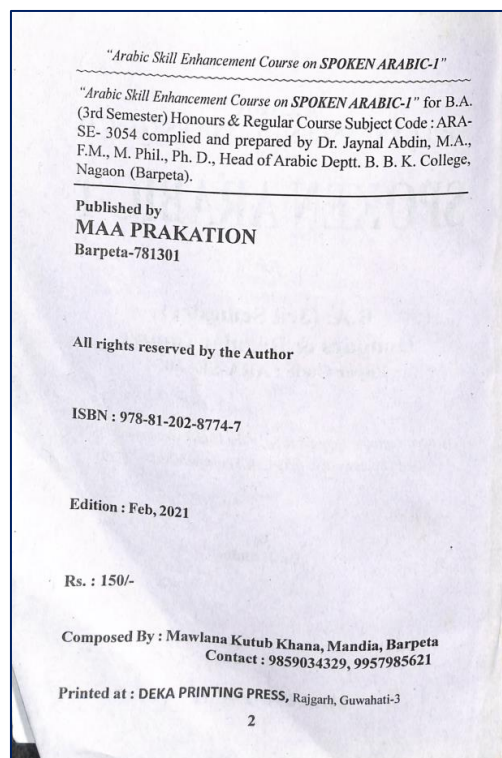
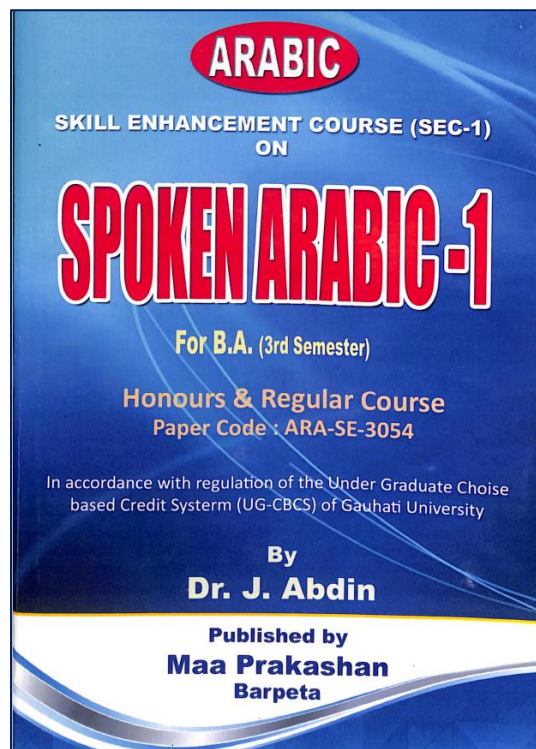
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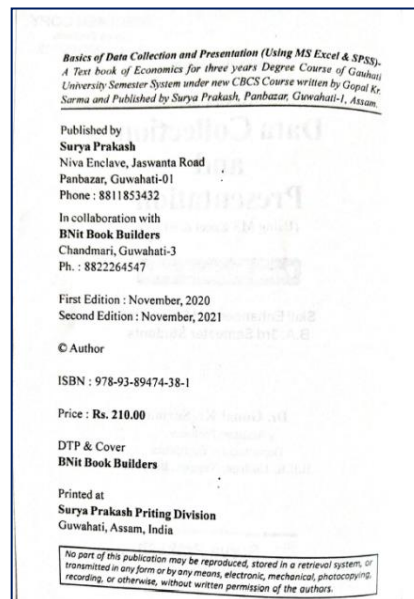
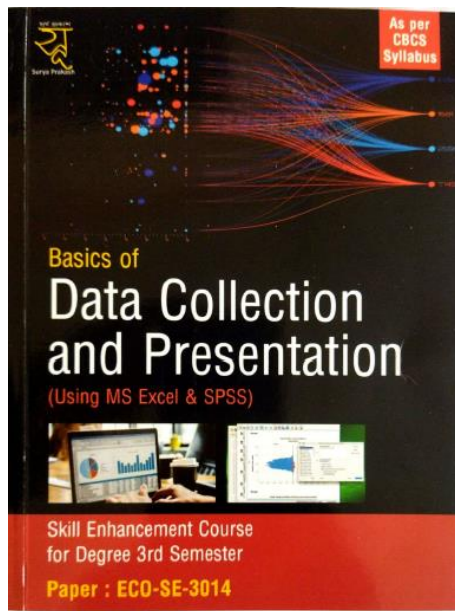
CONTENTS	
1. Medicinal Plants Used by the Traditional Healers of Tiwa Community, Morigaon District, Assam	1
<i>Bhagabati Baruah</i>	
2. Ethno-medical beliefs and practices among The Sonowal Kacharis of Assam	13
<i>Bhagabati Baruah</i>	
3. Beliefs and Practices Related to Conception and Birth among the Sonowal Kacharis of Assam	23
<i>Bhagabati Baruah</i>	
4. Continuity of Traditional Beliefs through Cultural Syncretism among the Nocte Tribe	29
<i>Divinagar Sarmah</i> <i>Chandan Kumar Baruah</i>	
5. Social and biological factors affecting the health of women and infants of Mog population of Upper Assam	53
<i>Dr. Fulgini Roy Barua and Dr. Deepanjana Datta Das</i>	
6. Conventional Methods of Child Birth	67
<i>Haripriya Das</i>	
7. Contextualising the Issues of Wildlife Conservation and Tribal Development in North-East India	73
<i>Hemant Jyoti Baruah</i>	



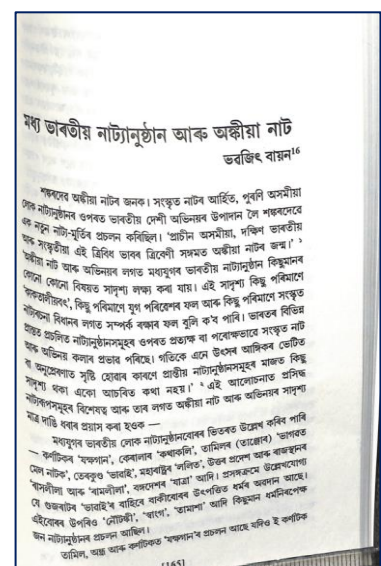
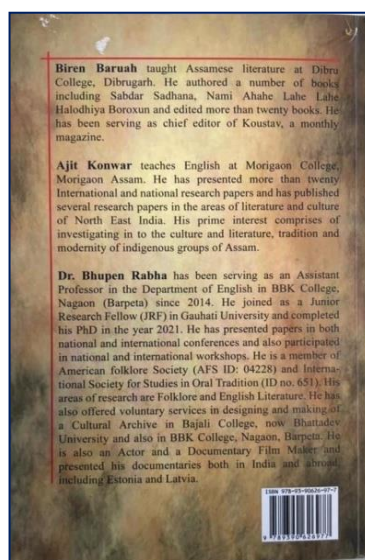
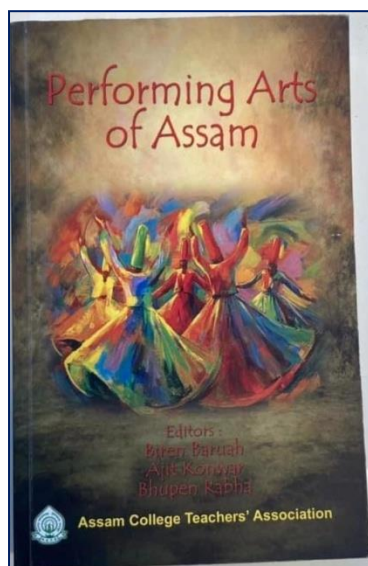
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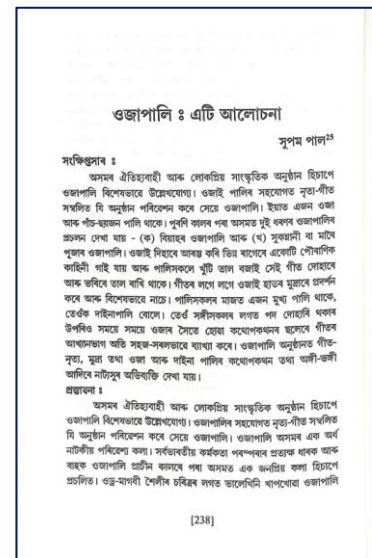
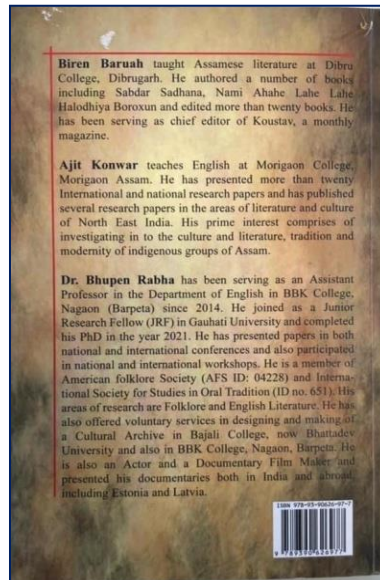
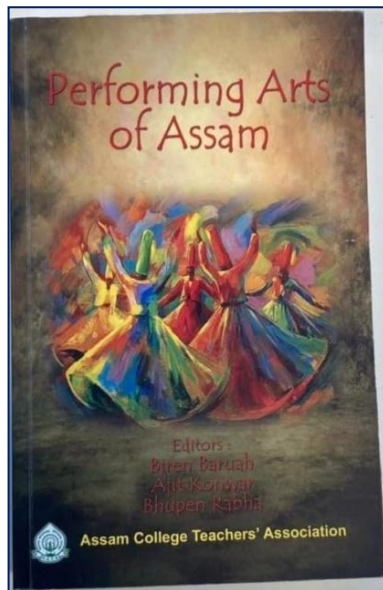
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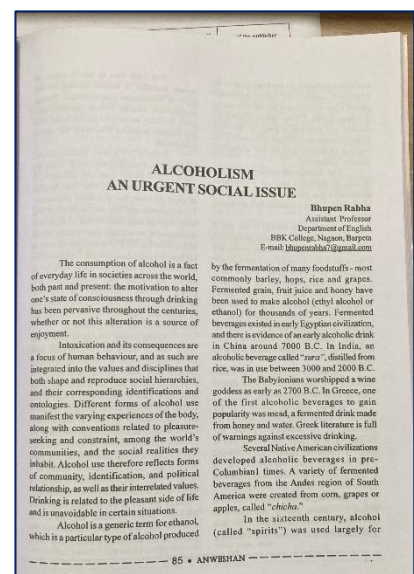
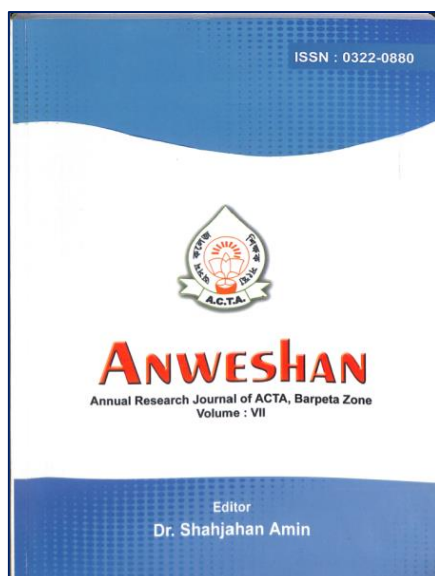
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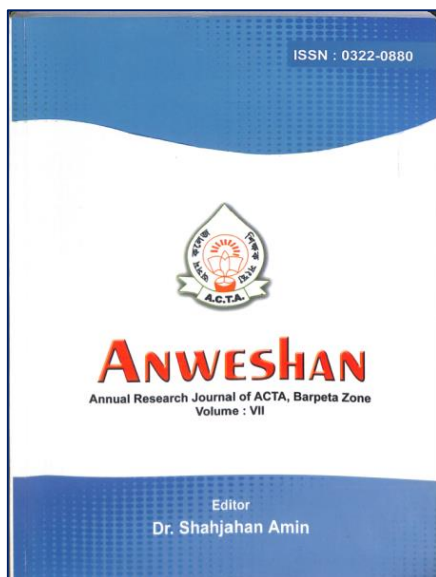
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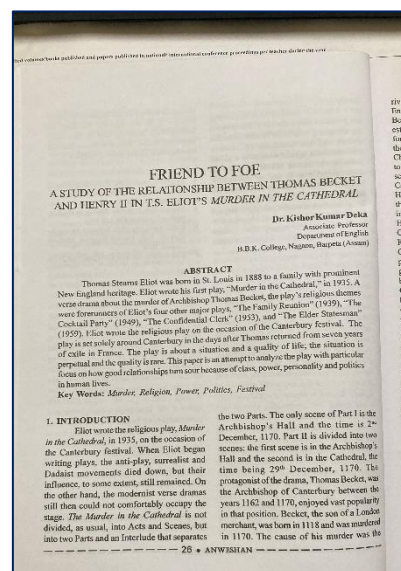
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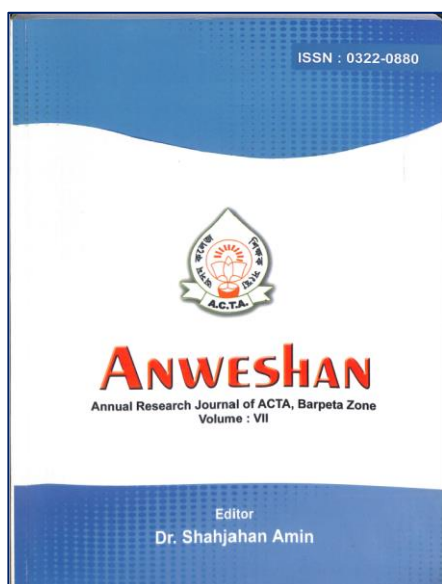
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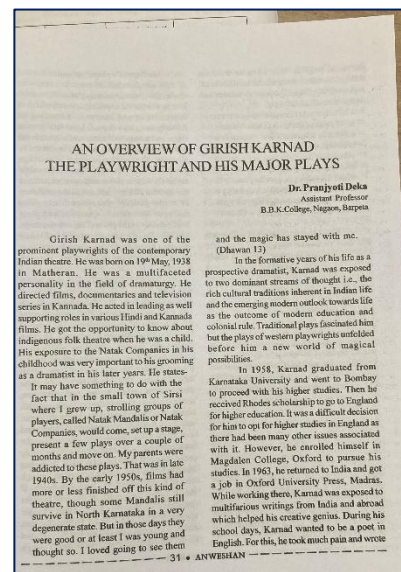
CONTENTS	
• NEP 2020: Rebuilding Indian Education – Dr. Duhomoni Goswami	9
• Exploring Masculinity in Devdutt Pattanaik's Jaya: An illustrated retelling of the Mahabharata – Manas Neog	13
• Feminine Sensibility in Kamala Das's Poetry: A Study of 'An Introduction' and 'The Old Playhouse' – Anurima Bhattacharya	20
• Friend to Foe: A Study of the relationship between Thomas Becket and Henry II in T.S. Eliot's 'Murder in the Cathedral' – Dr. Kishor Kumar Deka	26
• An Overview of Girish Karnad: The Playwright and his Major Plays – Dr. Pranjoyoti Deka	31
• The October Revolution and English literature – Dr. Sultan Ali Ahmed	36
• Visible Work, Invisible Workers: A Study on Women's Domestic Work and its Impact on the Economy – Mr. Ajanta Choudhury	41
• Economic Independence in relation to Women to Women Empowerment and Gender Equality – Dr. Kakali Hazarika	47
• Value-based Education – Dr. Dipi Kalita	51
• Role of ICT in Education – Lieutenant Dr. Shahjahan Ali	54



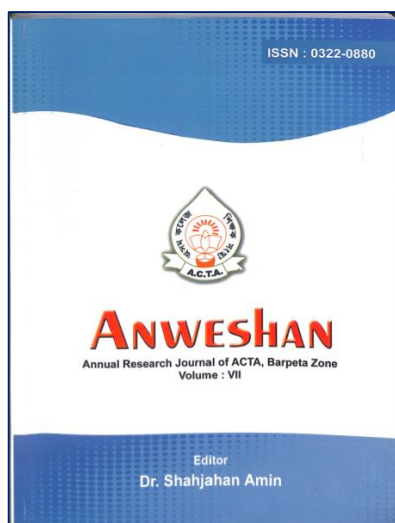
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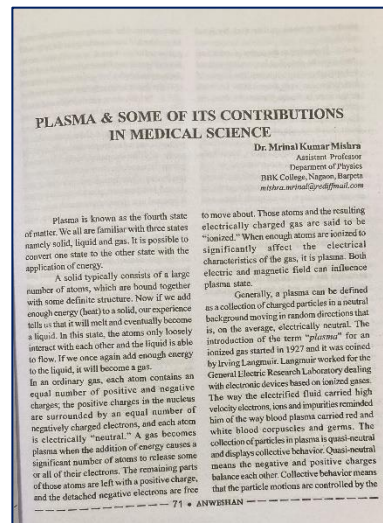
CONTENTS	
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• An Overview of Girish Karnad: The Playwright and his Major Plays – Dr. Pranjoyoti Deka	31
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• Visible Work, Invisible Workers: A Study on Women's Domestic Work and its Impact on the Economy – Mr. Ajanta Choudhury	41
• Economic Independence in relation to Women to Women Empowerment and Gender Equality – Dr. Kakali Hazarika	47
• Value-based Education – Dr. Dipi Kalita	51
• Role of ICT in Education – Lieutenant Dr. Shahjahan Ali	54



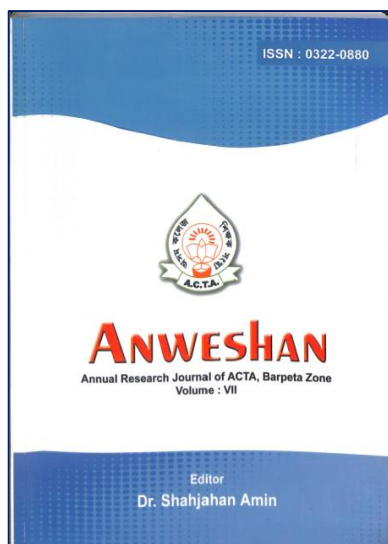
31) Dr. Mrinal Kr. Mishra



• Role of Higher Education in Human Resources Development with Special Reference to Assam – Dr. Kabinor Rahman	60
• India's Pride: Timeless Monuments – Phulrenu Mishra	67
• Plasma & Some of Its Contributions in Medical Science – Dr. Mrinal Kumar Mishra	71
• Japanese Encephalitis: An Overview – Dr. Sharmistha Chakravarty	77
• The Impact of Covid-19 Pandemic on the Economy of India—A Study – Dr. Imrul Hussain	81
• Alcoholism: An Urgent Social Issue – Bhupen Rabha	85
• Role of Education to Empower Women in our Indian Society—An Analytical Study – Parabi Talukdar	91
• Dialogues and Linguistic Style of Dr. Lakshminarayana Laal – Dr. Karabi Talukdar	96
• Small Tea Growers in the Present Scenario of Assam: An Analysis – Prabodh Kalita	109
• Transforming Thought, Inspiring Civilization: An Analysis of Christian Missionaries' Works among Bodoes – Dr. Khanin Barman, Jagadish Basumatary	115
• সত্যের নিকট এক দৃষ্টিকোণী শ্রমজীবী : 'সত্যদেব' – "১৩" দিগন্ত	122
• সত্যদেব কোন সত্য? : বিদ্যায় জ্ঞান অমৃতং – "১৩" দিগন্ত	129



