



**Nehru Education Society**

**Nehru Mahavidyalaya (Arts, Com. & Sci.),  
Nerparsopant, Dist. Yavatmal.**

*Affiliated to*

**Sant Gadge Baba Amravati University, Amravati.**



**3<sup>rd</sup> cycle**

**Assessment & Accreditation by NAAC**

**CRITERIA III - Research, Innovations and Extension**

**3.5 Collaboration**

**Metric No.:- 3.5.1**

**Number of functional MoUs/linkages with institutions/ industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research during the last five years.**



Nehru Education Society, Nerparsopant  
**NEHRU MAHAVIDYALAYA**

\* Arts \* Commerce \* Science

Nerparsopant, Dist.Yavatmal (M.S.) 445102

Centre for Graduate, Post Graduate and Research Studies



**PRINCIPAL**

**Dr. Ashok N. Bhorjar**  
 M.A. (History), M.Phil., Ph.D.  
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**PRESIDENT**

**Hon. Shri. Parmanandji S. Agrawal**  
 M.Com.  
 Mob. 9421774699

Ref.No.NMV/Sr./J/... 3141/2023-24

Date :- 21/12/2023

**Declaration**

The information, reports, true copies of the documents, numerical data etc. functional in this file is verified by me and found correct.

  
 Principal

Dr. A. N. Bhorjar  
 Principal  
 Nehru Mahavidyalaya  
 [ Arts \* Commerce \* Science ]  
 Ner parsopant Dist.Yavatmal



### 3.5 Collaboration

**3.5.1** Number of functional MoUs/linkages with institutions/ industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research during the last five years.

#### **Organization-Institute MoUs:**

- ❖ The institution has three active MoUs with non-academic organizations which sets out opportunities for students.
- ❖ The institution has MoU with Aarsh Foundation, Nagpur for Skill development and training program under the guidance of Tribal Research and Training Institute, Pune and carried out by Aarsh Foundation, Nagpur.
- ❖ Many job-oriented courses are offered in co-operation with Career Katta for students and unemployed graduates.
- ❖ The institute organized various program collaboration with government local bodies like Tahsil office, Nagar Parishad and Panchayat Samiti office which help to implement the social activities for the betterment of the society.

Sr. No.	Name of Scheme	Collaborating Agency	First Party	Second Party	Document
1.	Add on Courses by Career Katta	Maharashtra Information Technologies Help Center (Career Katta), Maharashtra Shasan.	Principal, Nehru Mahavidyalaya (Arts, Com. & Sci.), Nerparsopant, Dist. Yavatmal.	Mr. Yashwant Shitole, President, Maharashtra Information Technologies Help Center (Career Katta), Maharashtra Shasan.	Photo 3.5.1.2 & Photo 3.5.1.3
2.	Police Pre-Recruitment Training	Maharashtra Information Technologies Help Center (Career Katta), Maharashtra Shasan.	Principal, Nehru Mahavidyalaya (Arts, Com. & Sci.), Nerparsopant, Dist. Yavatmal.	Mr. Yashwant Shitole, President, Maharashtra Information Technologies Help Center (Career Katta), Maharashtra Shasan.	Photo 3.5.1.4
3.	Skill development and training program under the guidance of Tribal Research and Training Institute, Pune.	Aarsh Foundation, Nagpur.	Principal, Nehru Mahavidyalaya (Arts, Com. & Sci.), Nerparsopant, Dist. Yavatmal.	Mr. Anil M. Jawade, Secretary, Aarsh Foundation, Nagpur.	Photo 3.5.1.5
4.					



**Photo 3.5.1.1:** The Function of signing MoU, Institutional MoU with Career Katta in Presence of Mr. Yashawant Shitole, President, Maharashtra Information Technologies Help Center (Career Katta), Maharashtra Shasan.

**सामंजस्य करार**  
करिअर कट्टा आणि महाविद्यालय  
(Add on Courses)

पार्टी नं.१ :- करिअर कट्टा  
पार्टी नं.२ :- नेहरू महाविद्यालय, नेरपरसोपंत

**उद्देश**

महाराष्ट्र राज्य उच्च व तंत्र शिक्षण विभाग व महाराष्ट्र माहिती तंत्रज्ञान सहाय्यता केंद्र यांच्या संयुक्त विद्यमाने " करिअर कट्टा " या उपक्रमांतर्गत विद्यार्थ्यांमध्ये कौशल्य वृद्धीकरणाच्या दृष्टिकोनातून ऑनलाईन पध्दतीने तीस तास (दोन क्रेडिट) असे कोर्सेस तयार करण्यात आलेले आहेत. या कोर्सेसचा महाविद्यालयामध्ये राबविण्यासाठीचा सामंजस्य करार करीत आहे.

**करिअर कट्ट्याची जबाबदारी :-**

१. सदर अभ्यासक्रम ठरवणे.
२. अभ्यासक्रमासाठी आवश्यक असणारे तज्ञ व्यक्तींचे मार्गदर्शन उपलब्ध करून देणे.
३. सदर अभ्यासक्रमांतर्गत प्रशिक्षणानंतर विद्यार्थ्यांच्या अंतर्गत मूल्यांकनासाठी परीक्षांचे नियोजन करणे.
४. योग्य त्यावेळी विद्यार्थ्यांना आवश्यकतेप्रमाणे तांत्रिक बाबींची माहिती देण्याचे विशेष सेशन आयोजित करणे.