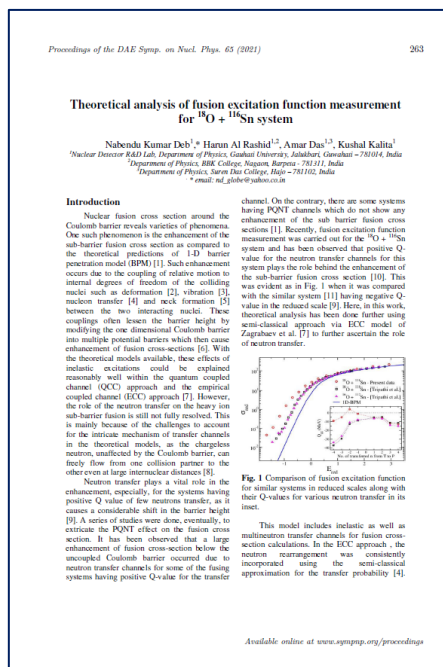
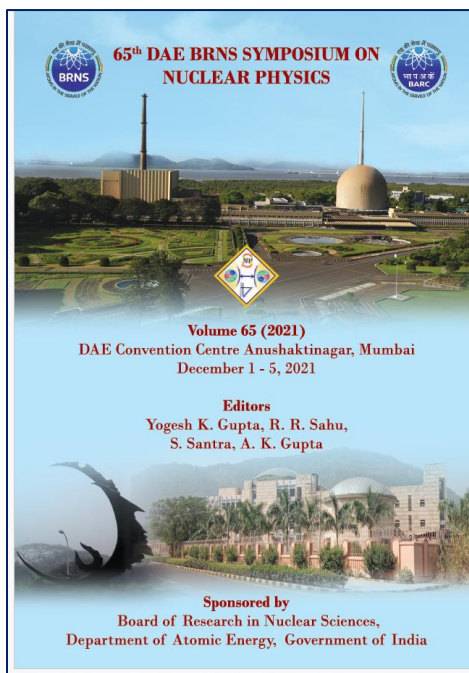
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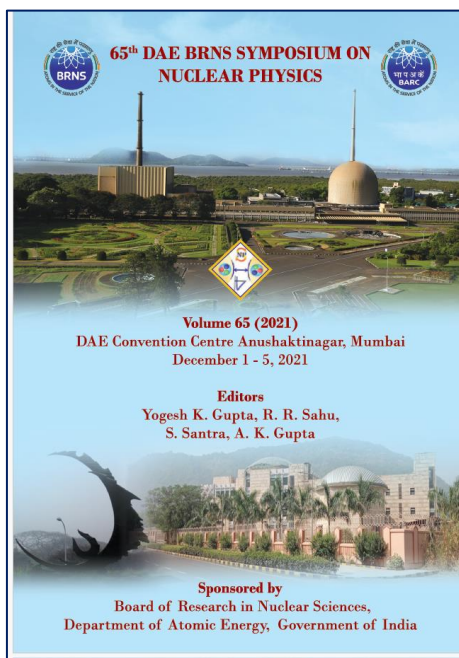
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• Plasma & Some of Its Contributions in Medical Science – Dr. Mrinal Kumar Mishra	71
• Japanese Encephalitis: An Overview – Dr. Sharmistha Chakravarty	77
• The Impact of Covid-19 Pandemic on the Economy of India—A Study – Dr. Imrul Hussain	81
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• Dialogues and Linguistic Style of Dr. Lakshminarayana Laal – Dr. Karabi Talukdar	96
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• Transforming Thought, Inspiring Civilization: An Analysis of Christian Missionaries' Works among Bodoes – Dr. Khanin Barman, Jagadish Basumatary	115
• সত্যের নিকট এক দৃষ্টিকোণী শ্রমজীবী : 'সত্যদেব' – "১৩" দিগন্ত	122
• সত্যদেব কোন সত্য? : বিদ্যায় জ্ঞান অমৃতং – "১৩" দিগন্ত	129



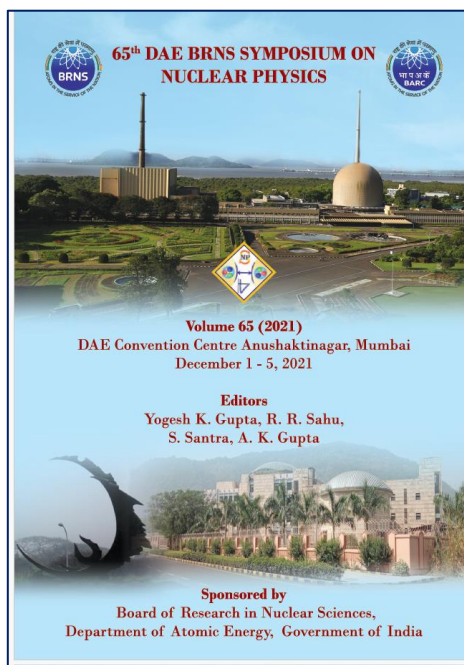
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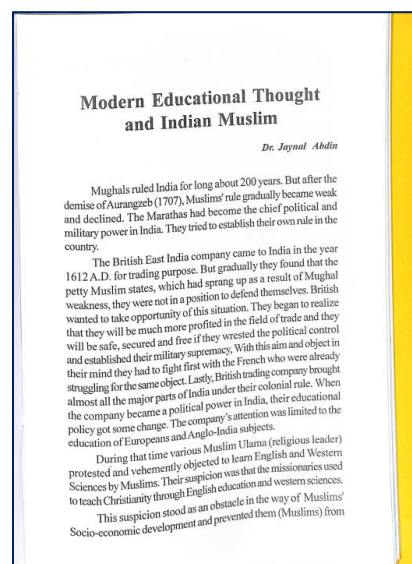
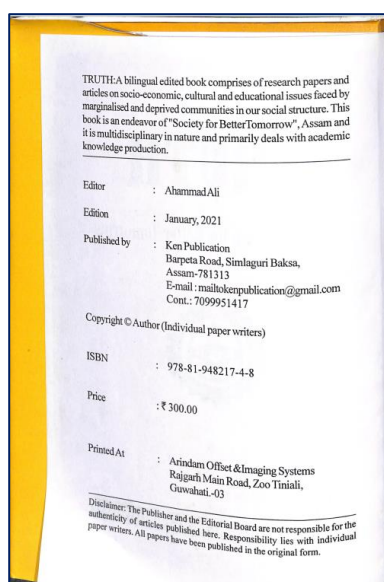
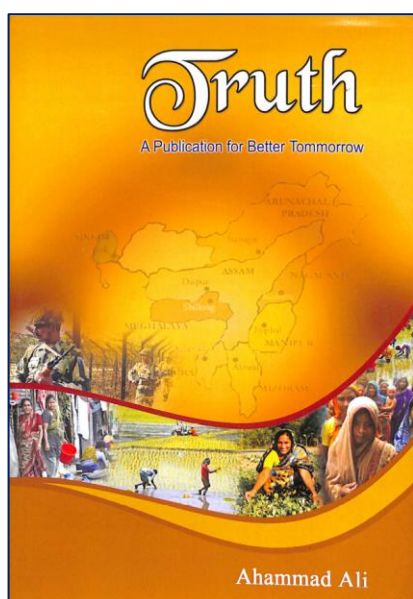
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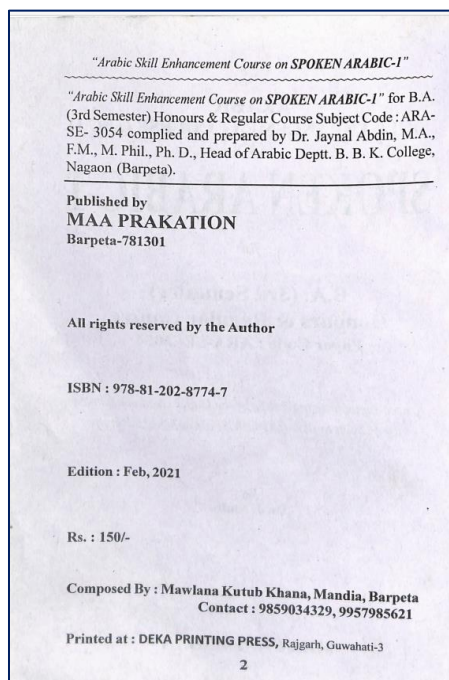
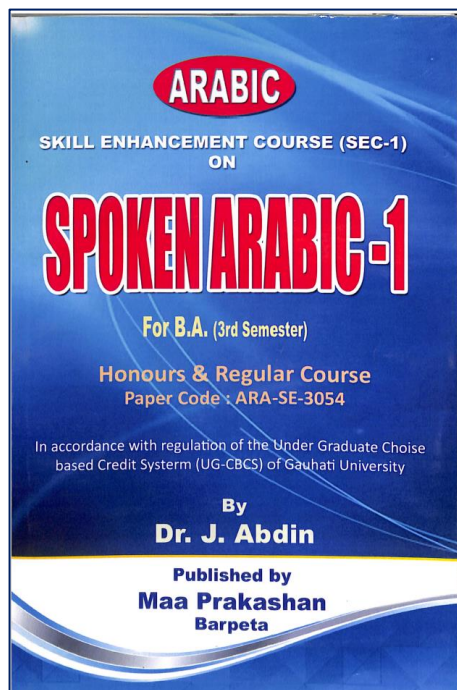


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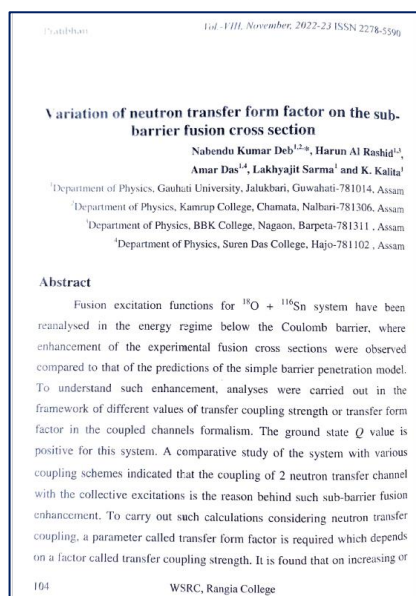
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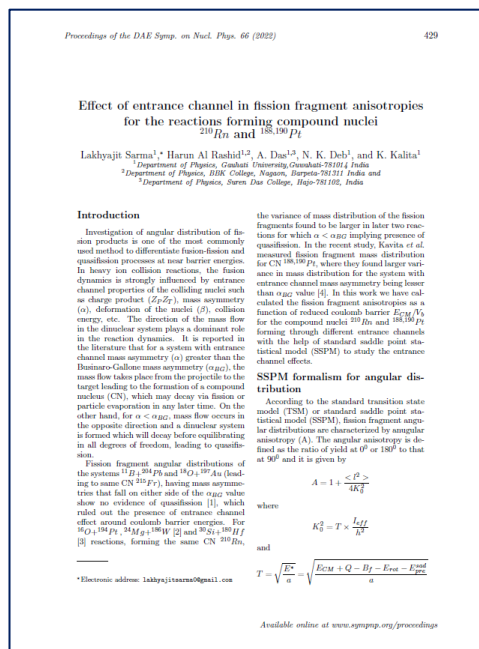
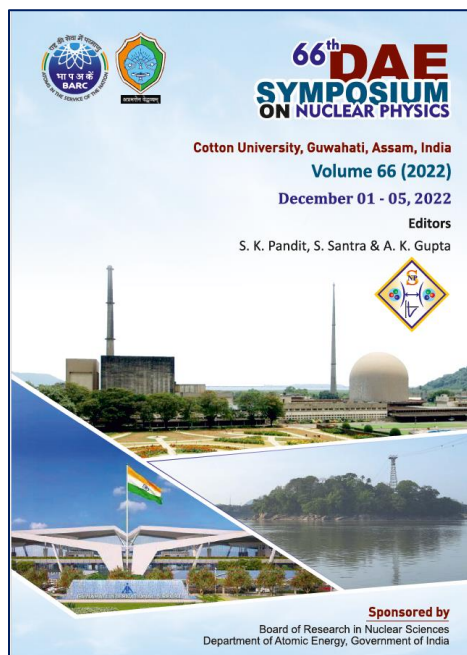
37) Dr. Jaynal Abdin: Spoken Arabic (2022-23)



38) Harun Al Rashid (2022-23)



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40) Harun Al Rashid (2022-23)



Substituting oxidizing material and parting agent selection in the fabrication of nuclear target

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ABSTRACT

In order to perform certain heavy ion nuclear reaction experiments, the enriched targets of stable isotopes ¹⁹⁹Ir, ¹⁹⁸Ir, ¹⁹⁷Ir, ¹⁹⁶Ir, ¹⁹⁵Ir, ¹⁹⁴Ir, ¹⁹³Ir, ¹⁹²Ir, ¹⁹¹Ir, ¹⁹⁰Ir, ¹⁸⁹Ir, ¹⁸⁸Ir, ¹⁸⁷Ir, ¹⁸⁶Ir, ¹⁸⁵Ir, ¹⁸⁴Ir, ¹⁸³Ir, ¹⁸²Ir, ¹⁸¹Ir, ¹⁸⁰Ir, ¹⁷⁹Ir, ¹⁷⁸Ir, ¹⁷⁷Ir, ¹⁷⁶Ir, ¹⁷⁵Ir, ¹⁷⁴Ir, ¹⁷³Ir, ¹⁷²Ir, ¹⁷¹Ir, ¹⁷⁰Ir, ¹⁶⁹Ir, ¹⁶⁸Ir, ¹⁶⁷Ir, ¹⁶⁶Ir, ¹⁶⁵Ir, ¹⁶⁴Ir, ¹⁶³Ir, ¹⁶²Ir, ¹⁶¹Ir, ¹⁶⁰Ir, ¹⁵⁹Ir, ¹⁵⁸Ir, ¹⁵⁷Ir, ¹⁵⁶Ir, ¹⁵⁵Ir, ¹⁵⁴Ir, ¹⁵³Ir, ¹⁵²Ir, ¹⁵¹Ir, ¹⁵⁰Ir, ¹⁴⁹Ir, ¹⁴⁸Ir, ¹⁴⁷Ir, ¹⁴⁶Ir, ¹⁴⁵Ir, ¹⁴⁴Ir, ¹⁴³Ir, ¹⁴²Ir, ¹⁴¹Ir, ¹⁴⁰Ir, ¹³⁹Ir, ¹³⁸Ir, ¹³⁷Ir, ¹³⁶Ir, ¹³⁵Ir, ¹³⁴Ir, ¹³³Ir, ¹³²Ir, ¹³¹Ir, ¹³⁰Ir, ¹²⁹Ir, ¹²⁸Ir, ¹²⁷Ir, ¹²⁶Ir, ¹²⁵Ir, ¹²⁴Ir, ¹²³Ir, ¹²²Ir, ¹²¹Ir, ¹²⁰Ir, ¹¹⁹Ir, ¹¹⁸Ir, ¹¹⁷Ir, ¹¹⁶Ir, ¹¹⁵Ir, ¹¹⁴Ir, ¹¹³Ir, ¹¹²Ir, ¹¹¹Ir, ¹¹⁰Ir, ¹⁰⁹Ir, ¹⁰⁸Ir, ¹⁰⁷Ir, ¹⁰⁶Ir, ¹⁰⁵Ir, ¹⁰⁴Ir, ¹⁰³Ir, ¹⁰²Ir, ¹⁰¹Ir, ¹⁰⁰Ir, ⁹⁹Ir, ⁹⁸Ir, ⁹⁷Ir, ⁹⁶Ir, ⁹⁵Ir, ⁹⁴Ir, ⁹³Ir, ⁹²Ir, ⁹¹Ir, ⁹⁰Ir, ⁸⁹Ir, ⁸⁸Ir, ⁸⁷Ir, ⁸⁶Ir, ⁸⁵Ir, ⁸⁴Ir, ⁸³Ir, ⁸²Ir, ⁸¹Ir, ⁸⁰Ir, ⁷⁹Ir, ⁷⁸Ir, ⁷⁷Ir, ⁷⁶Ir, ⁷⁵Ir, ⁷⁴Ir, ⁷³Ir, ⁷²Ir, ⁷¹Ir, ⁷⁰Ir, ⁶⁹Ir, ⁶⁸Ir, ⁶⁷Ir, ⁶⁶Ir, ⁶⁵Ir, ⁶⁴Ir, ⁶³Ir, ⁶²Ir, ⁶¹Ir, ⁶⁰Ir, ⁵⁹Ir, ⁵⁸Ir, ⁵⁷Ir, ⁵⁶Ir, ⁵⁵Ir, ⁵⁴Ir, ⁵³Ir, ⁵²Ir, ⁵¹Ir, ⁵⁰Ir, ⁴⁹Ir, ⁴⁸Ir, ⁴⁷Ir, ⁴⁶Ir, ⁴⁵Ir, ⁴⁴Ir, ⁴³Ir, ⁴²Ir, ⁴¹Ir, ⁴⁰Ir, ³⁹Ir, ³⁸Ir, ³⁷Ir, ³⁶Ir, ³⁵Ir, ³⁴Ir, ³³Ir, ³²Ir, ³¹Ir, ³⁰Ir, ²⁹Ir, ²⁸Ir, ²⁷Ir, ²⁶Ir, ²⁵Ir, ²⁴Ir, ²³Ir, ²²Ir, ²¹Ir, ²⁰Ir, ¹⁹Ir, ¹⁸Ir, ¹⁷Ir, ¹⁶Ir, ¹⁵Ir, ¹⁴Ir, ¹³Ir, ¹²Ir, ¹¹Ir, ¹⁰Ir, ⁹Ir, ⁸Ir, ⁷Ir, ⁶Ir, ⁵Ir, ⁴Ir, ³Ir, ²Ir, ¹Ir.

1. Introduction

Nuclear reaction studies require a good quality and homogeneous target with uniform thickness [1], which poses an ardent challenge during its fabrication. To study heavy-ion induced nuclear reactions with ²³⁸Pu and ¹⁹⁸Pu elements using mass analyzer, where the reaction products of different masses are dispersed at its focal point with good mass resolution, thin self-supporting targets are preferred. To measure Fusion Excitation Function [2,3] and to study the role of various entrance channel parameters viz., mass-asymmetry of the system, target deformation

etc., on the incomplete fusion dynamics [4]; a series of experiments were to be done to perform excitation functions and Forward Backward Range Distribution (FBRD) measurements using the alpha and non-alpha clusters ion beam with enriched ²³⁸Pu and ¹⁹⁸Pu targets. Through these measurements, a systematic study of low-energy fusion in these systems will be carried out to observe the effect of target deformation on incomplete fusion dynamics and hence a comparative analysis will be carried out. The Sn and Nd isotopes that are considered here consist of the pair of both deformed and spherical nuclei. The measurements with these systems are yet to be done which will contribute to the development of a theoretical model to explain incomplete fusion dynamics which is still an unsolved area of investigation [4]. Thermal evaporation techniques or relative heating methods are the most effective methods to obtain such thin self-supporting targets [5]. But due to certain experimental limitations, target materials are evaporated on a thin lower Z backing material (e.g. carbon) foil ($\approx 30 \mu\text{g}/\text{cm}^2$) through which the energy loss and

Abbreviations: FBRD, Forward Backward Range Distribution; RMC, Inter University Accelerator Centre; TDS, Thermal Desorption; DPL, Diffusion Pump based coating Unit; TDS, Thermal Desorption based coating Unit; CN, Liquid Nitrogen; e-gun, electron gun; SEM, The Scanning and Range of ions in Matter; RMC, Bombarded Back Scattering; RMC, Bombarded Back Scattering; RMC, Bombarded Back Scattering; TDS, Thermal Desorption based coating Unit.
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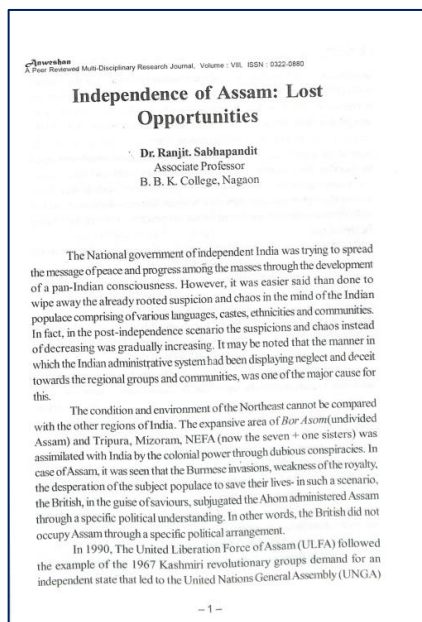
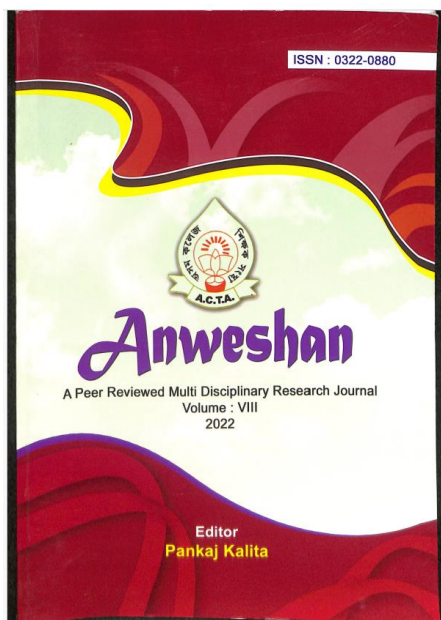


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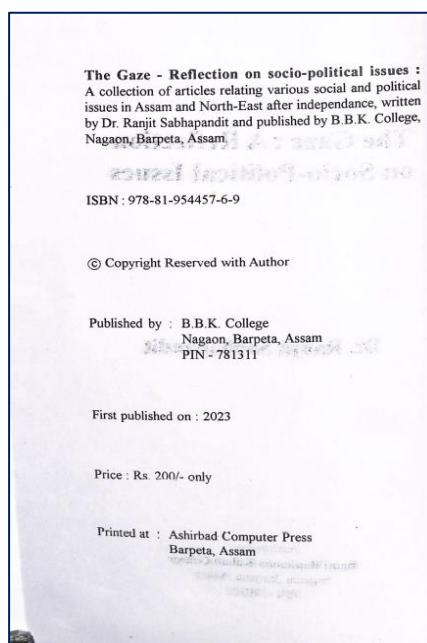
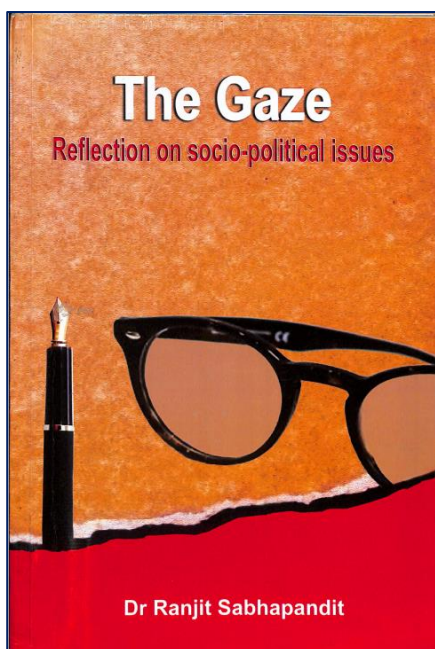
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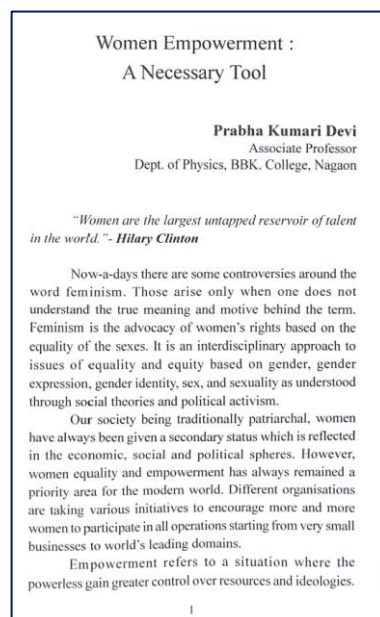
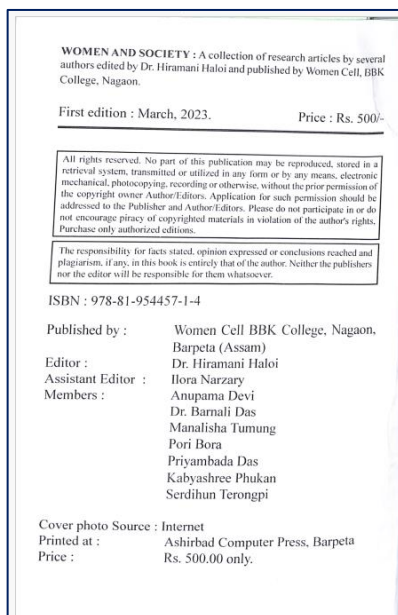
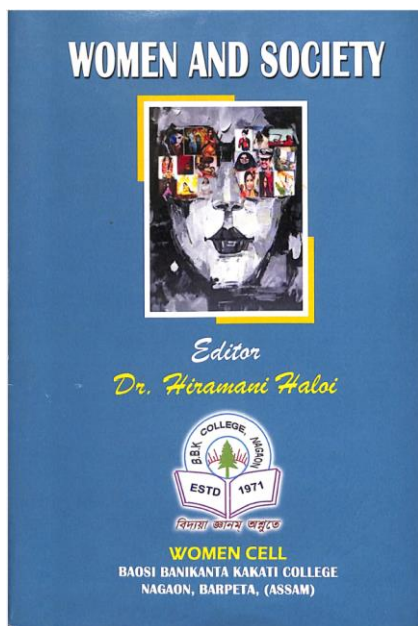


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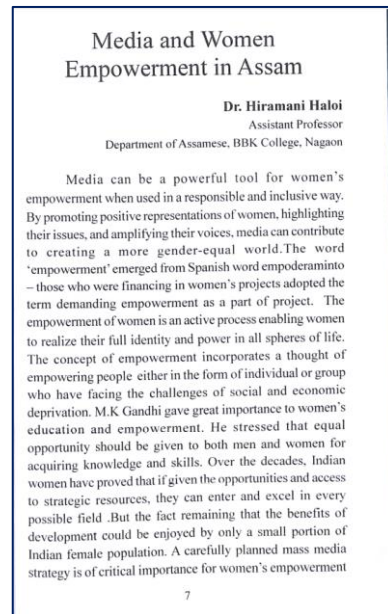
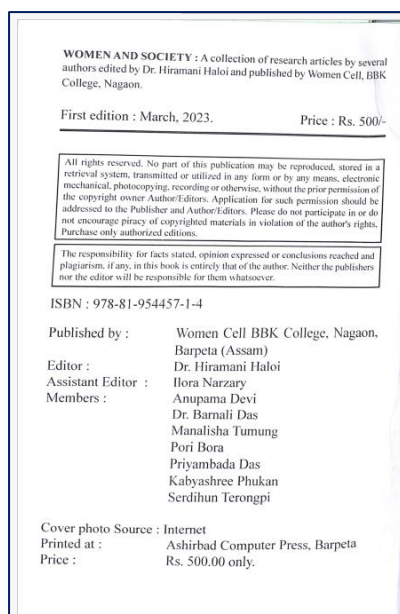
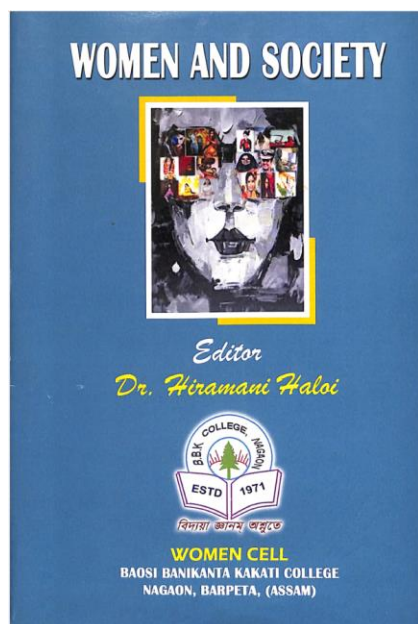
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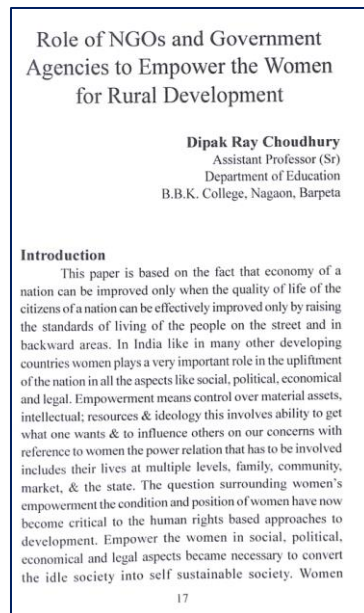
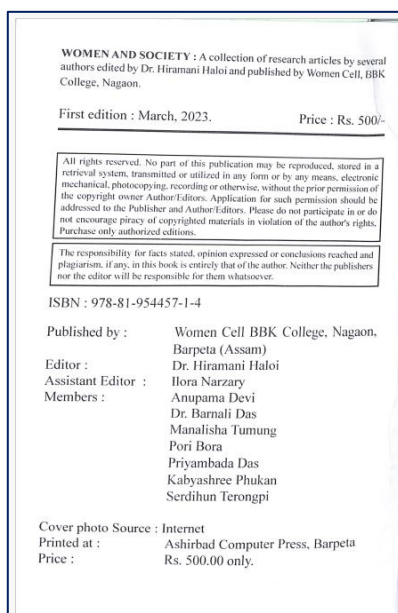
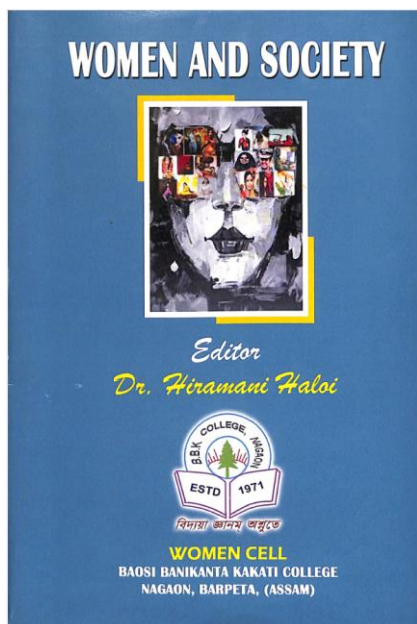


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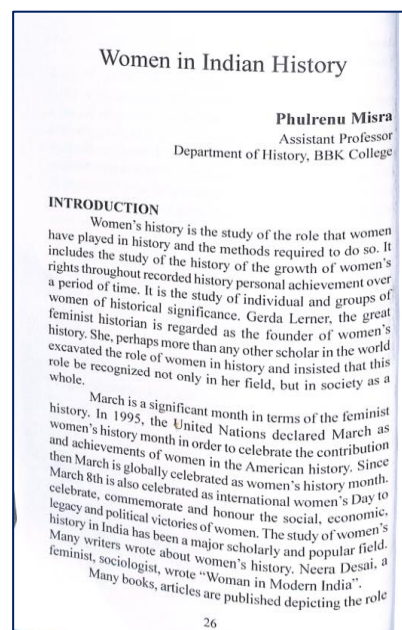
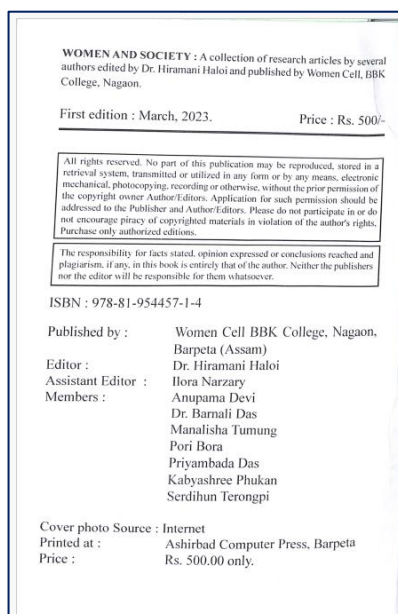
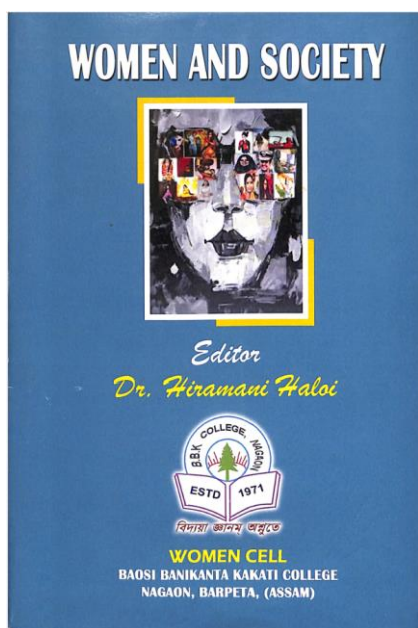
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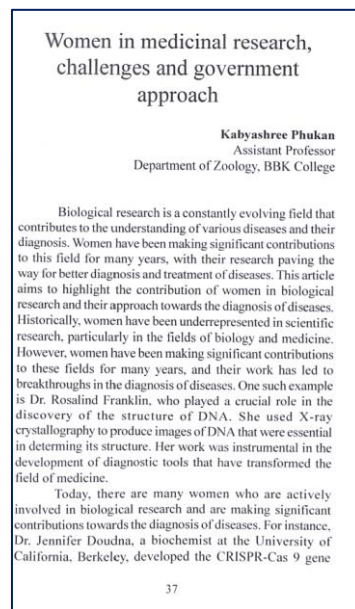
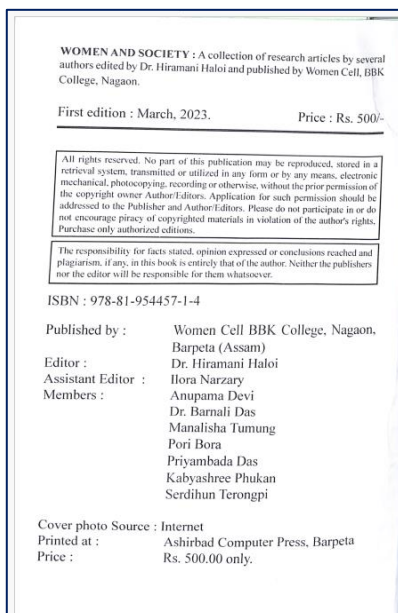
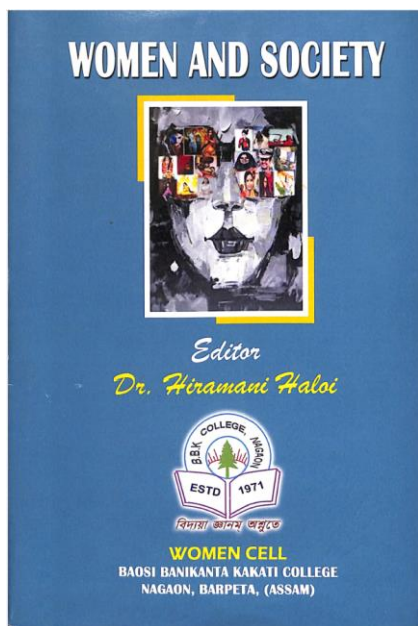


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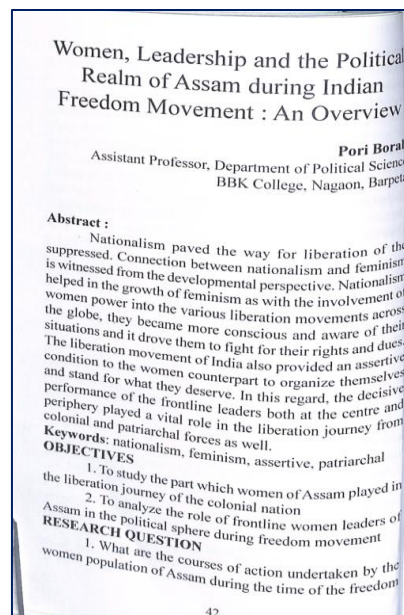
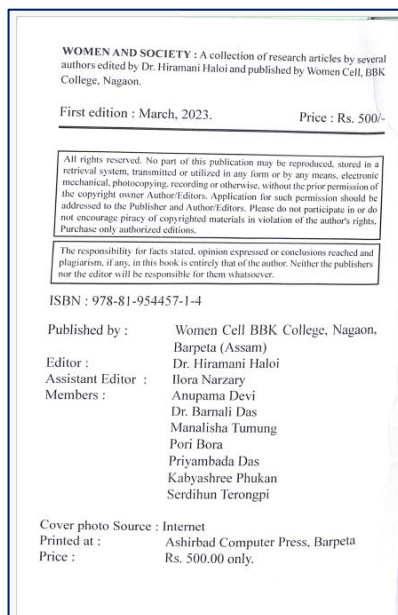
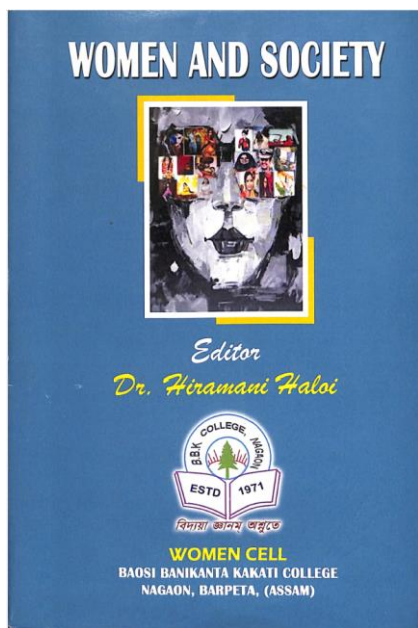
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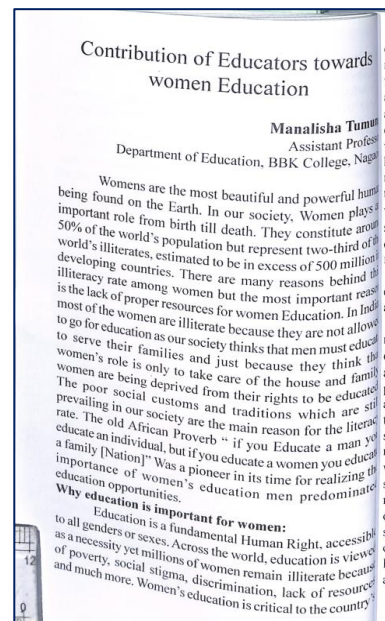
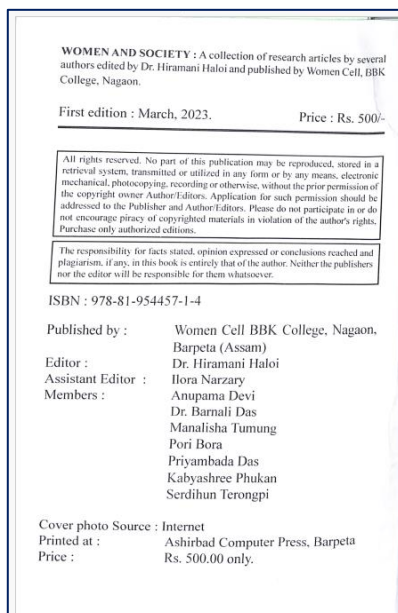
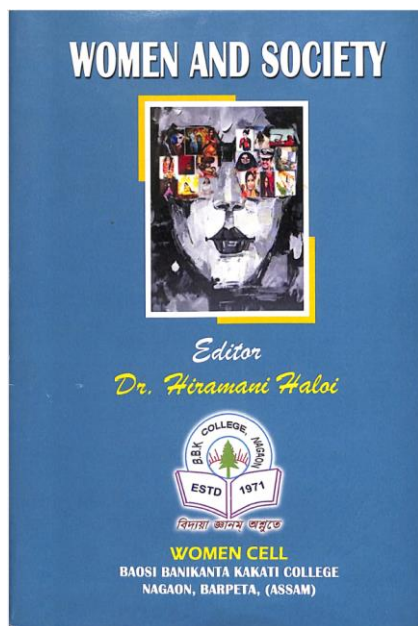
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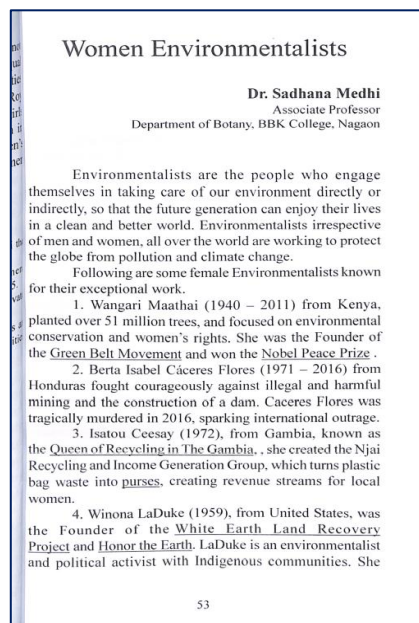
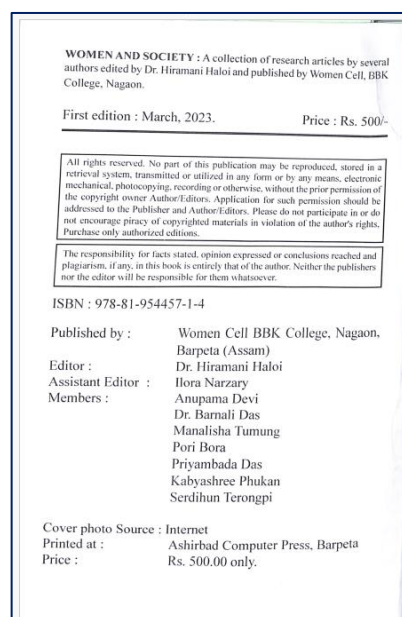
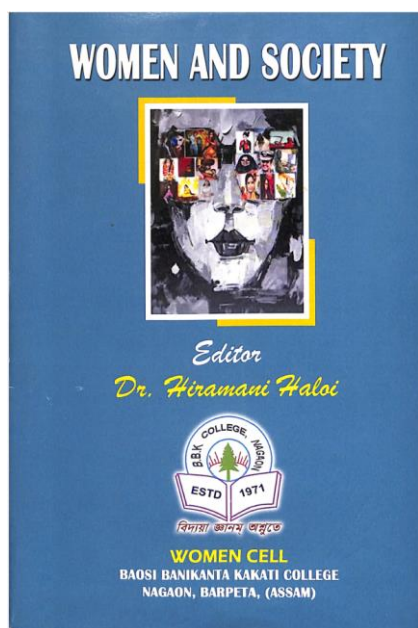
48) Pori Borah (2022-23)