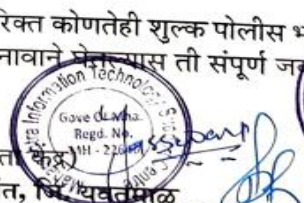


**महाविद्यालयाची जबाबदारी :-**

१. करिअर कट्टा अंतर्गत सुरू असणाऱ्या कौशल्य वृद्धीकरणाच्या दृष्टिकोनातून सुरू असणाऱ्या Add on Courses ची माहिती विद्यार्थ्यांना देणे.
२. विद्यार्थ्यांची नोंदणी करून घेऊन या प्रक्रियेमध्ये समाविष्ट करून घेणे.
३. समाविष्ट विद्यार्थ्यांच्या नियमित उपस्थितीबाबत वारंवार अहवाल घेऊन उपस्थितीमध्ये सातत्य राहिल यासाठी प्रयत्न करणे.
४. महाविद्यालयीन स्तरावर शारिरीक शिक्षकाचे जे प्रशिक्षण उपलब्ध आहेत त्यांच्याकडून विद्यार्थ्यांच्या शारिरीक क्षमता चाचणीच्या आवश्यक ते सराव करून घेणे.
५. विद्यार्थ्यांना आवश्यक असणारे स्थानिक पातळीवरची साधनसामग्री उपलब्ध करून देणे.


**नियम व अटी :-**

१. सदर बाबींमध्ये विद्यार्थ्यांकडून कोणत्याही शुल्क करिअर कट्टा कडून आकारले जाणार नाही.
२. महाविद्यालयाला अपेक्षित असल्यास विद्यार्थ्यांच्या अतिरिक्त सुविधेसाठी किफायतशीर दरामध्ये महाविद्यालय उपलब्ध करून देऊ शकते त्यासाठी आकारण्याचा आणि खर्च करण्याचा अधिकार महाविद्यालयाचा असेल.
३. सदर सामंजस्य कराराचा कालावधी तीन वर्षासाठी असेल.
४. सदर उपक्रमांमध्ये करिअर कट्ट्याच्या नोंदणी शुल्काव्यतिरिक्त कोणतेही शुल्क पोलीस भरणीस देण्यास ती संपूर्ण जबाबदारी प्रशिक्षणासाठी अतिरिक्त घेतल्यास करिअर कट्ट्याच्या नावाने घेतल्यास ती संपूर्ण जबाबदारी महाविद्यालयाची असेल.

१. यशवंत शितोळे (अध्यक्ष, महाराष्ट्र माहिती तंत्रज्ञान सहाय्यता केंद्र)  
२. महाविद्यालयाचे नाव :- नेहरू महाविद्यालय, नेरपरसोपंत, जिल्हा यशवंतमाळ  
३. प्राचार्य :- डॉ.एम.डी.वडते


  
  
  
 PRINCIPAL  
 NEHRU MAHAVIDYALAYA  
 Arts \* Commerce \* Science  
 NER PARSOPANT, Dist. Yavatm.


**Photo 3.5.1.2:** Institutional MoU with Career Katta for Add on Courses in Presence of Mr. Yashwant Shitole, President, Maharashtra Information Technologies Help Center (Career Katta), Maharashtra Shasan.


  
**Nehru Mahavidyalaya,**  
 (Arts\*Commerce\*Science)  
 Nerparsopant, Dist.Yavatmal - 445 102


**Courses List**


Sr.No.	Course Name
1	Python Programming
2	Pythone for AI/ML
3	Python for web Development
4	Cloud Computing
5	Devops
6	Data analytics with Tableau and Power BI
7	Social Media Profile Management
8	Financial Literacy
9	Communication Skill & Personality Development
10	माहिती अधिकार कायदा प्रशिक्षण
11	Certificate Course in Human Right
12	Certificate Course in Journalism
13	E-Filling
14	Soft Skill Development
15	Introduction to Basic Concept o Accounting
16	Renewable Energy
17	Cyber Law
18	Consumer Protection Act 2019

 समन्वयक  
 (डॉ.डी.जे.भगत)



 प्रिन्सिपल  
 (डॉ.एम.डी.वडते)  
**PRINCIPAL**  
 NEHRU MAHAVIDYALAYA  
 Arts \* Commerce \* Science  
 NER PARSOPANT, Dist. Yavatm

 अध्यक्ष  
 (श्री.यशवंत शितोळे)



**Photo 3.5.1.3: Institutional MoU with Career Katta for Add on Courses.**

**सामंजस्य करार**  
करिअर कट्टा आणि महाविद्यालय  
(पोलिस भरतीपूर्व प्रशिक्षण)

पार्टी नं.१ :- करिअर कट्टा  
पार्टी नं.२ :- नेहरू महाविद्यालय, नेरपरसोपंत

उद्देश

महाराष्ट्र राज्य उच्च व तंत्र शिक्षण विभाग व महाराष्ट्र माहिती तंत्रज्ञान सहाय्यता केंद्र यांच्या संयुक्त विद्यमाने " करिअर कट्टा " या उपक्रमांतर्गत पोलिस भरती पूर्व ऑनलाईन पध्दतीने मार्गदर्शन करून विद्यार्थ्यांच्या मध्ये यशास्वीतेचे प्रमाण वाढवण्याचा प्रयत्न केला जाणार आहे. या माध्यमातून ग्रामीण भागातील विद्यार्थ्यांना ऑनलाईन पध्दतीने तज्ञ व्यक्तींचे मार्गदर्शन उपलब्ध मदत होईल व महाविद्यालयाच्या वतीने मैदानावर विद्यार्थ्यांचा सराव घेतल्यानंतर त्यांना शासकीय नोकरीमध्ये समाविष्ट होण्यासाठी मदत होईल व त्यांचे चांगले परिणाम होतील या उद्देशाने महाविद्यालय व करिअर कट्टा एकत्रितरित्या हा सामंजस्य करार करीत आहे.

**करिअर कट्ट्याची जबाबदारी :-**

१. सदर अभ्यासक्रम ठरवणे.
२. अभ्यासक्रमासाठी आवश्यक असणारे तज्ञ व्यक्तींचे मार्गदर्शन उपलब्ध करून देणे.
३. सदर अभ्यासक्रमांतर्गत प्रशिक्षणानंतर विद्यार्थ्यांच्या अंतर्गत मूल्यांकनासाठी परीक्षांचे नियोजन करणे.
४. योग्य त्यावेळी विद्यार्थ्यांना आवश्यकतेप्रमाणे तांत्रिक बाबींची माहिती देण्याचे विशेष सेशन आयोजित करणे.

**महाविद्यालयाची जबाबदारी :-**

१. करिअर कट्टा अंतर्गत सुरु असणाऱ्या पोलिस भरतीपूर्व प्रशिक्षणाची माहिती विद्यार्थ्यांना देणे.
२. विद्यार्थ्यांची नोंदणी करून घेऊन या प्रक्रियेमध्ये समाविष्ट करून घेणे.
३. समाविष्ट विद्यार्थ्यांच्या नियमित उपस्थितीबाबत वारंवार अहवाल घेऊन उपस्थितीमध्ये सातत्य राहिल यासाठी प्रयत्न करणे.
४. महाविद्यालयीन स्तरावर शारीरिक शिक्षकांचे जे प्रशिक्षण उपलब्ध आहेत त्यांच्याकडून विद्यार्थ्यांच्या शारीरिक क्षमता चाचणीच्या आवश्यक ते सराव करून घेणे.
५. विद्यार्थ्यांना आवश्यक असणारे स्थानिक पातळीवरची साधनसामग्री उपलब्ध करून देणे.

**नियम व अटी :-**

१. सदर बाबींमध्ये विद्यार्थ्यांकडून कोणत्याही शुल्क करिअर कट्टा कडून आकारले जाणार नाही.
२. महाविद्यालयाला अपेक्षित असल्यास विद्यार्थ्यांच्या अतिरिक्त सुविधेसाठी किफायतशीर दरामध्ये महाविद्यालय उपलब्ध करून देऊ शकते त्यासाठी आकारण्याचा आणि खर्च करण्याचा अधिकार महाविद्यालयाचा असेल.
३. सदर सामंजस्य कराराचा कालावधी तीन वर्षासाठी असेल.
४. सदर उपक्रमांमध्ये करिअर कट्ट्याच्या नोंदणी शुल्काव्यतिरिक्त कोणतेही शुल्क पोलिस भरतीपूर्व प्रशिक्षणासाठी अतिरिक्त घेतल्यास करिअर कट्ट्याच्या नावाने घेतल्यास ती संपूर्ण जबाबदारी महाविद्यालयाची असेल.
५. सदर प्रशिक्षणामध्ये दिले जाणारे प्रशिक्षण हे विद्यार्थ्यांच्या तयारीसाठी करून जात असते शासकीय भरती प्रक्रीया हा या उपक्रमाचा भाग नाही.

६. वर्षभरामध्ये चालणाऱ्या प्रशिक्षणाच्या बेंचेसचे नियोजन हे राज्यस्तरीय पध्दतीने करण्यात येईल.

७. व्यक्तिगत महाविद्यालयाच्या सोयीनुसार त्याच्यामध्ये येणार नाही.

१. यशवंत शितोळे (अध्यक्ष, महाराष्ट्र माहिती तंत्रज्ञान सहाय्यता केंद्र)

२. महाविद्यालयाचे नाव :- नेहरू महाविद्यालय, नेरपरसोपंत, जि. यवतमाळ

३. प्राचार्य :- डॉ.एम.डी.वडते

४. समन्वयकांचे नाव :- प्रा.डॉ.डी.जे.भगत

Principal  
NEHRU MAHAVIDYALAYA  
Arts & Commerce & Science  
NER PARSOPANT, Dist. Yavatm

NEHRU MAHAVIDYALAYA  
NER PARSOPANT

**Photo 3.5.1.4:** Institutional MoU with Career Katta for Police Pre-Recruitment Training in Presence of Mr. Yashawant Shitole, President, Maharashtra Information Technologies Help Center (Career Katta), Maharashtra Shasan.



हाराष्ट्र MAHARASHTRA

2022

सामंजस्य करारनामा (MOU)

करारनामा लिहून देणार :- अनिल म. जवादे (सचिव)  
आर्श फाऊंडेशन, नागपुर.  
प्लॉट नं. 105, वैभव आनंद सोसायटी,  
शंभु नगर, नागपूर 30

करारनामा लिहून घेणार :- प्राचार्य, नेहरु महाविद्यालय, नेरपरसोपंत  
ता.नेरपरसोपंत, जि.यवतमाळ  
संचालित.

आज दि. 27/01/2023 रोजी नेर मुक्कामी मी लिहून देतो की, करारनाम्यातील खालील अटी व शर्तीच्या आधिन राहून आर्श फाऊंडेशन नागपुर नोंदणी क्रं. 542 / 2018 (Skill Base Traning Programme) यांच्या उपयोगाकरीता लागणारी आणि नेहरु महाविद्यालय, नेरपरसोपंत ह्यांच्या इमारतीमधील असलेली कॉम्प्युटर लॅब व दोन क्लास रुम Sharing Basis वर देण्यात येईल.

आर्श फाऊंडेशन (Skill Base Traning Programme) नागपुर यांना नेहरु महाविद्यालय, नेरपरसोपंत यांच्या खालील अटी व शर्ती वाचून समजून करारबद्ध सत्र 2023-2024 याकरीता करून घेत आहोत.