49) Manalisha Tumung (2022-23)



50) Dr. Sadhana Medhi (2022-23)



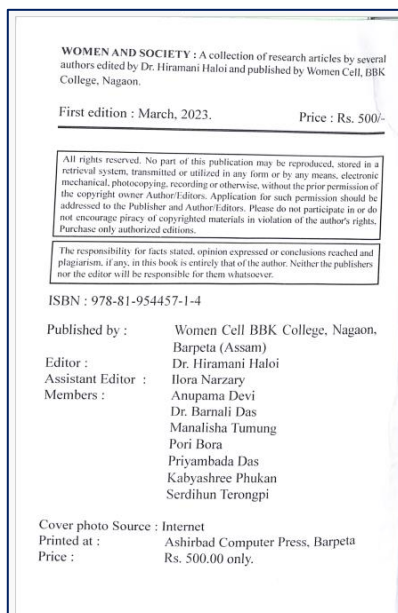
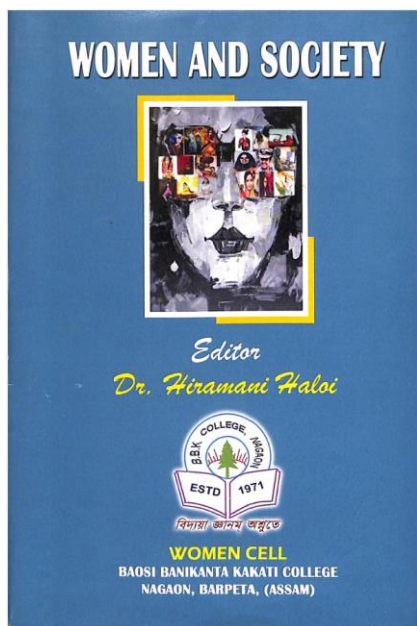


BAOSI BANIKANTA KAKATI COLLEGE

Nagaon, Barpeta
Assam – 781311 (INDIA)

Dr. Pradip Das
Principal

51) Serdihun Teronpi (2022-23)



Women role in the environment: An overview of Chipko movement

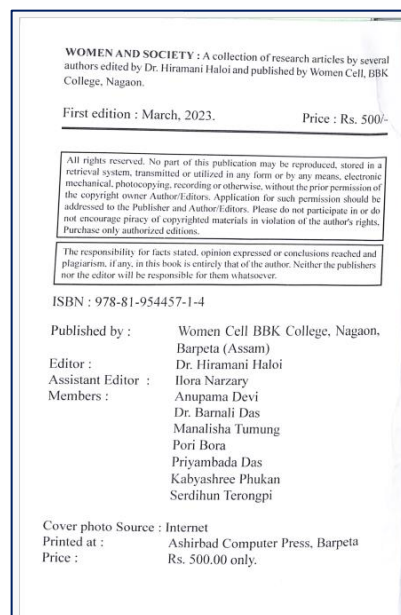
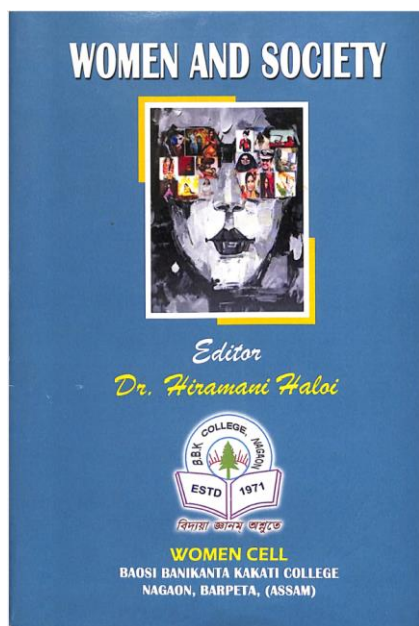
Serdihun Teronpi
Assistant Professor, Department of Botany
B.B.K College, Nagaon, Barpeta

A woman has an immense part to play in the environment, no less than her male counterpart. The notion that a man's contribution to the society is more important and fruitful than a woman, does not hold good in today's world. If given equal opportunities and support, a woman has reportedly been more successful and thriving than a man. After all, held-back people learn the most, and do the most, for motivation drives them to achieve the unachievable. Struggles and outcries of oppressed women in the past have prompted the society to notice them and realize how quietly and patiently they borne all responsibilities and tortures until they could take no more. And as time passed by, the world realized how wrong they were to ever suppress the ingenious ideas and the latent flair that eventually shone bright and took development to the next level. At the First World Conference on Women held in Mexico-City in the year 1975, Vandana Shiva commenced the discussion of women and the environment. During the conference women's role in agriculture and their extent of contribution began to come to light.

Women in the developing world are predominantly responsible for management and conservation of resources for their families. Women spend vast amounts of time collecting and storing water, securing sources of fuel, food and fodder, and managing land — be it forest, wetlands or

57

52) Rashmi Rekha Das (2022-23)



Women empowerment in India

Rashmi Rekha Das
Assistant Professor,
Department of Political Science, BBK College

Abstract :

Women Empowerment is a debatable subject. Women Empowerment means promoting women in their social and economic development, providing them equal opportunities of employment, education, economical development and allowing them to socialize, the freedoms and rights that were defined before it is a process which empowers women to know that they too can achieve their aspirations as the men of the society and help them do that. Women empowerment refers to making women powerful to make them capable of deciding for themselves. It refers to the activities undertaken to improve the social, economic and political status of women in the world. Women empowerment simply refers to having the equal rights a men should have. The empowerment of a women can be termed as the ability to become a source of self independence. It gives the self to grow in their ability to move freely within the society. Women empowerment helps in improving the standard of life of women in rural as well as urban areas.

Introduction :

The origin of the concept of empowerment go back to the civil rights in the USA in the 1960. Since the mid 1980's the term empowerment has become popular in the field of development, especially in reference to women. The word "women empowerment" implies that women are not powerful enough, they need to be empowered. In Indian male dominated society, emphasis is being given on women empowerment to reduce gender discrimination. In modern era, it is very

65

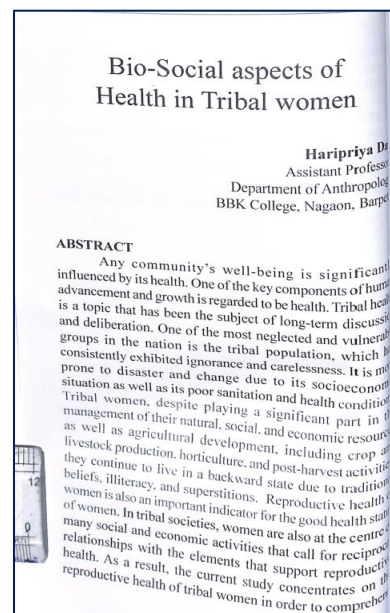
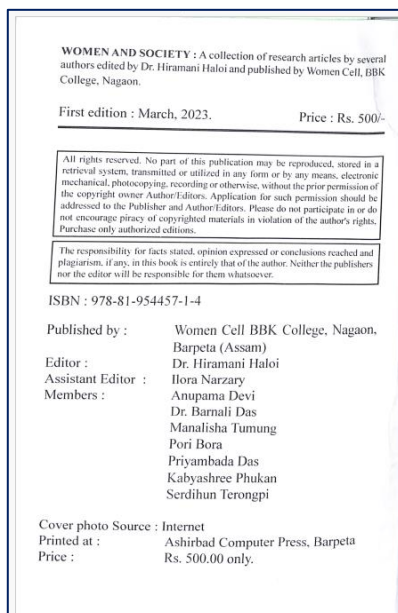
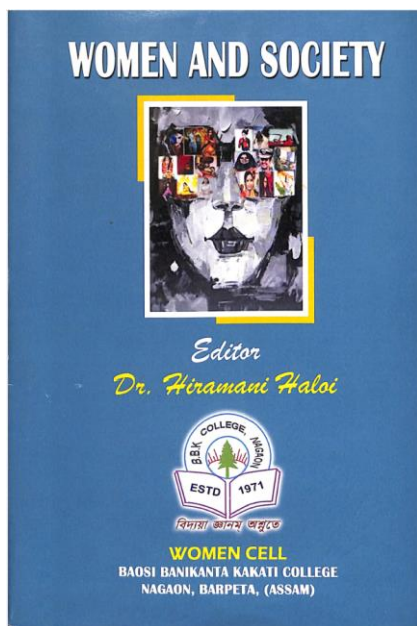


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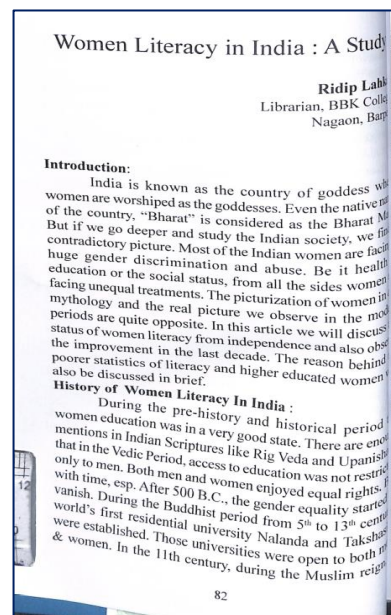
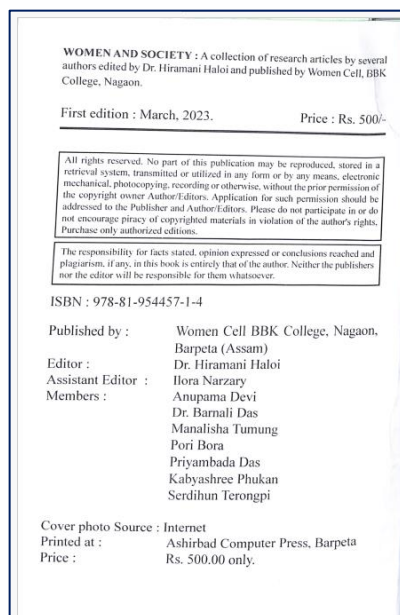
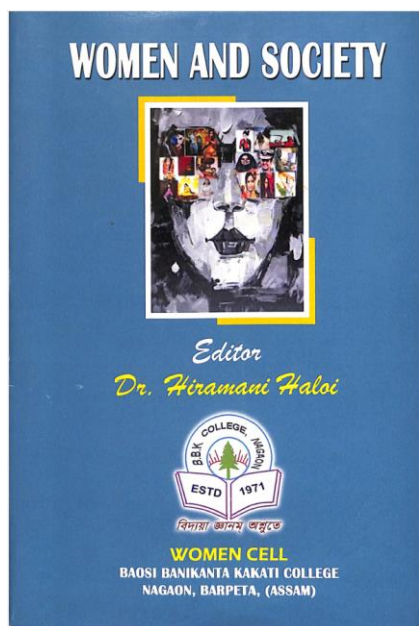
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53) Haripriya Das (2022-23)



54) Ridip Lahkar (2022-23)



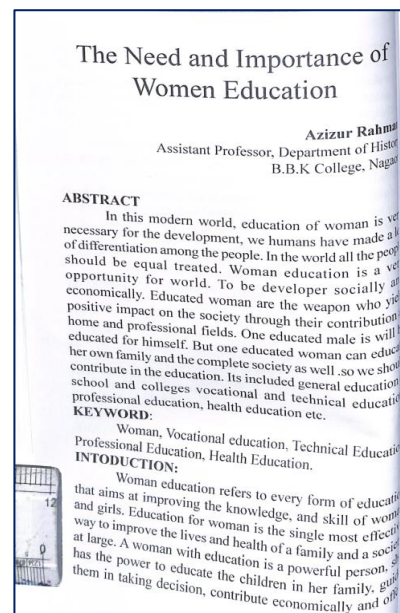
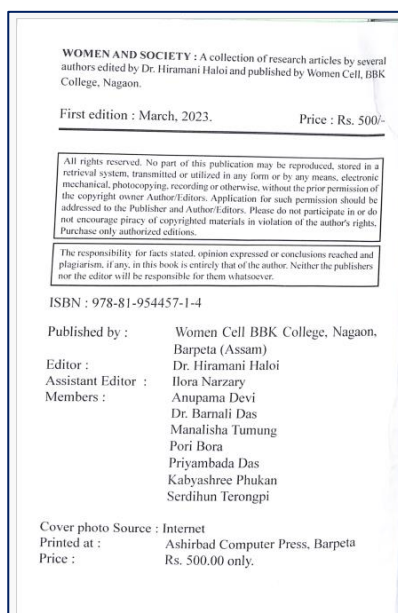
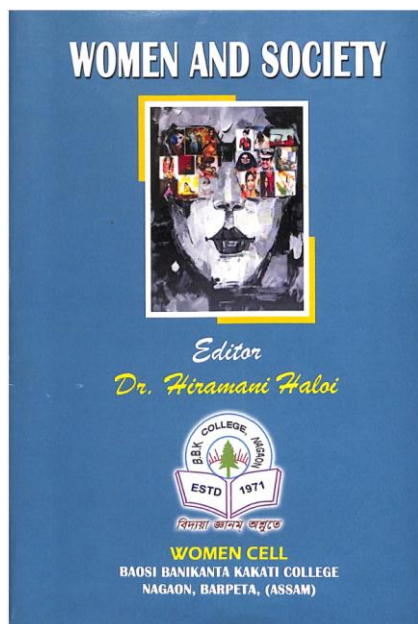


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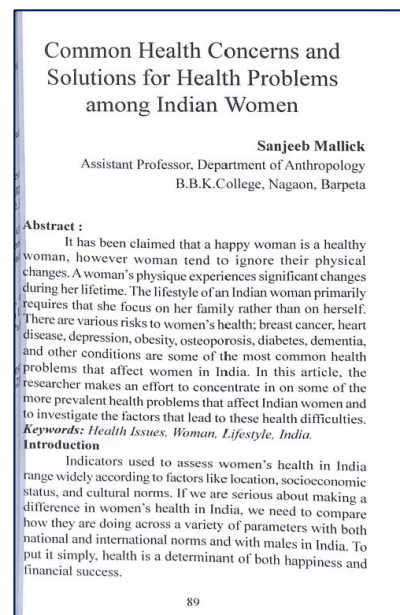
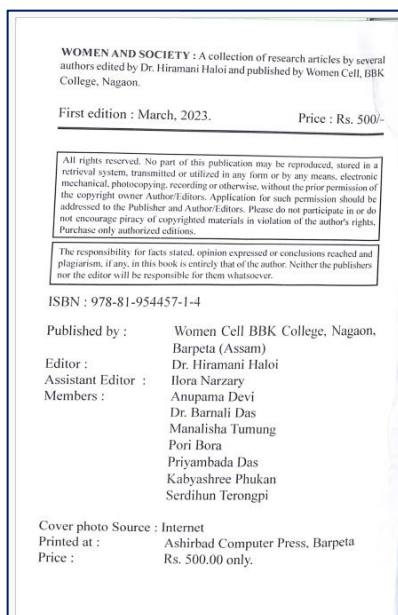
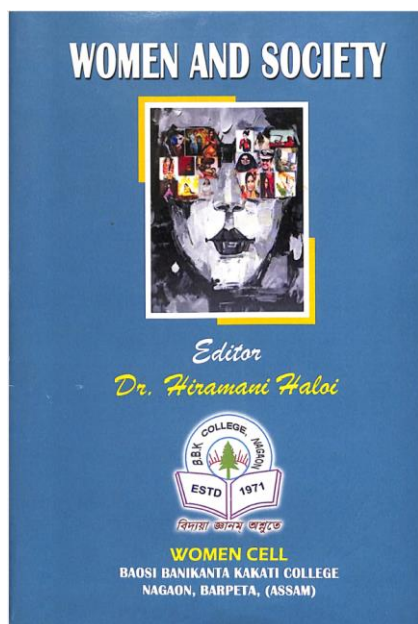
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55) Azizur Rahman (2022-23)



56) Sanjeeb Mallick (2022-23)



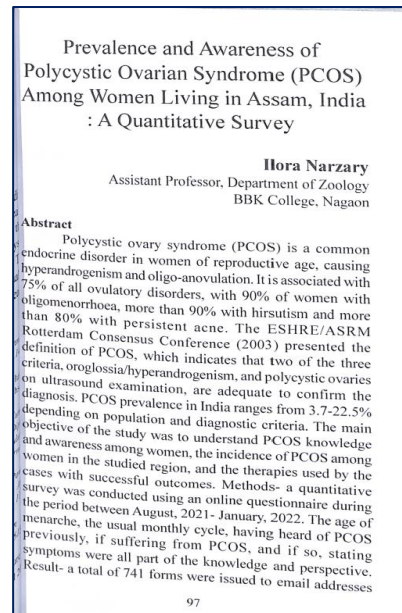
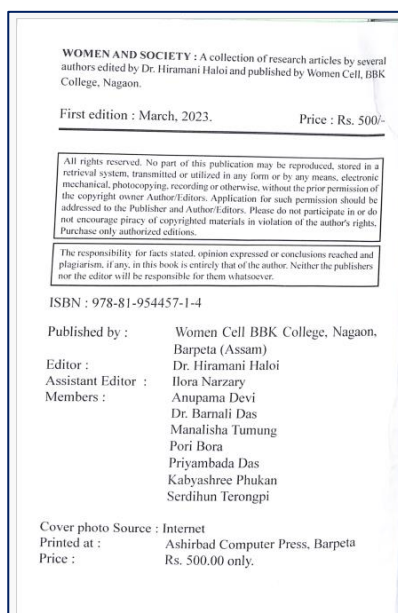
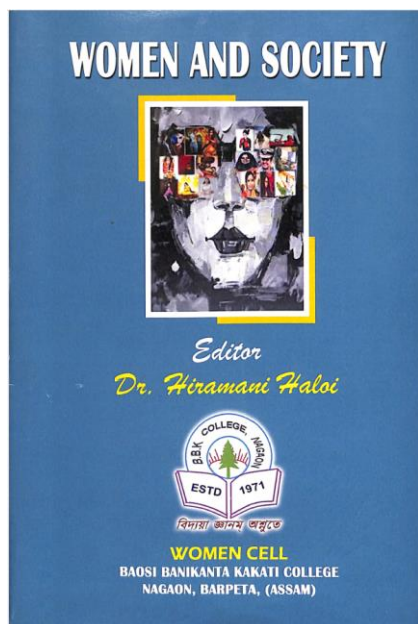


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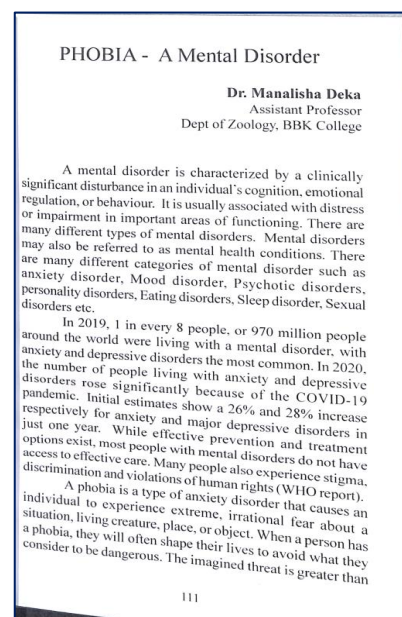
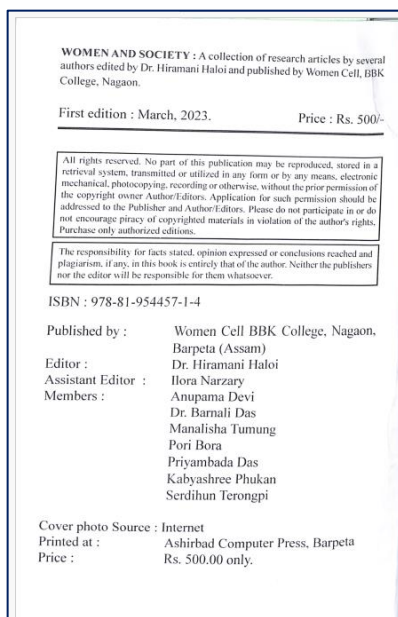
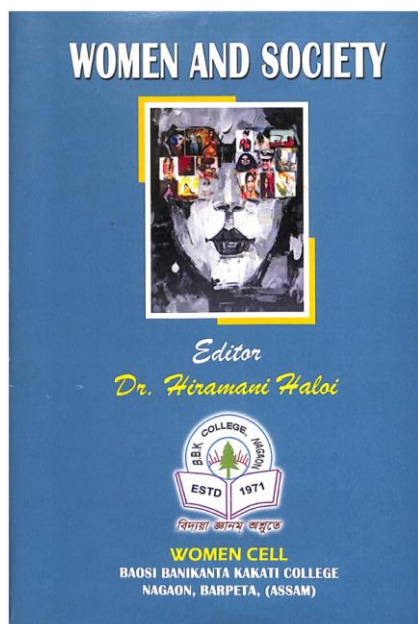
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Assam – 781311 (INDIA)

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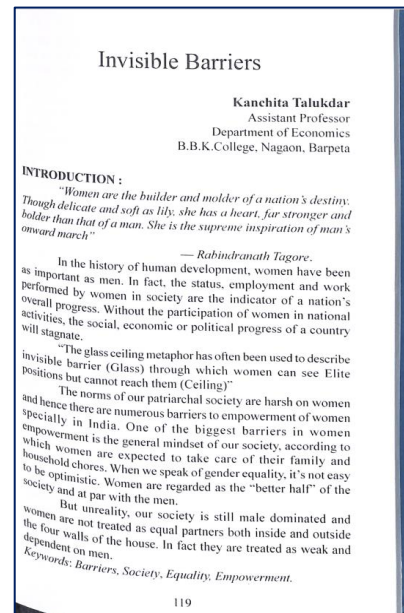
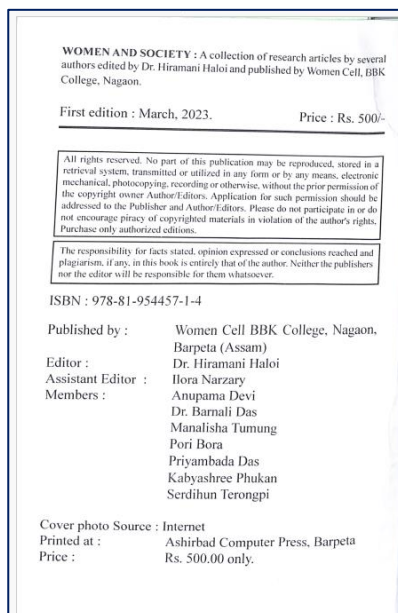
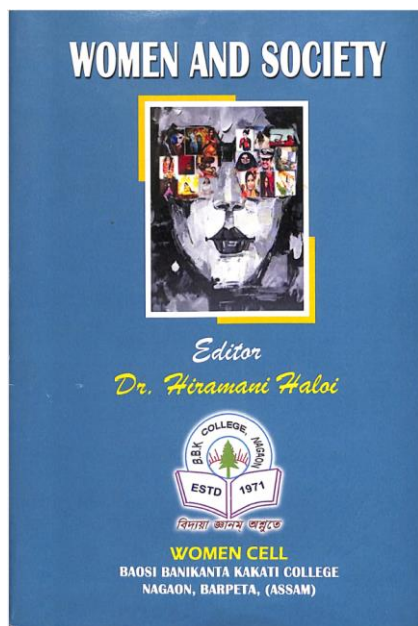
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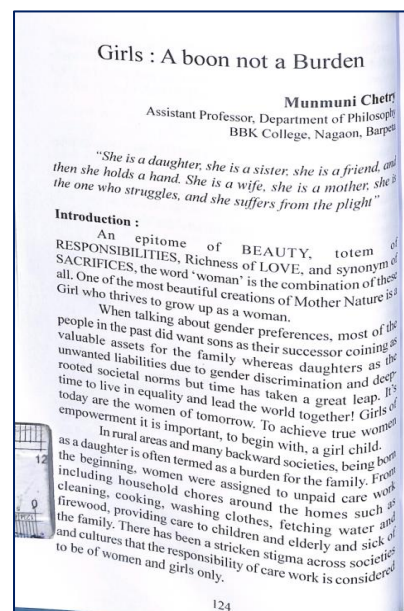
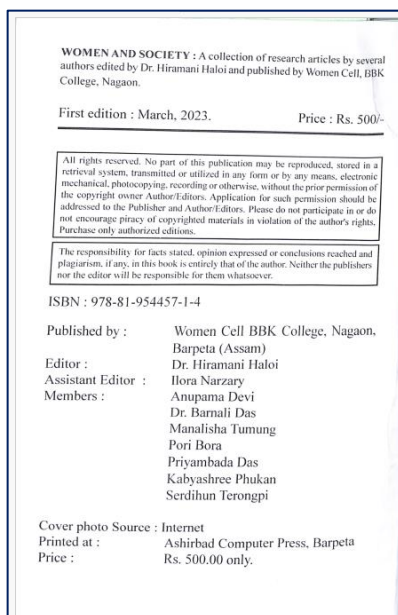
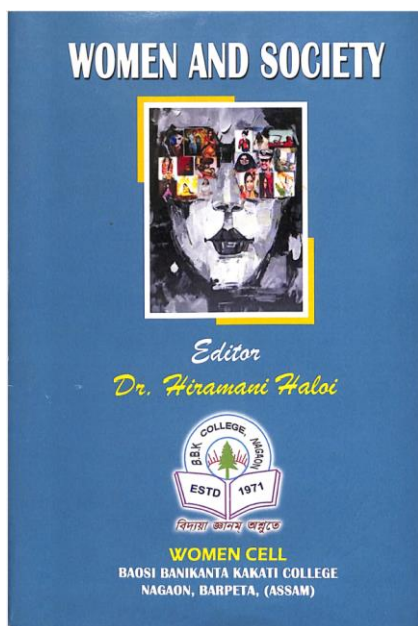
58) Dr. Manalisha Deka (2022-23)



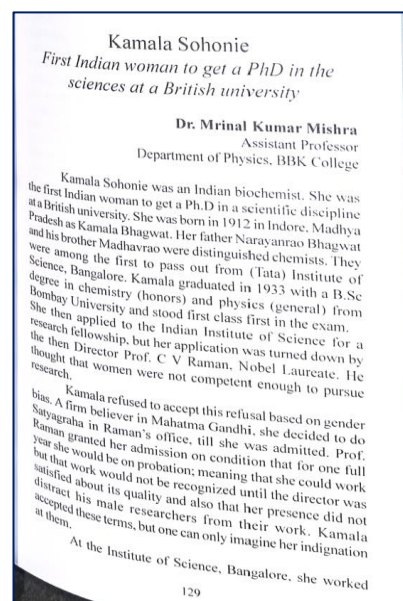
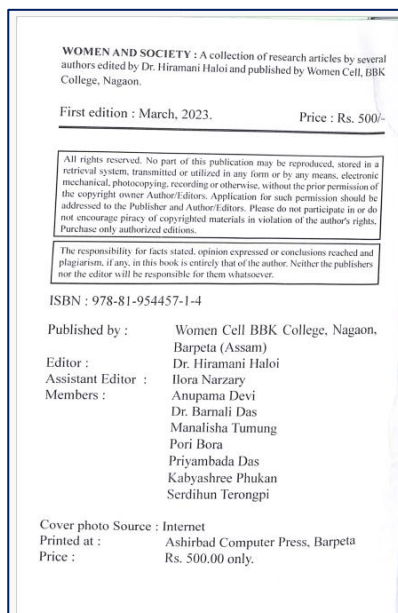
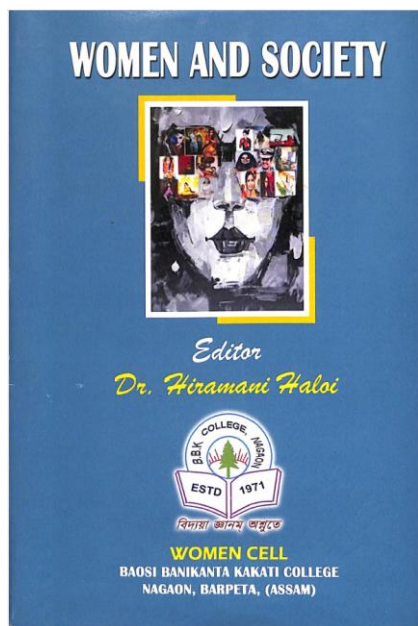
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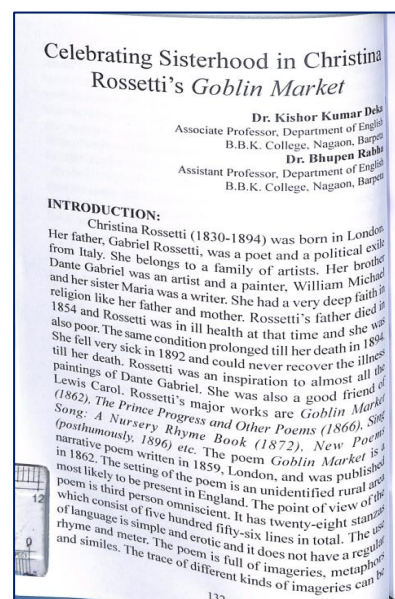
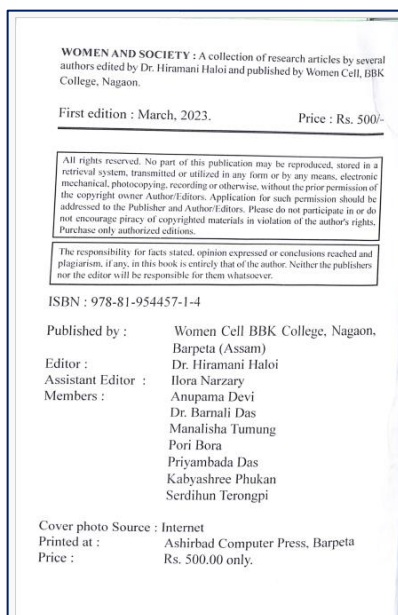
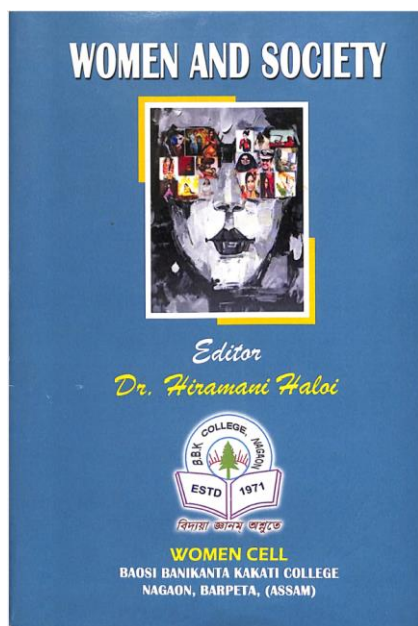
60) Munmuni Chetry (2022-23)



61) Dr. Mrinal Kumar Misra (2022-23)



62) Dr. Kishor Kumar Deka (2022-23)



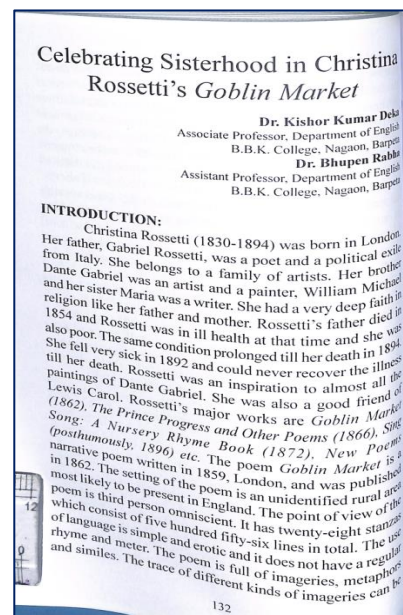
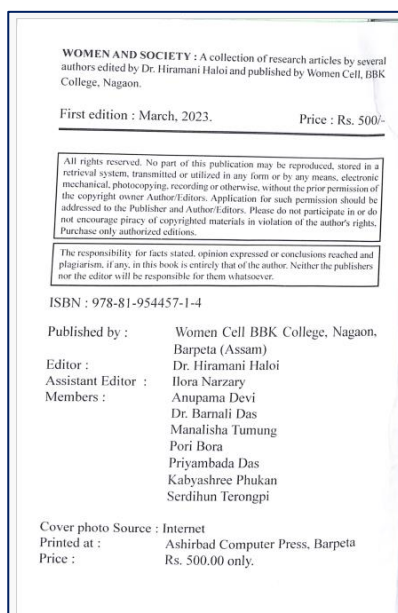
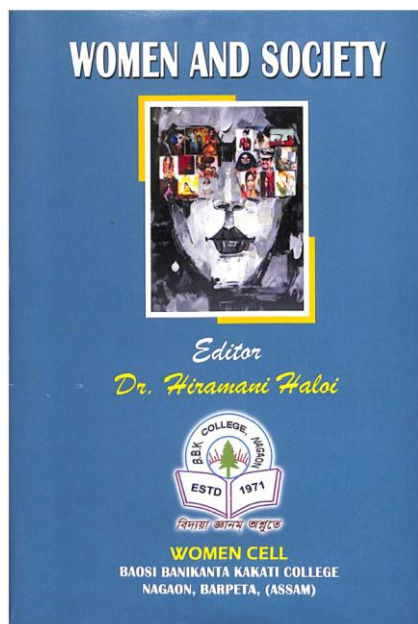


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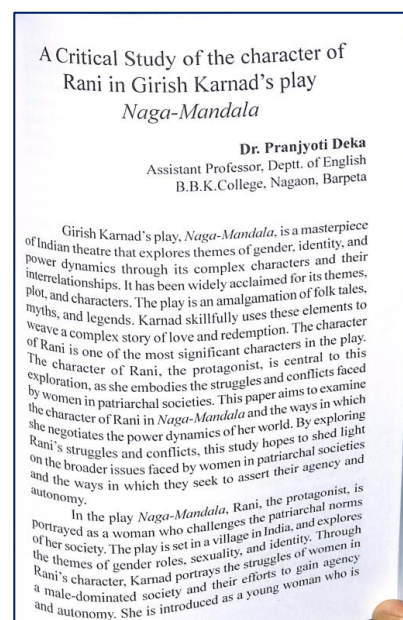
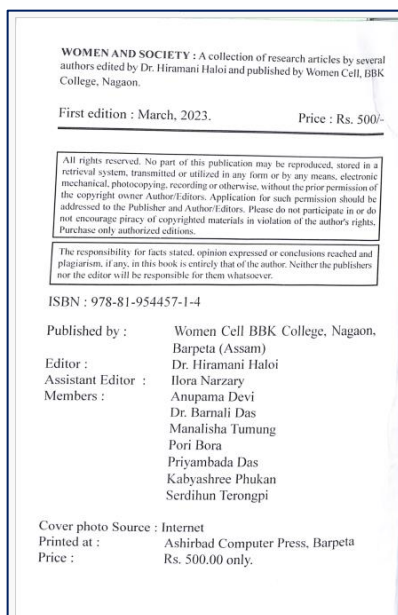
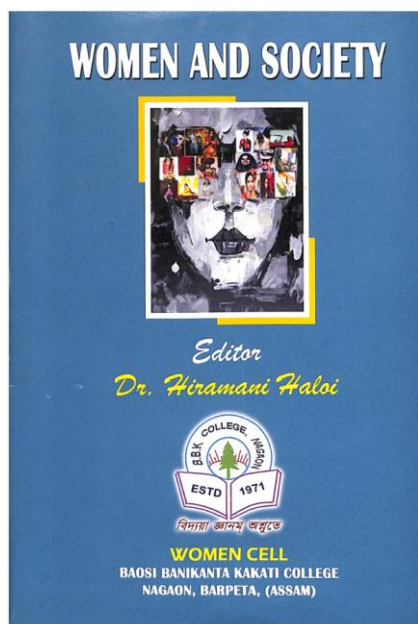
Nagaon, Barpeta
Assam – 781311 (INDIA)

Dr. Pradip Das
Principal

63) Dr. Bhupen Rabha (2022-23)



64) Dr. Pranjoyoti Deka (2022-23)



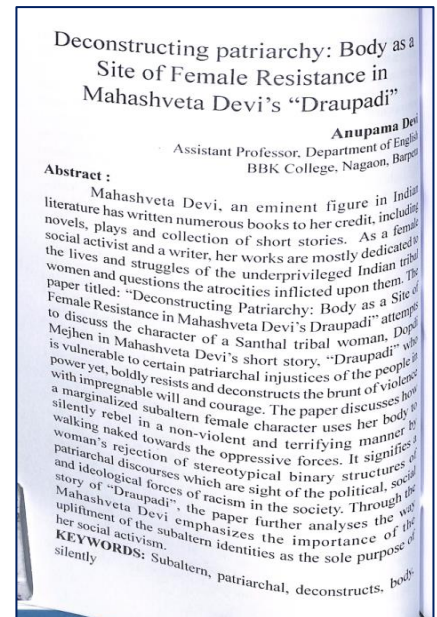
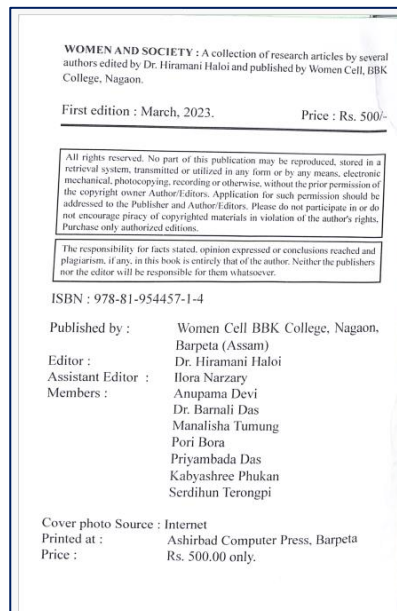
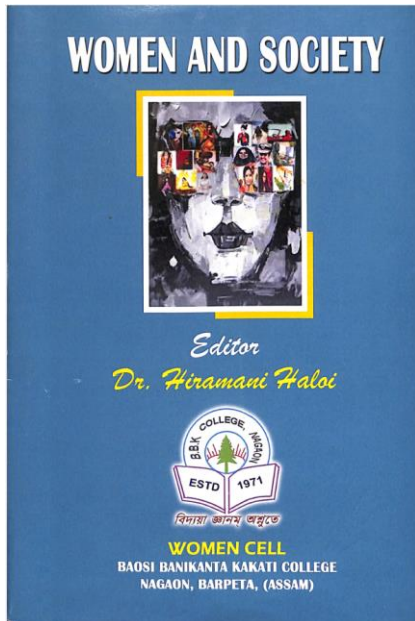