## List of students Enroll for the Skill Development Course:

Sr. No.	ID	Beneficiary Name	Gender	Date of birth	Age	Qualification	Caste category	District	City	Phone	Status
1	2413016	ACHAL MESHARAM	female	11-Jun-2001	21	HSC	SC, Buddhist	Yavatmal	Yavatmal	7823866893	Approved
2	2413044	ACHAL KALE	female	13-Nov-2001	21	HSC	OBC, Hindu	Yavatmal	Yavatmal	9322560719	Approved
3	2413066	AMARDIP KHANDALKAR	male	30-Sep-2002	20	HSC	OPEN, Hindu	Yavatmal	Yavatmal	9373052194	Approved
4	2413109	AMISHA KORAT	female	23-Mar-2003	20	HSC	OBC, Hindu	Yavatmal	Yavatmal	9579389699	Approved
5	2413133	APEKSHA MESHARAM	female	16-Feb-2002	21	HSC	SC, Buddhist	Yavatmal	Yavatmal	9307984680	Approved
6	2413156	ARTI INGOLE	female	05-Nov-2002	20	HSC	SC, Buddhist	Yavatmal	Yavatmal	7066259339	Approved
7	2413220	ASHWIN MEHATRE	male	27-Oct-2002	20	HSC	OPEN, Hindu	Yavatmal	Yavatmal	8421436207	Approved
8	2413283	ASMITA CHAVHAN	female	31-Jul-2002	20	HSC	VJ-A, Hindu	Yavatmal	Yavatmal	7620354202	Approved
9	2413295	ASMITA NAKTODE	female	26-May-2003	19	HSC	OBC, Hindu	Yavatmal	Yavatmal	8177929775	Approved
10	2413307	BHAGYASHRI PADHEN	female	21-Aug-2002	20	HSC	SC, Buddhist	Yavatmal	Yavatmal	8010229314	Approved
11	2413314	BHAKTI UNADKAT	female	05-Nov-2002	20	HSC	OPEN, Hindu	Yavatmal	Yavatmal	8010581988	Approved

Sr. No.	ID	Beneficiary Name	Gender	Date of birth	Age	Qualification	Caste category	District	City	Phone	Status
12	2413343	CHE TAN SONONE	male	20-Jul-2003	19	HSC	OPEN, Hindu	Yavatmal	Yavatmal	9356246200	Approved
13	2413353	DIVYA LOKHANDE	female	05-May-2002	20	HSC	OPEN, Hindu	Yavatmal	Yavatmal	9322866411	Approved
14	2413369	DIYA GAYAKWAD	female	25-Oct-2002	20	HSC	SC, Buddhist	Yavatmal	Yavatmal	8208382989	Approved
15	2413378	GAURI KAVARE	female	08-Jul-2003	19	HSC	OPEN, Hindu	Yavatmal	Yavatmal	8010228071	Approved
16	2413391	GUNARTAN KAMBLE	male	16-Jul-1993	29	HSC	SC, Hindu	Yavatmal	Yavatmal	9503165495	Approved
17	2413410	ISHA CHUKEKAR	female	24-Oct-2002	20	HSC	OPEN, Hindu	Yavatmal	Yavatmal	9823321594	Approved
18	2413432	KAJAL PANDIT	female	14-Aug-2001	21	HSC	OPEN, Hindu	Yavatmal	Yavatmal	9657669196	Approved
19	2413446	KANCHAN CHAVAN	female	18-May-1999	23	Graduate	OPEN, Hindu	Yavatmal	Yavatmal	7028688904	Approved
20	2413462	KANUPRIYA SONTAKKE	female	28-Sep-2002	20	HSC	SC, Buddhist	Yavatmal	Yavatmal	9890022867	Approved
21	2413472	KIRTI MAHINDRAKAR	female	15-Jan-2002	21	HSC	OBC, Hindu	Yavatmal	Yavatmal	9284440537	Approved
22	2413484	KOMAL BHAKARE	female	18-Apr-2002	20	HSC	OPEN, Hindu	Yavatmal	Yavatmal	8805178017	Approved

Sr. No.	ID	Beneficiary Name	Gender	Date of birth	Age	Qualification	Caste category	District	City	Phone	Status
23	2413493	KOMAL GADEKAR	female	28-Feb-2003	20	HSC	OPEN, Hindu	Yavatmal	Yavatmal	7875980157	Approved
24	2413503	LAKHAN PAWAR	male	21-Oct-2002	20	HSC	OPEN, Hindu	Yavatmal	Yavatmal	7499475673	Approved
25	2413517	MANISH LONARE	male	11-Jan-2003	20	HSC	SC, Hindu	Yavatmal	Yavatmal	9499817906	Approved
26	2413526	MONALI GAYKWAD	female	16-Oct-2003	19	HSC	SC, Hindu	Yavatmal	Yavatmal	9322740169	Approved
27	2413537	NIKITA DESHAMUKH	female	16-Aug-2002	20	HSC	OPEN, Hindu	Yavatmal	Yavatmal	8378867443	Approved
28	2413547	NIKITA PANTAVANE	female	07-Feb-2004	19	HSC	SC, Hindu	Yavatmal	Yavatmal	7972841277	Approved
29	2413558	PALLAVI KAWARE	female	02-Jul-2004	18	HSC	OPEN, Hindu	Yavatmal	Yavatmal	9322629874	Approved
30	2413563	PRANAV GIRI	male	17-Jul-2002	20	HSC	OPEN, Hindu	Yavatmal	Yavatmal	7620137910	Approved



# आर्श फाउंडेशन

32, बजरंग नगर, शिंगाबाई टाकली, कोराडी रोड,  
नागपुर-30, 8087078899

REFERENCE NO.:-

DATE:-

प्रति,  
मा.प्राचार्य,  
नेहरू महाविद्यालय,  
नेरपरसोपंत,  
जि.यवतमाळ

विषय :- स्किल डेव्हलपमेंट ऑफ इंडिया अंतर्गत अभ्यासक्रम सुरू करणेबाबत...

महोदय,  
वरील विषयाच्या अनुषंगाने कळविण्यात येते की, स्किल डेव्हलपमेंट ऑफ इंडिया अंतर्गत विद्यार्थ्यांसाठी विविध रोजगार अभ्यासक्रम आपल्या महाविद्यालयामध्ये सुरू करण्यास इच्छुक संस्था आहे.

कृपया परवानगी मिळावी ही विनंती.  
धन्यवाद !

सचिव,  
आर्शफाउंडेशन नागपूर  
सचिव  
आर्श फाउंडेशन

**Photo 3.5.1.5:** The institution has MoU with Aarsh Foundation, Nagpur for Skill development and training program under the guidance of Tribal Research and Training Institute, Pune.

**Institute-Institute Research Collaborations:**

The faculties of institution have research collaboration with faculty of other academic institutes and under which number of research articles were published up till now. The institute has eight functional research collaborations. The list of faculties who collaborate with other academic institutions are provided below.

Sr. No.	Name of Faculty	Collaborating Faculty Name	Collaborating Faculty College	Document
1)	Dr. D. J. Bhagat	Dr. G. R. Dhokane	Dept. of Physics, Arts, Science And Commerce college, Chikhaldara, Dist. Amravati.	Photo 3.5.1.6
2)	Dr. D. J. Bhagat	Dr. N. S. Bajaj	Dept. of Physics, Toshniwal Mahavidyalaya, Shengaoon, Dist. Hingoli.	Photo 3.5.1.7
3)	Dr. V. D. Bokey	Dr. V. G. Mete	Dept. of Physics, R.D.I.K. & K.D. College, Badnera.	Photo 3.5.1.8
4)	Dr. V. D. Bokey	Dr. V. S. Bawane	Dept. of Physics, Mahatma Phule Arts, Commerce and S.C. Choudhary Science College, Warud, Dist. Amravati.	Photo 3.5.1.8
5)	Dr. V. D. Bokey	Dr. K. S. Adhav	Hawassa University, Hawassa, Ethiopia.	Photo 3.5.1.9
6)	Dr. P. S. Vishwakarma	Mr. M. V. Dambale	Sipna College of Engineering and Technology, Amravati, Dist. Amravati.	Photo 3.5.1.10
7)	Dr. P. S. Vishwakarma	Mr. V. P. Panjabi	Vidya Wardhini Sabha's , Dr. M. Y. Vaidya Arts, Prof. P. D. Dalal Commerce & Dr. D. S. Shah Science, College, Dhule.Dist. Dhule	Photo 3.5.1.11
8)	Dr. S. R. Jadhao	Dr. S. P. Bakde	Dept. of Physics, Shri. R. R. Lahoti Science College Morshi, Dist. Amravati.	Photo 3.5.1.12
9)	Dr. P. S. Vishwakarma	Dr. K. G. Dhobale	Smt. Kesharbai Lahoti Mahavidyalaya, Amravati.	Photo 3.5.1.13
10)	Dr. P. S. Vishwakarma	Dr. A. S.Nanwani	Dada Ramchand BakhruSIndhu Mahavidyalaya, Panchpaoli, Nagpur.	Photo 3.5.1.13
11)	Dr. P. S. Vishwakarma	Prof. G. N. Daga	Department of Commerce and Management, Brijlal Biyani Mahavidyalaya, Amravati.	Photo 3.5.1.14
12)	Mr. F. P. Sahala	Dr. B. B. Padhen	Phulsing Naik Mahavidyalaya, Pusad	Photo 3.5.1.15
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**Comparison Between Electronic and Optical Band Gap Polyindole/Poly(Vinyl Acetate) Composite**  
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<sup>b</sup>Arts, Science and Commerce College, Chikhaldara, 444807, Maharashtra, India.  
 \*Corresponding author: [bjhagat@rediffmail.com](mailto:bjhagat@rediffmail.com)

**Abstract**  
 In present research work, comparison between electronic and optical band gap of polyindole/poly(vinyl acetate) (PIN/PVAc) composite are reported. The synthesized composite was analyzed via DC conductivity measurement and UV-Visible spectroscopy. The value of DC conductivity primarily increases and reaches to  $1.89 \times 10^{-6} \text{ Scm}$  at 383 K. The value of electronic and optical band gap of composite is established as 2.831 eV and 3.81 eV respectively. The semiconducting nature of PIN/PVAc composite reflects from electronic and optical band gap and Arrhenius behaviour of DC plot.

**Keywords:** Polyindole/poly(vinyl acetate); composite; electronic; optical; band gap.

**Introduction**  
 Conducting polymer composites develop into the novel and attractive group of materials due to their superior properties. They have fascinated a lot of concern due to its unique optical and electrical properties in addition to its superior thermal stability. Polyindole has received excellent research interest because of its close structural similarities with both polyaniline and polypyrrole. Also, due to its extraordinary conduction mechanism and environment stability as compared to other conducting polymers [1-7]. Some researchers were given so much attention for synthesizing the polyindole composite materials due to its amazing properties. Researchers such as Koyuncu et al. studied the opportunity of preparing a colloidal steady poly(vinyl chloride)/polyindole ER active composite system [8]. Sarf et al. presented preparation, characterization, ER and creep-recovery properties of polyindole/polyethylene composites [9]. This research paper gives the information about the comparison between electronic and optical band gap of polyindole/poly(vinyl acetate) (PIN/PVAc) composite which is chemically prepared using ferric chloride as an oxidant. As-synthesized composite was characterized through DC conductivity measurement technique and ultraviolet-visible (UV-Vis) spectroscopy.

**Experimental**  
 All chemicals used in this research were of AR grade and procured from SD Fine Chemicals, India, like as monomer indole, oxidant ferric chloride (FeCl<sub>3</sub>), organic media methanol. Poly(vinyl acetate) (PVAc) (Himedia Chemicals, India) used as counter polymer. The polyindole/poly(vinyl acetate) (PIN/PVAc) composite was synthesized through chemical polymerization route using oxidant FeCl<sub>3</sub>. Poly(vinyl acetate) (1 g) was dissolved in methanol (9 ml) and stirred 2 h then kept solution for 24 h to get homogeneous solution. The monomer indole (0.5 g) was added in PVAc solution and stirred for 2 h. The indole was chemically polymerized using oxidizing agent FeCl<sub>3</sub> (0.1097 g) and stirred it for 2 hr to complete polymerization process. Then reaction mixture was kept for 60 min to settle down. Then composite solution was poured

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**Studies on thermal analysis and optical parameters of Cu doped poly(vinyl acetate)/polyindole composites**  
**D.J. Bhagat<sup>a</sup>, G.R. Dhokane**  
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**ABSTRACT**  
 This article reports investigation on optical parameters and thermal analysis of Cu doped poly(vinyl acetate)/polyindole composites using cupric chloride as an oxidant. The study's complex optical parameters were determined through ultraviolet-visible (UV-vis) spectroscopy. Thermal analysis was done through thermogravimetric analysis (TGA) and differential thermal analysis (DTA). The optical band gap values were found in the range 3.631–4.864 eV that reflects that synthesized composites have the potential to have application in optical devices and solar cells. The optical conductivity of composites is calculated to be  $1.608 \times 10^{-5} \text{ Scm}^{-1}$ .