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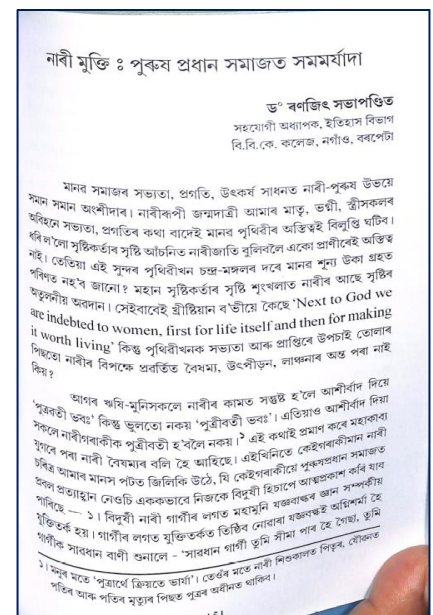
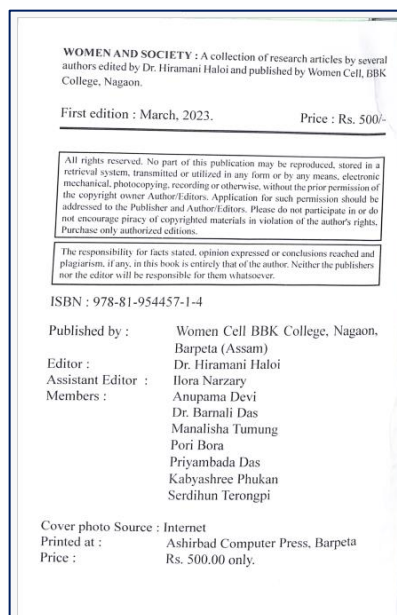
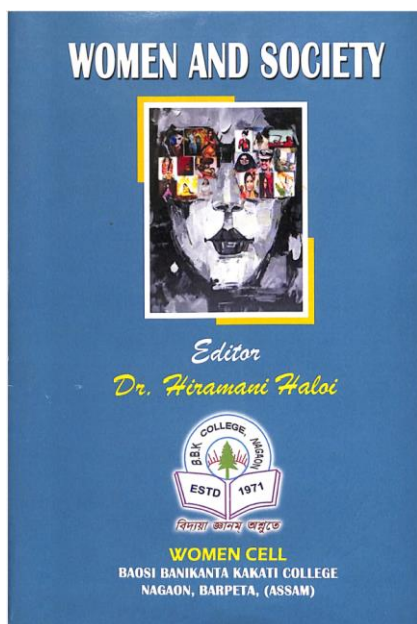
Nagaon, Barpeta
Assam – 781311 (INDIA)

Dr. Pradip Das
Principal

65) Aupama Devi (2022-23)



66) Dr. Ranjit Sabhapandit (2022-23)



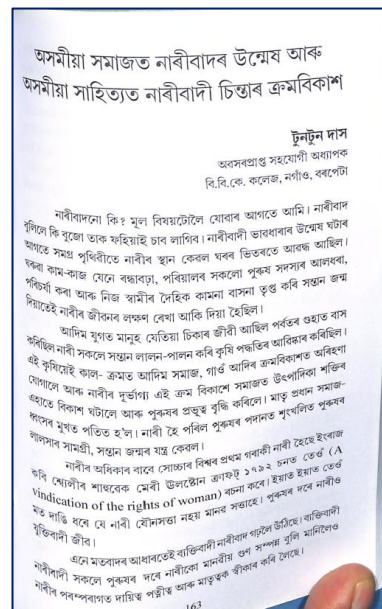
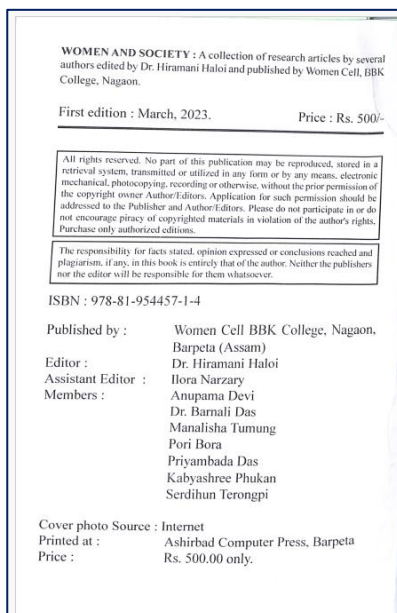
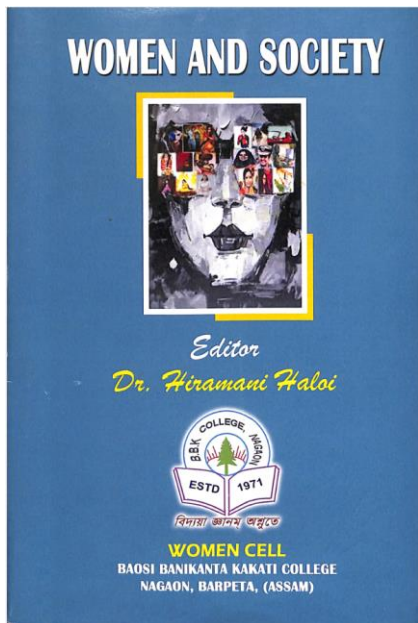


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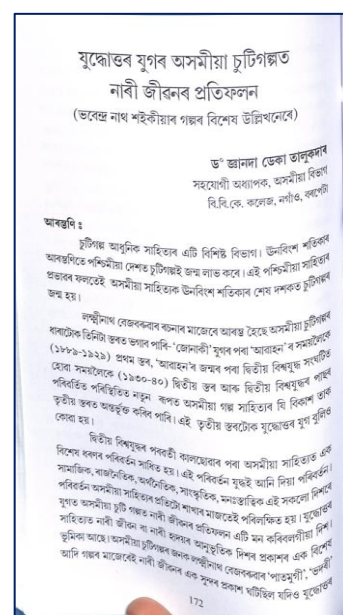
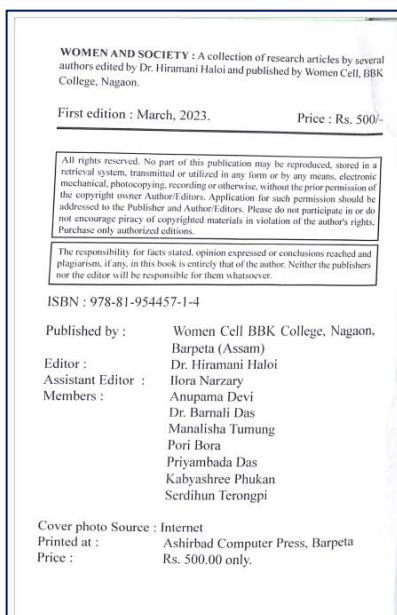
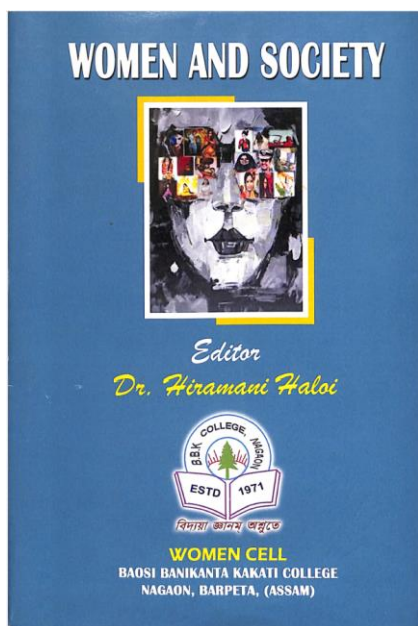
Nagaon, Barpeta
Assam – 781311 (INDIA)

Dr. Pradip Das
Principal

67) Tuntun Das (2022-23)



68) Dr. Gyana Deka Talukdar (2022-23)



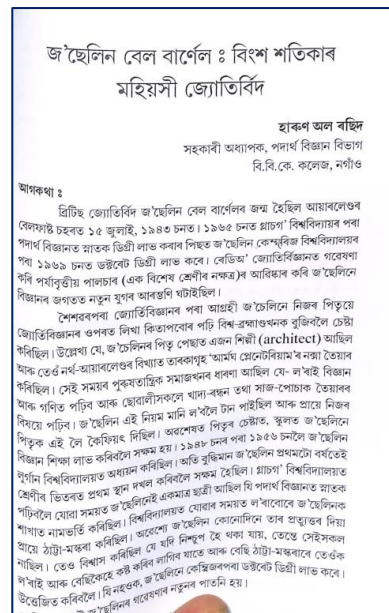
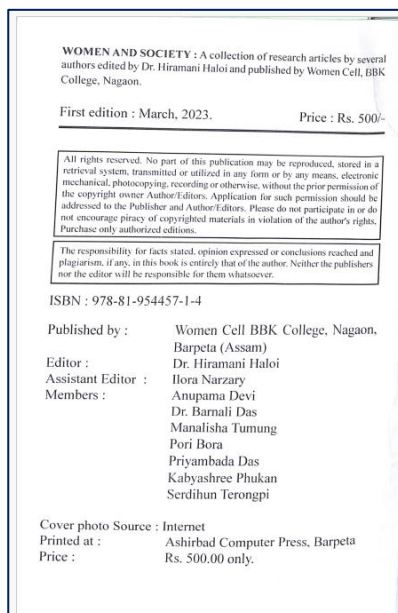
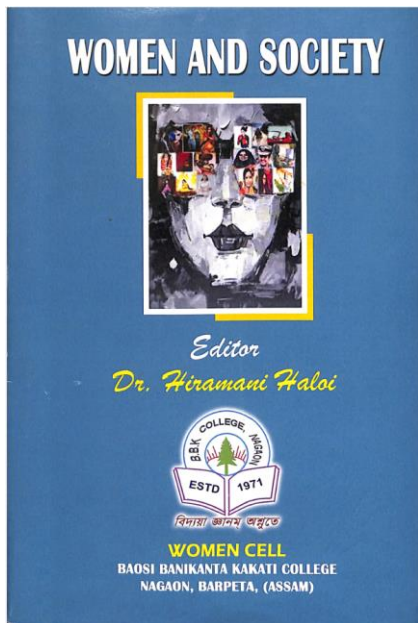


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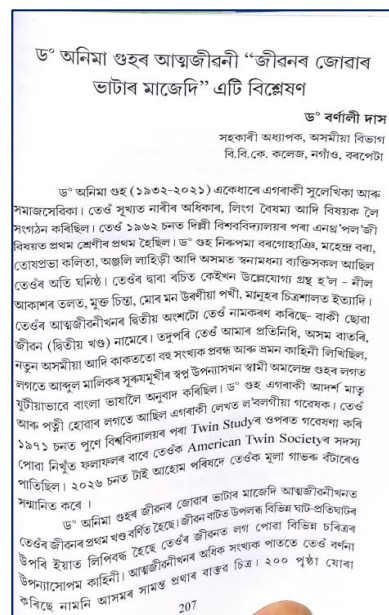
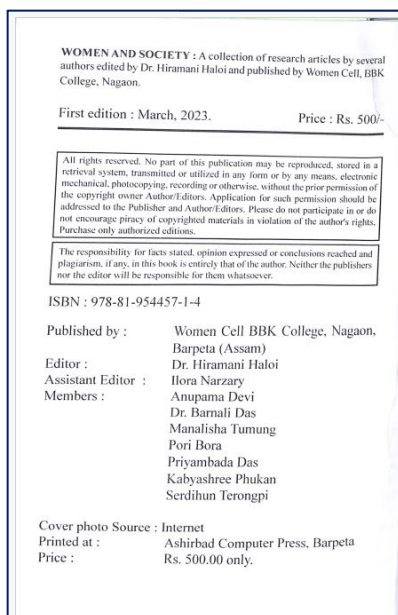
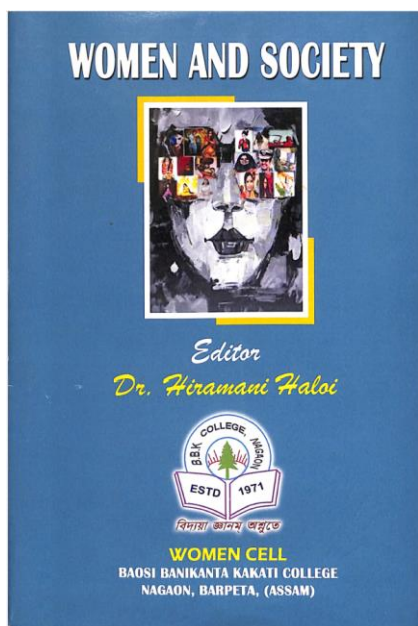
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Assam – 781311 (INDIA)

Dr. Pradip Das
Principal

69) Harun Al Rashid (2022-23)



70) Dr. Barnali Das (2022-23)



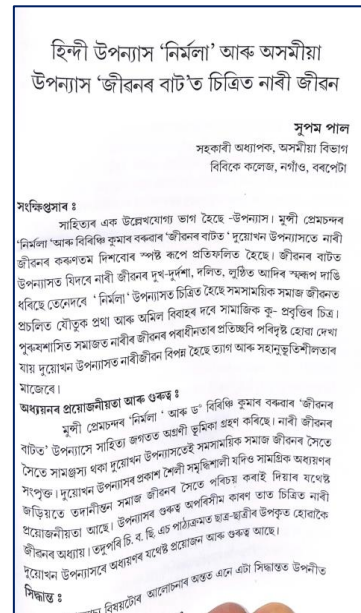
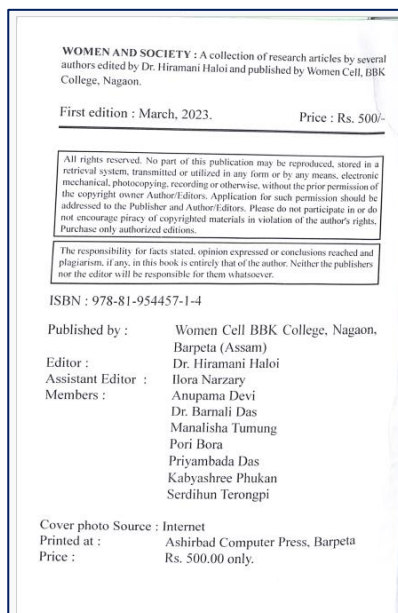
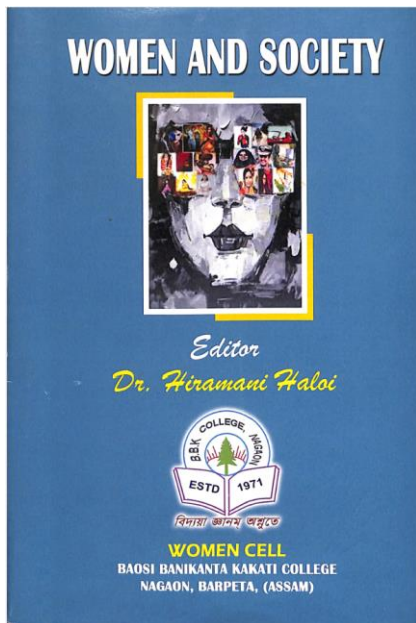


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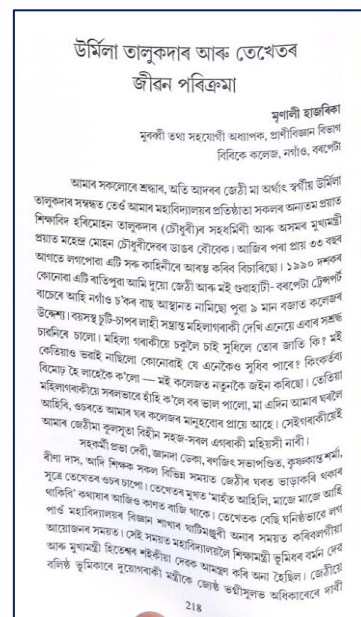
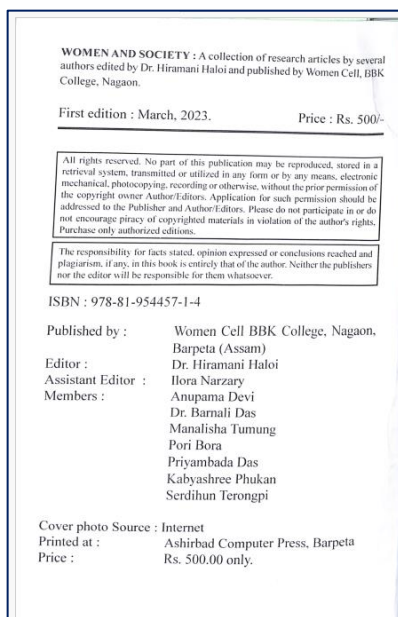
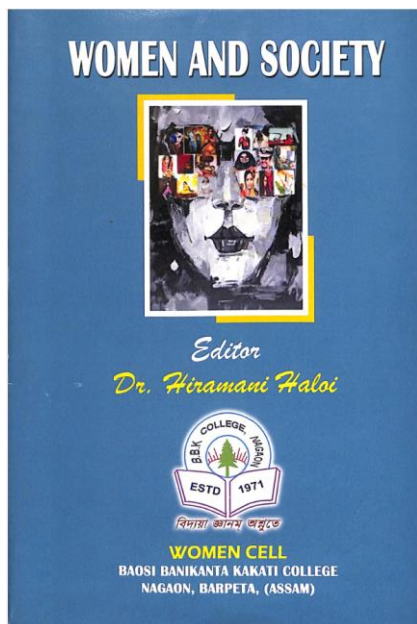
Nagaon, Barpeta
Assam – 781311 (INDIA)

Dr. Pradip Das
Principal

71) Supam Paul (2022-23)



72) Mrinali Hazarika (2022-23)



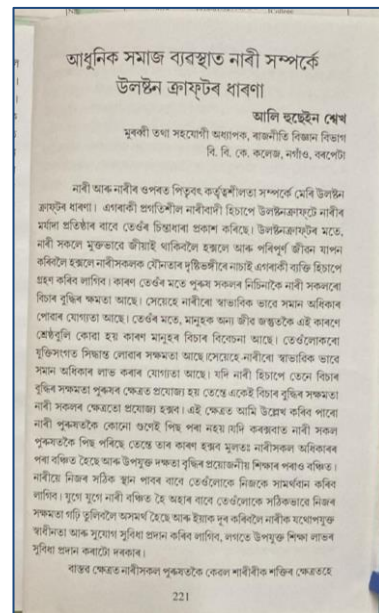
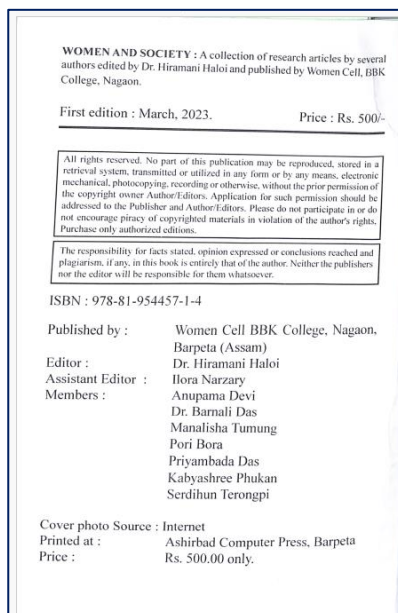
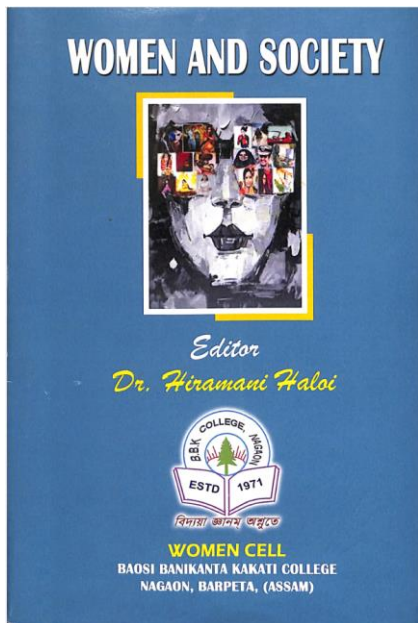


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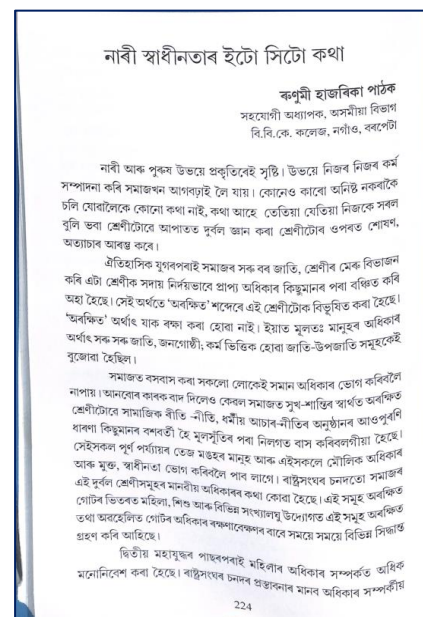
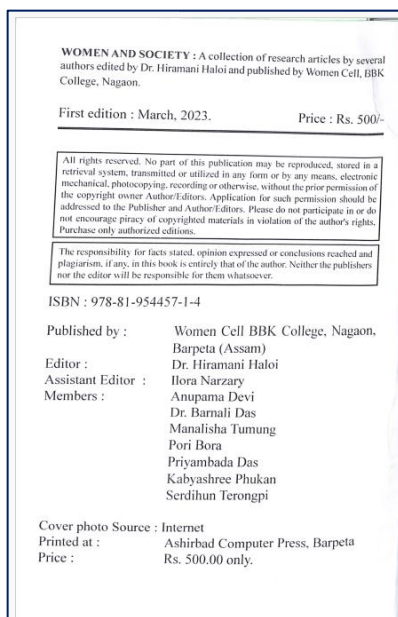
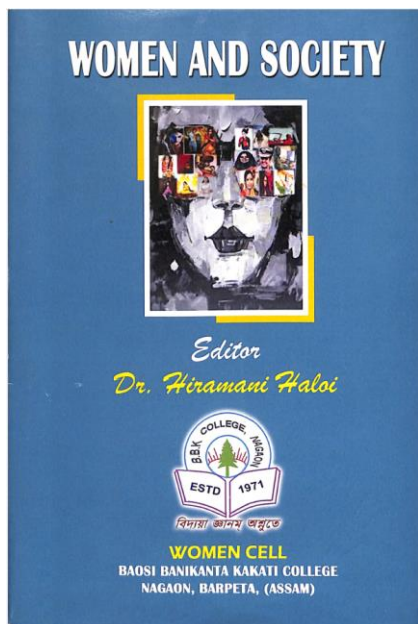
Nagaon, Barpeta
Assam – 781311 (INDIA)