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**1. Introduction**  
 In last decades, the electro-active conducting polymers have been extensively studied due to their optical, physical properties and their application potential in semiconducting technology. The hetero-atomic organic compounds like polypyrrole, polyaniline, polycarbazole and their substitute derivatives contain nitrogen atom in their ring. Among these conducting polymers, polyindole contain both benzene ring and pyrrole ring. Thus it possesses properties of both polypyrrole and poly(para-phenylene). In addition, it has advantages of excellent electrical conductivity, good environment and thermal stability but has a poor mechanical property and processability. To conquer this difficulty various techniques have been used till date, such as blending of conducting polymer with the other materials and synthesis of conducting polymer composites by chemical polymerization technique. It has expected to get more research on polyindole base composite materials in future because of its optical, physical and electrical properties [1–9]. Joshi et al. [10] focused on indole polymerization governed by chloro-sulfuric acid also reduction of Au<sup>3+</sup> ions occurred simultaneously in single step, was monitored using UV-vis absorption spectroscopy. Erdemir et al. [11] chemically prepared polyindole-poly(vinyl acetate) composite and represents UV-vis spectrum. Abthagir et al. [12] studied thermal properties of polyindole-polycarbazole and its derivatives. The present work reveals optical parameters and thermal analysis of Cu doped poly(vinyl acetate)/polyindole composites. The prepared composites were characterized through UV-vis spectroscopy, thermogravimetric analysis (TGA) and differential thermal analysis (DTA) to investigate optical parameters and thermal analysis, respectively.

**2. Experimental**  
**2.1. Materials**  
 All chemicals such as, indole used as a monomer, cupric chloride (CuCl<sub>2</sub>) used as an oxidizing agent, methanol used as organic solvent were analytical grade and procured from SD Fine Chemicals, India. Poly(vinyl acetate) (PVAc) used as counter polymer procured from Hi Media Chemicals, India.

**2.2. Synthesis of Cu doped poly(vinyl acetate)/polyindole composites**  
 The Cu doped poly(vinyl acetate)/polyindole (PVAc/PIN) composites were prepared chemically by using cupric chloride (CuCl<sub>2</sub>) as an oxidizing agent through isothermal evaporation of organic media. The whole synthesis method was same as that discussed in previous article [13].

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Photo 3.5.1.6: Research Collaborations (Dr. D. J. Bhagat and Dr. G. R. Dhokane).



**Electro-optical properties of poly(vinyl acetate)/polyindole composite film**  
**D. J. Bhagat, N. S. Bajaj, and G. R. Dhokane**

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**Electro-optical properties of poly(vinyl acetate)/polyindole composite film**  
**D. J. Bhagat<sup>a</sup>, N. S. Bajaj<sup>b</sup>, G. R. Dhokane<sup>a</sup>**  
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**Abstract.** In present work, electrical and optical properties of poly(vinyl acetate)/polyindole (PVAc/PIN) composite film are reported. The prepared composite was characterized via X-ray diffraction (XRD), UV-Vis spectroscopy and DC conductivity measurement. The polyindole was synthesized by chemical route using oxidant Ni(NO<sub>3</sub>)<sub>2</sub>. The DC conductivity primarily increases and reaches to  $2.45 \times 10^{-7} \text{ Scm}$ . The optical band gap value of composite is determined as 4.77 eV. The semiconducting nature of composite observed from electronic as well as optical band gap and Arrhenius behaviour of DC plot.

**Keywords:** Poly(vinyl acetate)/polyindole; composite; electrical properties; optical properties.

**INTRODUCTION**  
 In past few decades, progressive research in field of conducting polymers such as polyaniline, polypyrrole and polythiophene because of their immense potential applications in the region of rechargeable batteries, gas separation member an electroluminescent diodes [1–3]. Conducting polymers possess high electrical conductivity and good environmental stability; on the other hand have poor mechanical properties and processability. To overcome disadvantages like poor processability and need of important mechanical properties showed by these polymers were avoid by preparing composites of suitable composition of conducting polymers with some insulating polymer [4–6]. Among the conducting polymers polyindole is least studied. Hence there is need to investigate its various properties. This article reports, the electrical and optical properties of poly(vinyl acetate)/polyindole composite.

**EXPERIMENTAL**  
**CHEMICALS**  
 All chemicals used in this study were of AR grade and purchased from SD Fine Chemicals, India, such as monomer indole, oxidant nickel nitrate (Ni(NO<sub>3</sub>)<sub>2</sub>), organic media methanol. Poly(vinyl acetate) (PVAc) (Himedia Chemicals, India) used as counter polymer.

**SYNTHESIS METHOD**  
 The poly(vinyl acetate)/polyindole (PVAc/PIN) composite was synthesized by chemical route using oxidant Ni(NO<sub>3</sub>)<sub>2</sub>. Poly(vinyl acetate) (1 g) was dissolved in methanol (9 ml) and stirred 2 h then kept solution for 24 h to get homogeneous solution. The monomer indole (0.5 g) was added in PVAc solution and stirred for 2 h. The indole was polymerized using oxidant Ni(NO<sub>3</sub>)<sub>2</sub> (0.1097 g) and stirred it for 2 hr to complete polymerization reaction. Then

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Photo 3.5.1.7: Research Collaborations (Dr. D. J. Bhagat and Dr. N.S. Bajaj).

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**INTERACTING DARK FLUIDS IN BIANCHI TYPE-I UNIVERSE WITH VARIABLE DECELERATION PARAMETER**

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**Key words:**  
 Bianchi Type-I universe; variable deceleration parameter; interacting dark fluids; coincidence parameter.