Dr. Pradip Das
Principal

73) Ali Hussain Sheikh (2022-23)



74) Runumi Hazarika Pathak (2022-23)



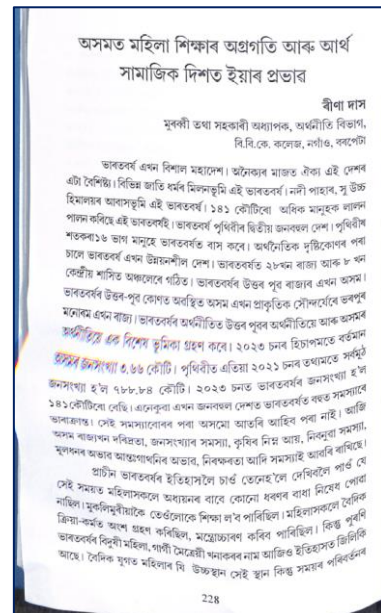
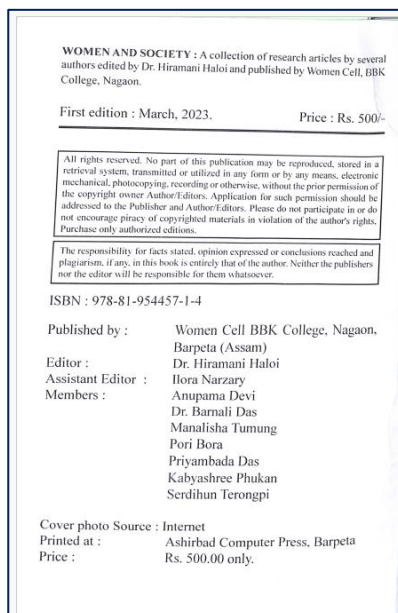
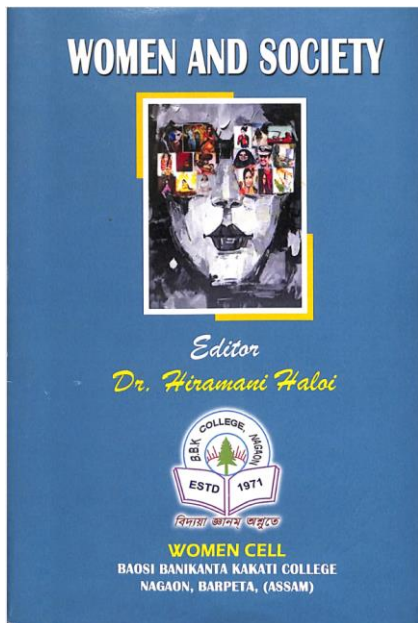


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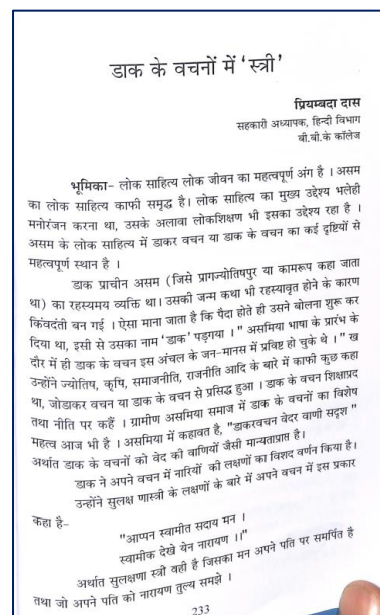
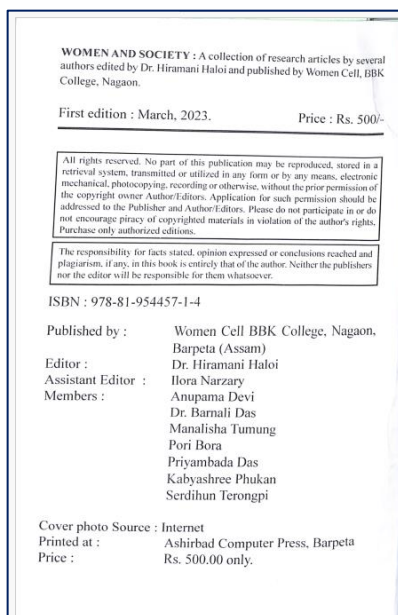
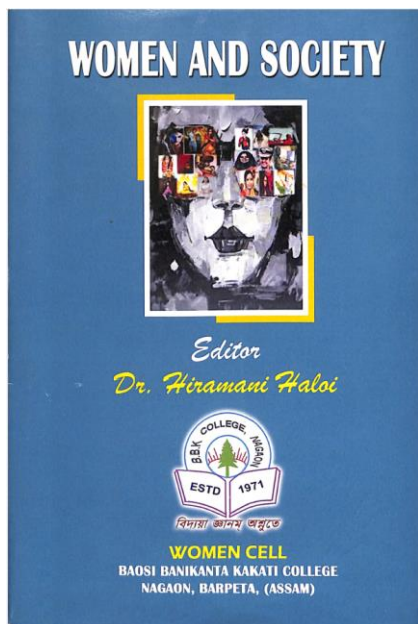
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Assam – 781311 (INDIA)

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75) Rina Das (2022-23)



76) Priyambada Das (2022-23)



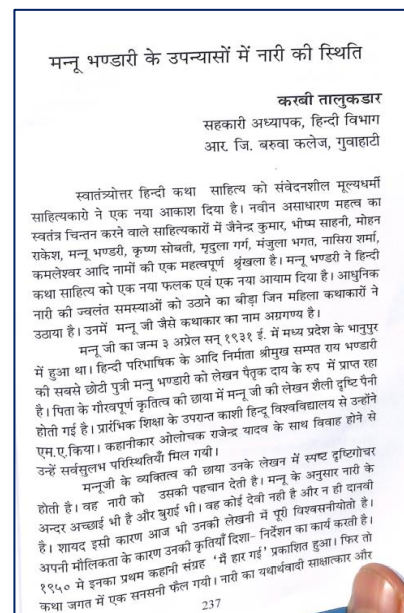
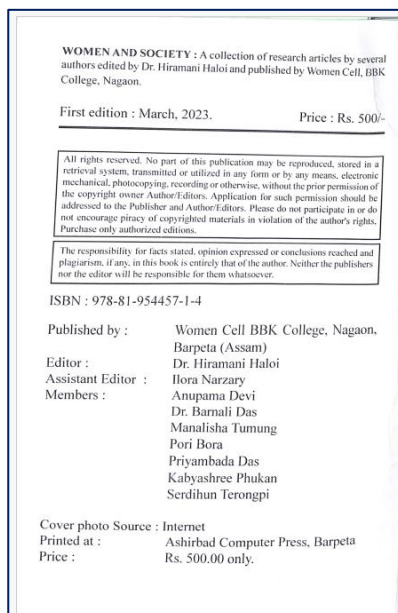
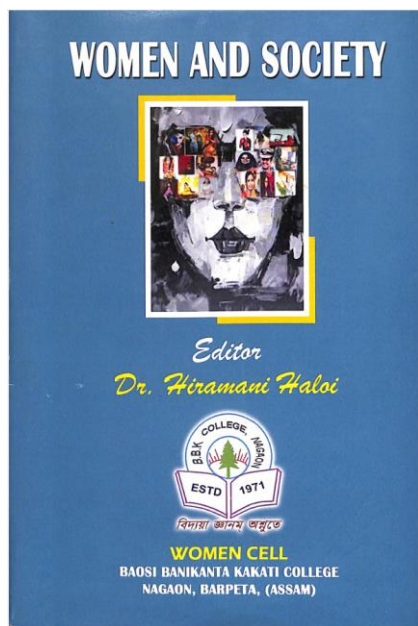


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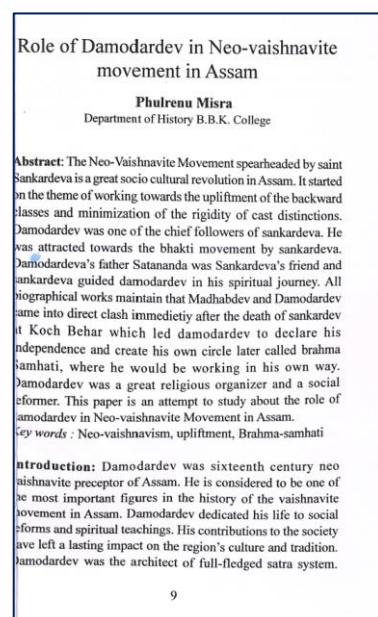
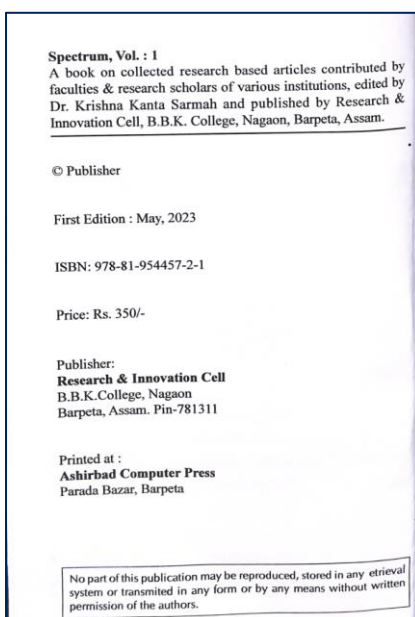
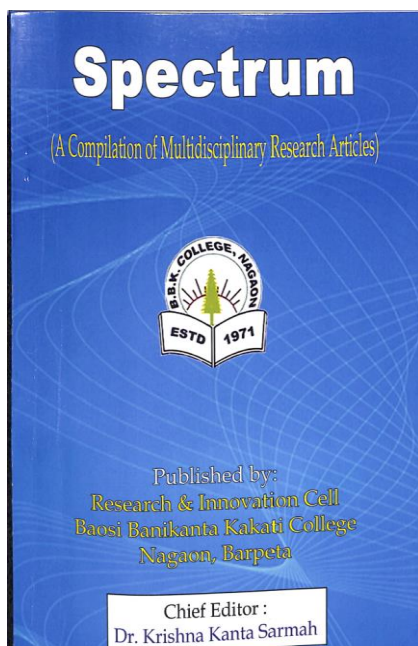
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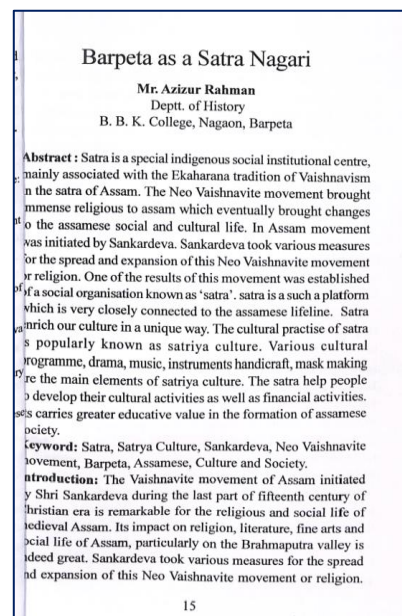
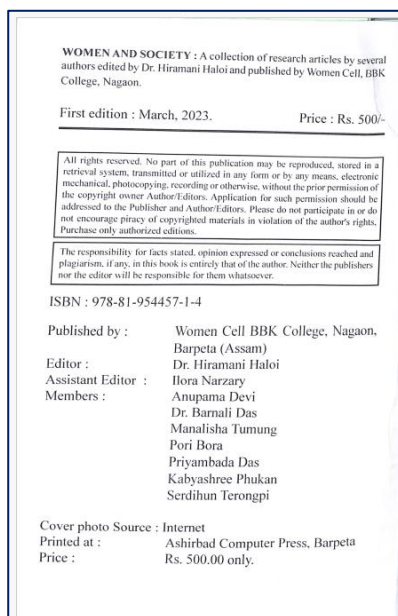
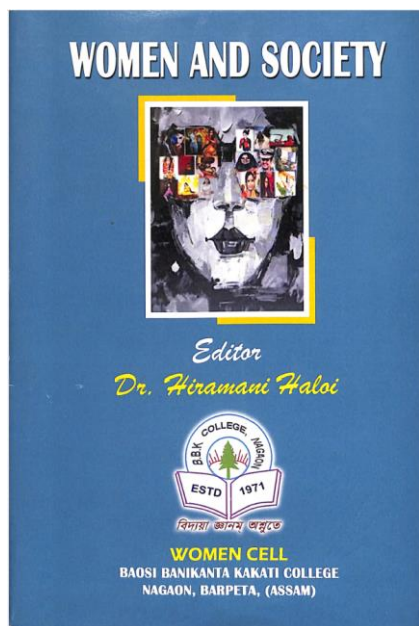
77) Karabi Talukdar (2022-23)



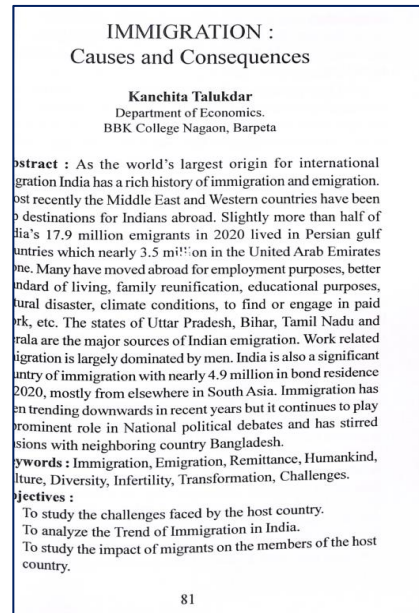
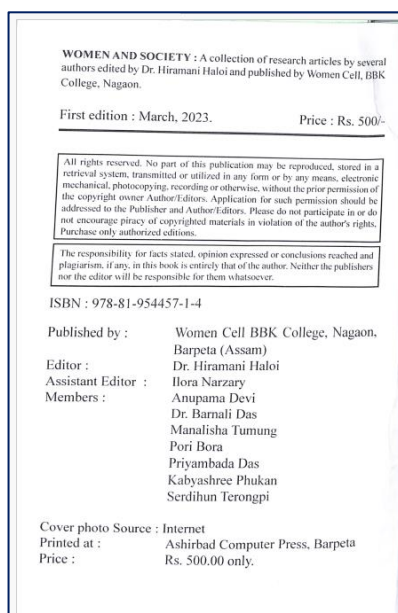
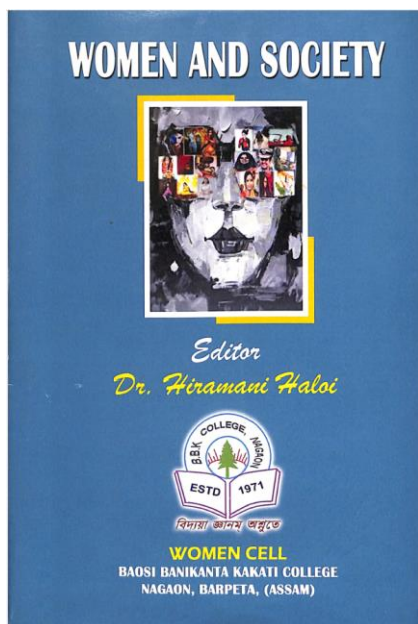
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79) Azizur Rahman (2022-23)



80) Kanchita Talukdar (2022-23)



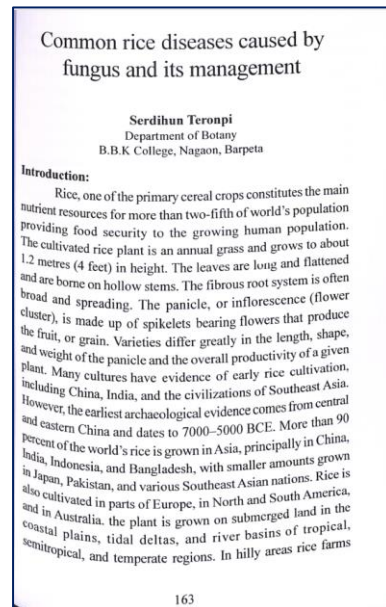
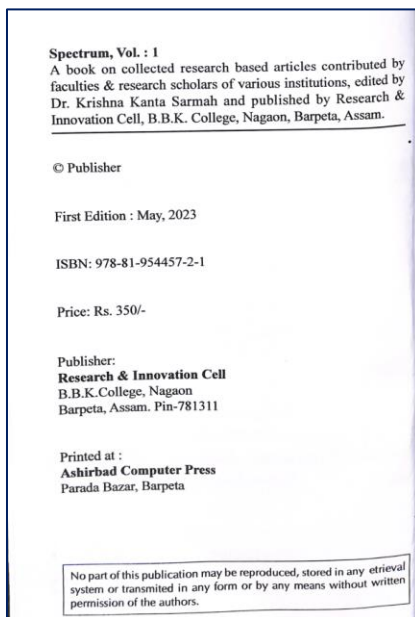
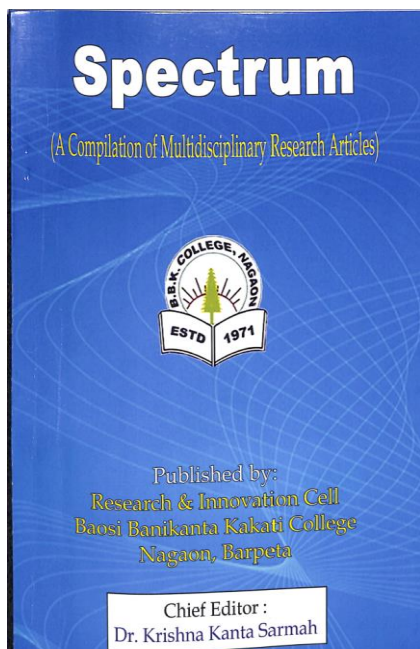


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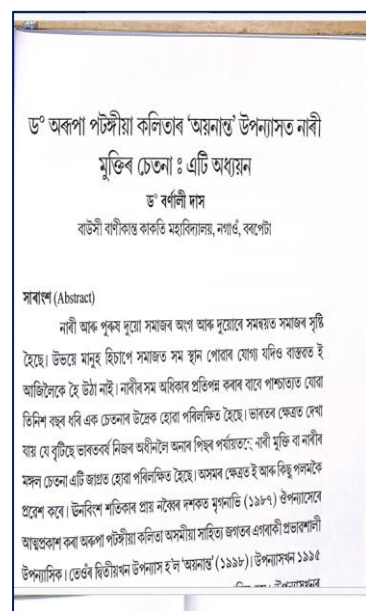
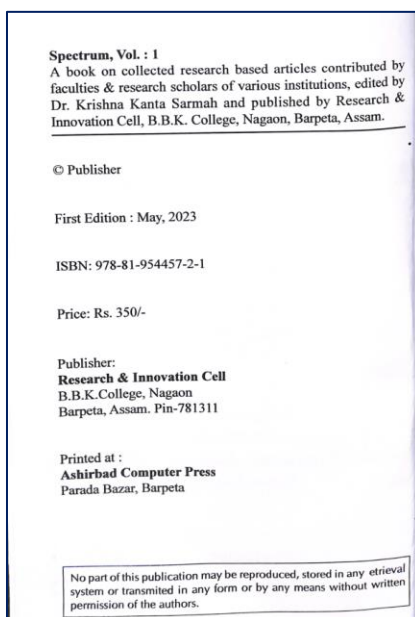
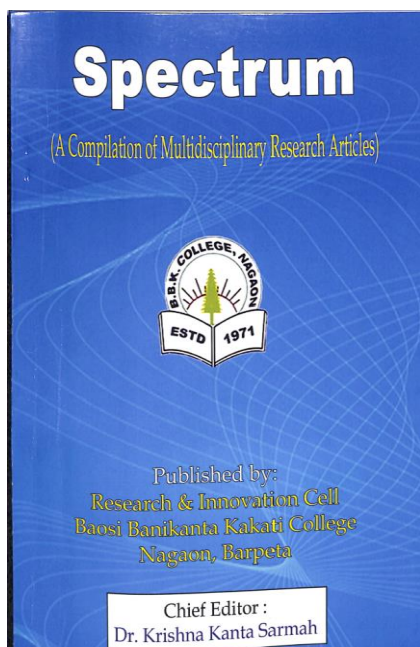
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81) Serdihun Teronpi (2022-23)