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**INTRODUCTION**

The present acceleration of the universe has been well established through numerous and complementary cosmological observations. The recent cosmological observations of type Ia supernovae (SNIa) [Riess et al. [54]; Perlmutter et al. [45]] indicates that currently universe is accelerating. When these results combines with the observations of cosmic microwave background (CMB) [Bennett et al. [16]; Spergel et al. [64]] and also the large scale structure (LSS) [Fegmark et al. [66], [67]], indicates that spatially flat universe is dominated by an exotic component with strong negative pressure called as dark energy [Weinberg [79]; Carroll [22]; Peebles and Ratra [44]; Padmanabhan [43]]. Many authors have been studied a special class of interacting models in which holographic dark energy is allowed to interact with dark matter [Gong[29]; Gong and Zhang[28]; Wang et al. [69]; Nojiri and Odintsov[60]; Guo et al. [31]; Bawane and Pavon[15]; Zimdahl and Pavon[75]; Zimdahl[76]]. Also Guo et al. [32], have shown that the proposal of interacting dark energy is compatible with current observations of the SNIa and CMB data.

Bianchi type dark energy models with usual perfect fluid have been studied by Akara and Kilinc [7], Yadav et al. [73].

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**ABSTRACT**

The present work deals with a Bianchi Type-I universe filled with interacting dark matter and holographic dark energy in the frame of Einstein theory of relativity. To obtain the cosmological solutions, we used variable deceleration parameter in the form  $\alpha(t) = [\sinh(\alpha t)]^{\beta}$ , where  $\alpha$  and  $\beta$  are constants. The physical and geometrical properties of the model are obtained and discussed in details.

**Keywords:** Kaluza-Klein space-time, dark matter, holographic dark energy, variable deceleration parameter.

**Introduction:**

Several cosmological observations indicate that the observable universe is accelerating [Riess et al. 1998; Perlmutter et al. 1999; Bennet et al. 2003]. To address the problem of cosmic acceleration there are two approaches that introducing a dark energy component in the universe or considers modifying the general relativity theory. The earlier modifications of Einstein's general relativity, termed as Brans and Dicke (1961) gravity in which a dynamical scalar field besides a gravitational part is introduced to an account for variable gravitational constant. It is introduced due to the lack of compatibility of Einstein's theory with Mach's principle. Later a scalar tensor theory of gravity has introduced by Saez Ballester (1986) in which a metric is coupled to a scalar field. This coupling gives a satisfactory description of the weak fields. A detailed discussion of Saez-Ballester and string cosmological model is contained in the study work of Sing and Agrawal (1991), Shri Ram and Tiwari (1998), D. R. K. Reddy et al. (2006), Adhav, K. S. et al. (2007,2008).

The Kaluza (1921) and Klein (1926) introduced a theory to unify Einstein's gravity theory and electromagnetism from Einstein's field equations by adding the fifth dimension. According to Wesson (1984, 1999) and Bellini (2003), the matter is induced 4D by 5D vacuum theory. Studying the cosmology of 5D with pure geometry in non-compact Kaluza-Klein theory. Several relativists have studied Kaluza-Klein cosmological models with different contexts. For example (1988), Chi (1990), Fukui (1993), Liu and Wesson (1994), Coley (1994).

Photo 3.5.1.8: Research Collaborations.

(Dr. V. D. Bokey, Dr. V. G. Mete and Dr. V. S. Bawane).

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**Bianchi Type-VI<sub>0</sub> Cosmological Model with Polytrropic Equation of State**

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**Abstract:**  
 This paper deals with Bianchi type VI<sub>0</sub> cosmological model in the presence of perfect fluid obeying polytrropic equation of state (EoS)  $p = K\rho^n$ , where K and n are constants called as polytrropic constant and polytrropic index respectively. The solutions of the Einstein's field equations for Bianchi type-VI<sub>0</sub> space time have been obtained under the assumption that the scalar expansion  $\theta$  is proportional to the shear scalar  $\sigma^2$ . The kinematic & physical properties of the model are also studied.

**Keywords:** Bianchi type-VI<sub>0</sub>Space time, Polytrropic equation of state, Perfect Fluid.

**1. Introduction:**  
 From the observations of large scale structures [18], cosmic microwave background [8,9], WMAP[4], it has been found that the universe is highly homogeneous and isotropic. The cause behind the acceleration of the universe has been attributed to the existence of dark energy component. It occupies 68.3% of the average energy density of the universe while dark matter comprises 26.8% and baryonic matter 4.9% as shown by Ade et al. [20]. Hence dark energy cosmological models of the universe with different equations of state have been a topic of interest for many researchers. There are many theories that have established the importance of dark energy in the acceleration of the universe. The models of dark energy includes tachyon field [25], chaplygin gas [30], Holographic dark energy models [3,32]. Adhav, et al. [14] has proposed homogeneous & anisotropic Bianchi type-I universe and holographic dark energy model with Linearly varying Deceleration Parameter.

The FRW models are considered as the simplest models of the expanding universe which are spatially homogeneous and isotropic. Here the source of gravitational field is most naturally considered to be a perfect fluid whose matter density  $\rho$  and pressure  $p$  satisfy a Equation of State (EoS) of the form

Photo 3.5.1.9: Research Collaborations (Dr. V. D. Bokey and Dr. K. S. Adhav).

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- ★ He is the member of Board of Studies in **Business Economics** (Commerce and Management) at SGBAU, Amravati.
- ★ He is the Recognized Ph.D. Supervisor in the Faculty of Commerce and Management under the subject Commerce in the SGBAU, Amravati and under his guidance 02 registered students are doing Ph.D. research work.
- ★ He has 44 Research paper published in National, International Peer Reviewed Journals, Conferences & Seminars.
- ★ He has written three books namely "**Indian Financial System**", "**E-Commerce**", "**E-Commerce-II**" out of which two books are refer in the SGBAU Syllabus.

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Photo 3.5.1.10: The Institute-Institute Research Collaborations.

(Dr. P. S. Vishwakarma and Mr. M. V. Dambale)

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## B.Com 3<sup>rd</sup> Semester

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Photo 3.5.1.11: The Institute-Institute Research Collaborations.