82) Dr. Barnali Das (2022-23)



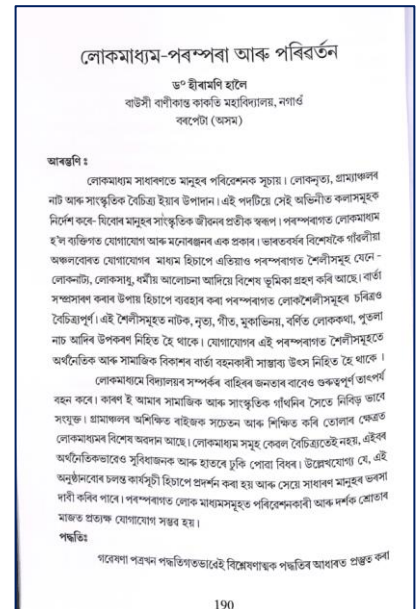
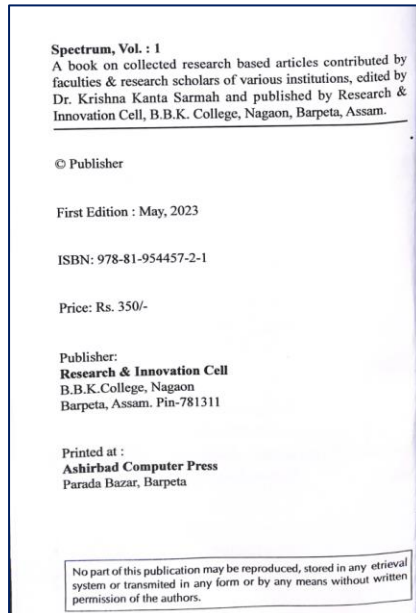
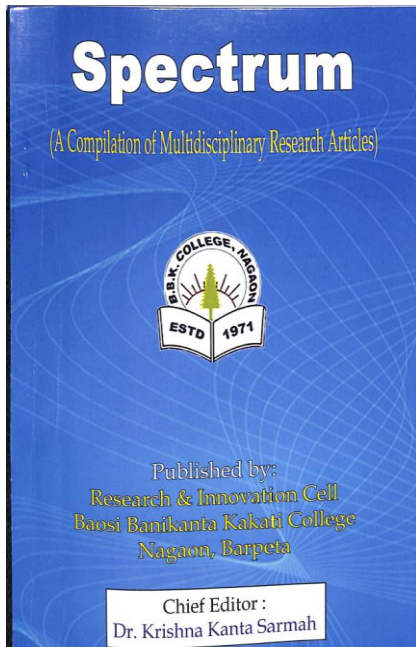


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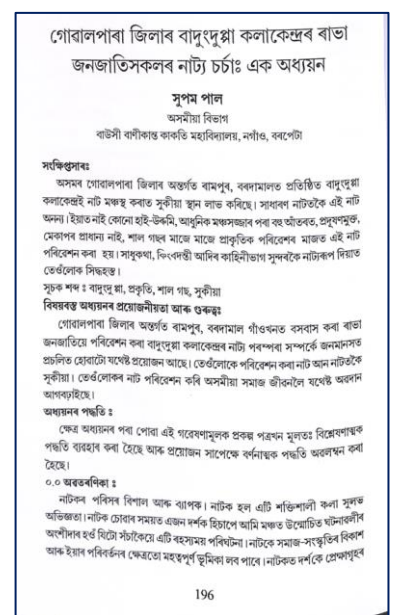
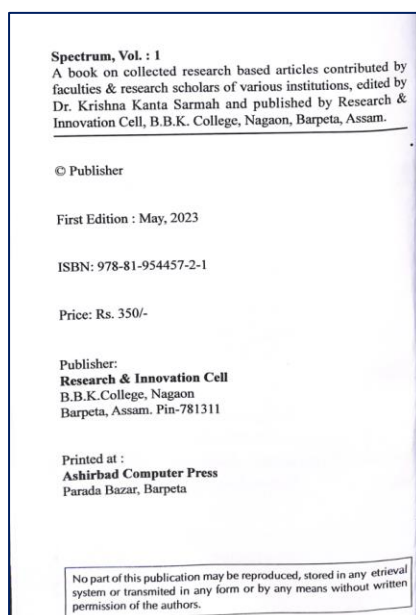
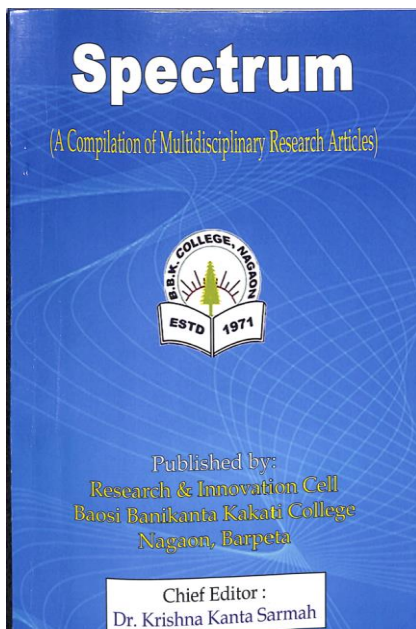
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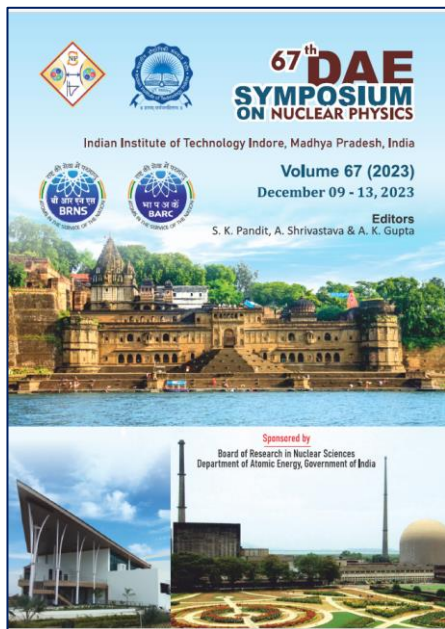
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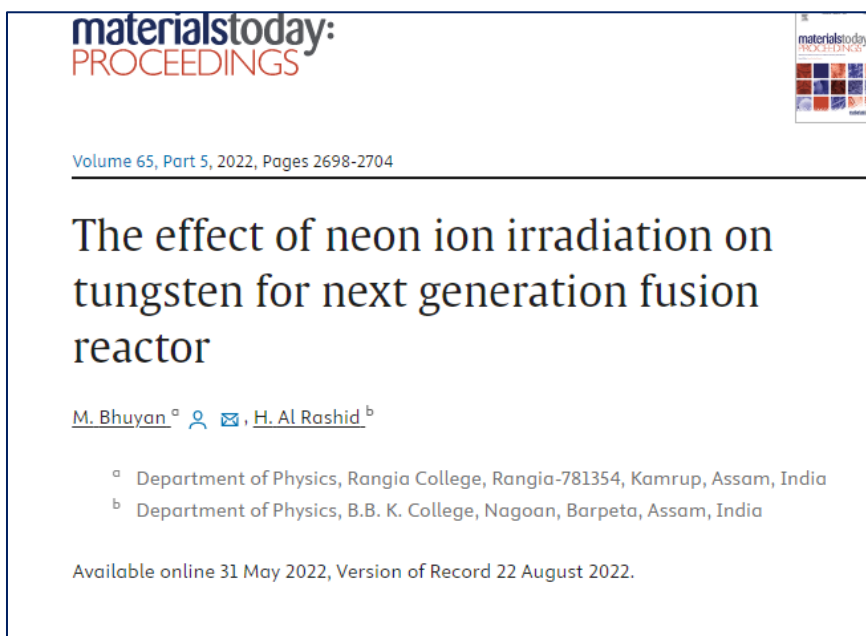
84) Supam Paul (2022-23)



85) Harun Al Rashid (2022-23)



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87) Dhrubajyoti Choudhury (2022-23)



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To,
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This certificate confirms that **Dhrubajyoti Choudhury** is the author of book chapter titled "**Relativistic Kinematics**" of published book entitled "**Recent Review and Research in Physics (Volume - 4)**" having ISBN 978-93-5570-590-7.

Yours Sincerely,

Akhil Gupta

Akhil Gupta
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Chapter - 5
Relativistic Kinematics
Dhrubajyoti Choudhury and Banajit Barman

Abstract

The term heavy ion collision (HIC) means the bombardment of two heavy nuclei at any energy whereas the term relativistic heavy ion collision (RHIC) means the bombardment of two heavy nuclei in the energy regime where the kinetic energy exceeds significantly the rest mass energy of the colliding nuclei. High energy heavy ion collisions are important from the point of view that such collisions might result free quarks and gluons which otherwise, are confined inside the hadrons. The lifetime of the QGP matter formed during the collisions is expected to be $\sim 10^{-23}$ second and the system's temperature is also very high $\sim 10^{12}$ K. It is therefore experimentally not possible to detect this state of the matter directly. Rather, one has to rely on some indirect methods or observables, which can provide reliable information about the state of the matter. Various observables of nuclear collisions can provide information about the various stages of evolution of the collisions. More detailed information on different observables of nuclear collisions are: multiplicity, rapidity, pseudorapidity, p_T spectra, collective flow, jet quenching and so on. A Large Ion Collider Experiment (ALICE) is one of the four major experiments of the Large Hadron Collider (LHC) at the European Organization for Nuclear Research (CERN). It is primarily designed to investigate the properties of the strongly interacting matter in extreme conditions of temperature and energy density, in which quarks and gluons are no longer bound inside the hadrons.

Keywords: Heavy ion collision, quark gluon plasma (QGP), global observables, tensor, standard model (SM)

Introduction

In experimental high energy physics, one deals with elementary particles. To investigate these particles, we need a probe whose resolution is comparable to the fermi scale i.e. 10^{-15} m. The following figure shows a schematic picture where a low energy probe fails to probe the inner structure of an object unlike a high energy probe with higher resolution ^[1].

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Chapter - 4
Quantum Chromodynamics
Dhrubajyoti Choudhury and Banajit Barman

Abstract

The theory of how quarks interact with one another is known as quantum chromodynamics (QCD). Quantum chromodynamics attempts to explain how quarks endow hadrons with their properties and has predicted a number of effects that have been observed in high-energy particle experiments. It is modeled on the well-established theory of how charged particles interact i.e. quantum electrodynamics (QED). The quark color of QCD is taking the place of electric charge of QED. In QED, electrically charged leptons emit and absorb photons whereas in QCD, the color charged quarks emit and absorb gluons. Both gluons and photons are massless with spin 1. One can analogy both of the two theories but they are not exactly the same. Through this chapter, we are trying to provide a better understanding of quantum chromodynamics in a simpler way along with a few interesting facts related to it.

Keywords: Hadron, Lepton, Gluon, Flavor, Standard Model (SM)

Introduction

A deeper understanding requires a lot of formal knowledge. Quantum electrodynamics (QED) takes the electromagnetic force and explains it in terms of quantum exchange of particles that mediates the force i.e. virtual photons in this case. There are three more fundamental forces: the strong and weak nuclear forces as well as gravitational force. Ordinary matter is composed of protons, neutrons and electrons. At first glance these particles seem enough to account for the structure of the universe around us ^[1]. But as it turns out, protons and neutrons are in turn made up of smaller particles still. Protons and neutrons are each composed of three quarks which are forever bound. Protons are made of two up quarks and one down quark, while neutrons are made of one up quark and two down quarks. There are other types of quarks beyond the up and down quarks. They are top, bottom, charm and strange quarks, which have different properties.

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Chapter - 4
Quantum Chromodynamics
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Abstract

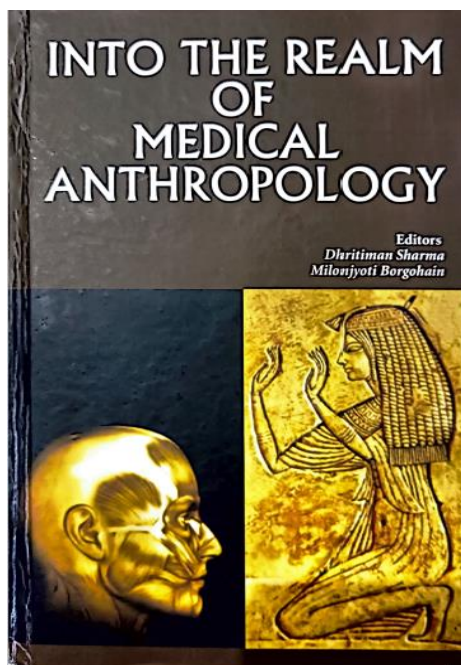
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89) Haripriya Das (2020-21)



**REPRODUCTIVE HEALTH AND DISEASE
OF THE KARBI WOMEN OF ASSAM**

HARIPRIYA DAS

INTRODUCTION

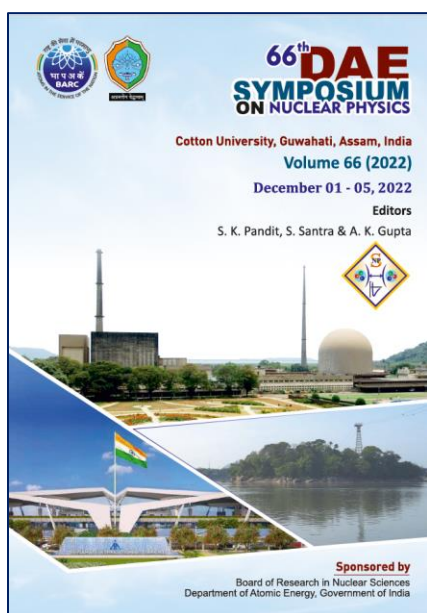
The WHO International conference on population and development, held in Cairo in 1994, arrived at a consensus view of health that was endorsed by 165 countries,

Reproductive health is ... "a state of complete, mental and social well being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and its function and process".

Reproductive health extends into the years before and beyond the years of reproduction, not just the time of reproduction. Reproductive health plays important role in morbidity, mortality and life expectancy. Reproductive health problems are the leading cause of women's health and mortality worldwide.

Plants have long been recognised for their therapeutical properties. For centuries, indigenous culture around the world has used traditional medicines. The number of patients seeking alternate and therapy is growing exponentially. Herbal medicines are the synthesis of therapeutical experiences of generations of practicing physicians of indigenous system of medicine for over hundreds of years. Herbal medicines are now in great demand in the developing

90) Harun Al Rashid (2022-23)



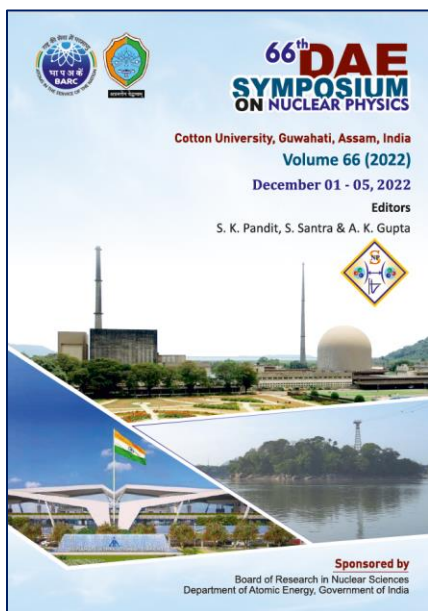


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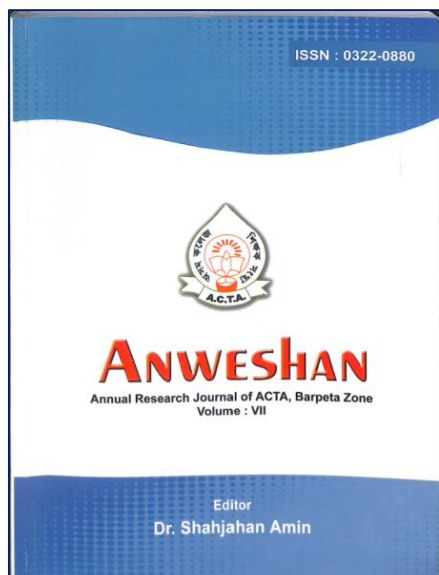
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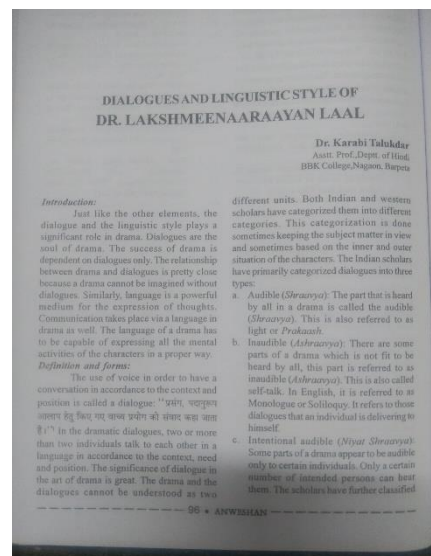
91) Harun Al Rashid (2022-23)



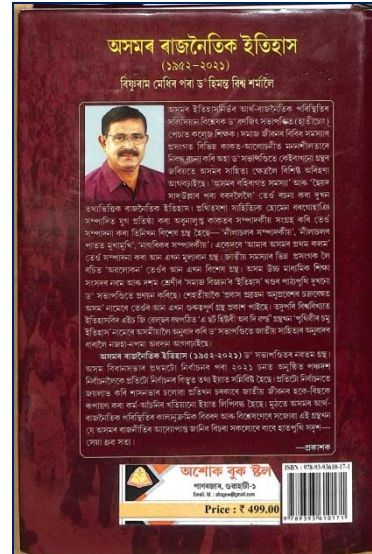
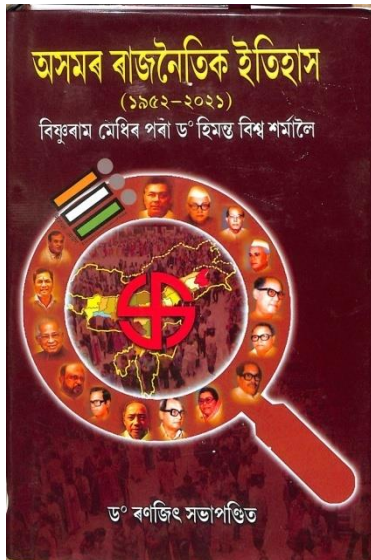
92) Dr. Karabi Talukdar (2022-23)



CONTENTS	
• NEP 2020: Rebuilding Indian Education – Dr. Duhonori Goswami	9
• Exploring Masculinity in Devdutt Pattanaik's Jaya: An illustrated retelling of the Mahabharata – Manas Neng	13
• Feminine Sensibility in Kamla Das's Poetry: A Study of 'An Introduction' and 'The Old Playhouse' – Arunima Bhattacharya	20
• Friend to Foe: A Study of the relationship between Thomas Becket and Henry II in T.S. Eliot's 'Murder in the Cathedral' – Dr. Kishor Kumar Deka	26
• An Overview of Girish Karnad: The Playwright and his Major Plays – Dr. Pranjoyi Deka	31
• The October Revolution and English literature – Dr. Sultan Ali Ahmed	36
• Visible Work, Invisible Workers: A Study on Women's Domestic Work and its Impact on the Economy – Mr. Ajanta Choudhury	41
• Economic Independence in relation to Women's Women Empowerment and Gender Equality – Dr. Kaktali Hazarika	47
• Value-based Education – Dr. Dipri Kalita	51
• Role of ICT in Education – Lieutenant Dr. Shahjahan Ali	54



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