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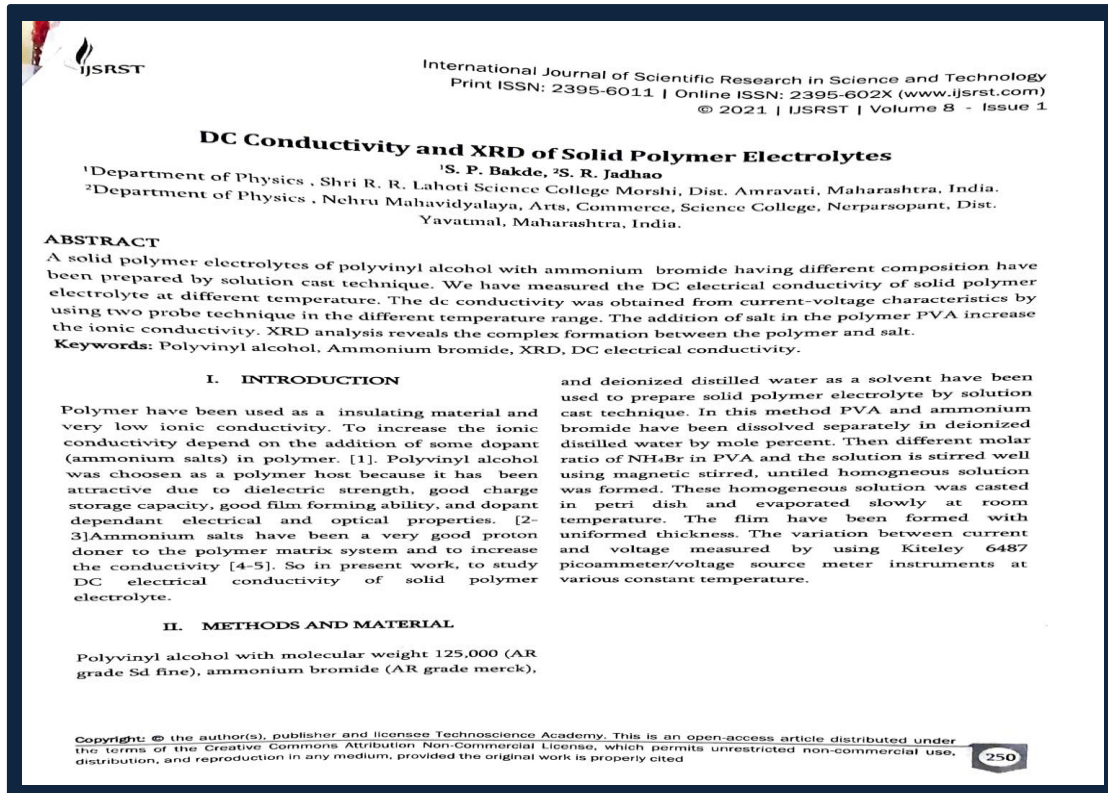


Photo 3.5.1.12: The Institute-Institute Research Collaborations.

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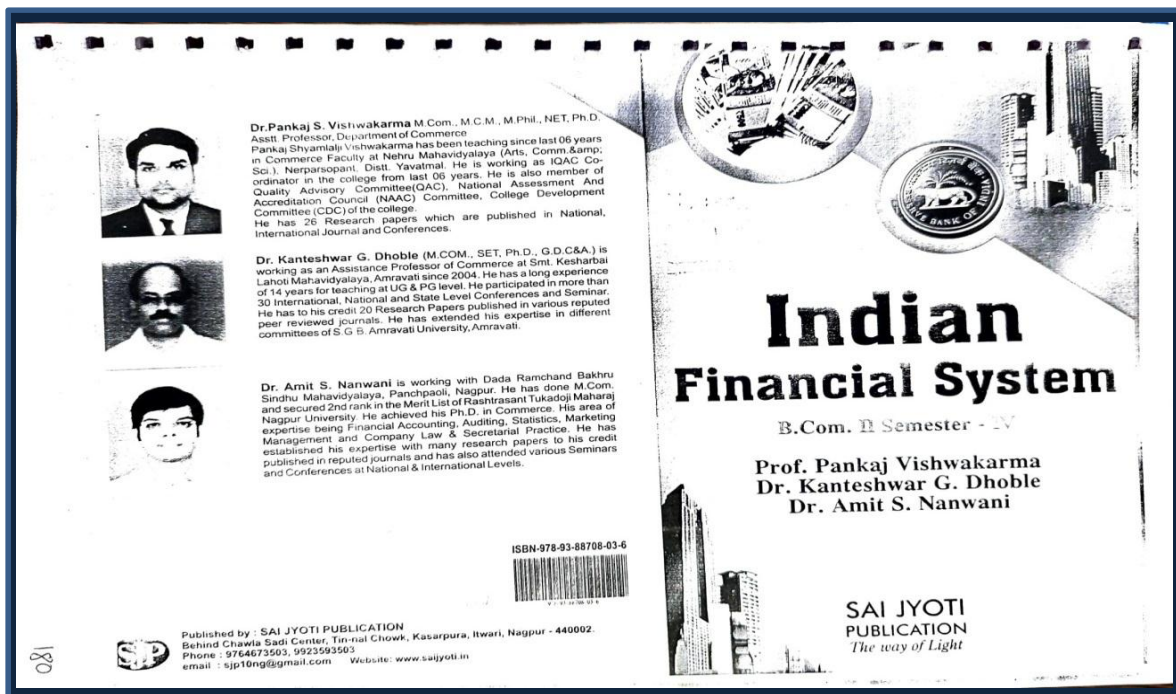


Photo 3.5.1.13: The Institute-Institute Research Collaborations.

(Dr. P. S. Vishwakarma, Dr. K. G Dhobale and Dr. A. S.Nanwani)

**E-COMMERCE**  
**B.Com Semester V**  
**Dr. Pankaj S. Vishwakarma**  
**Prof. Girishkumar N. Daga**

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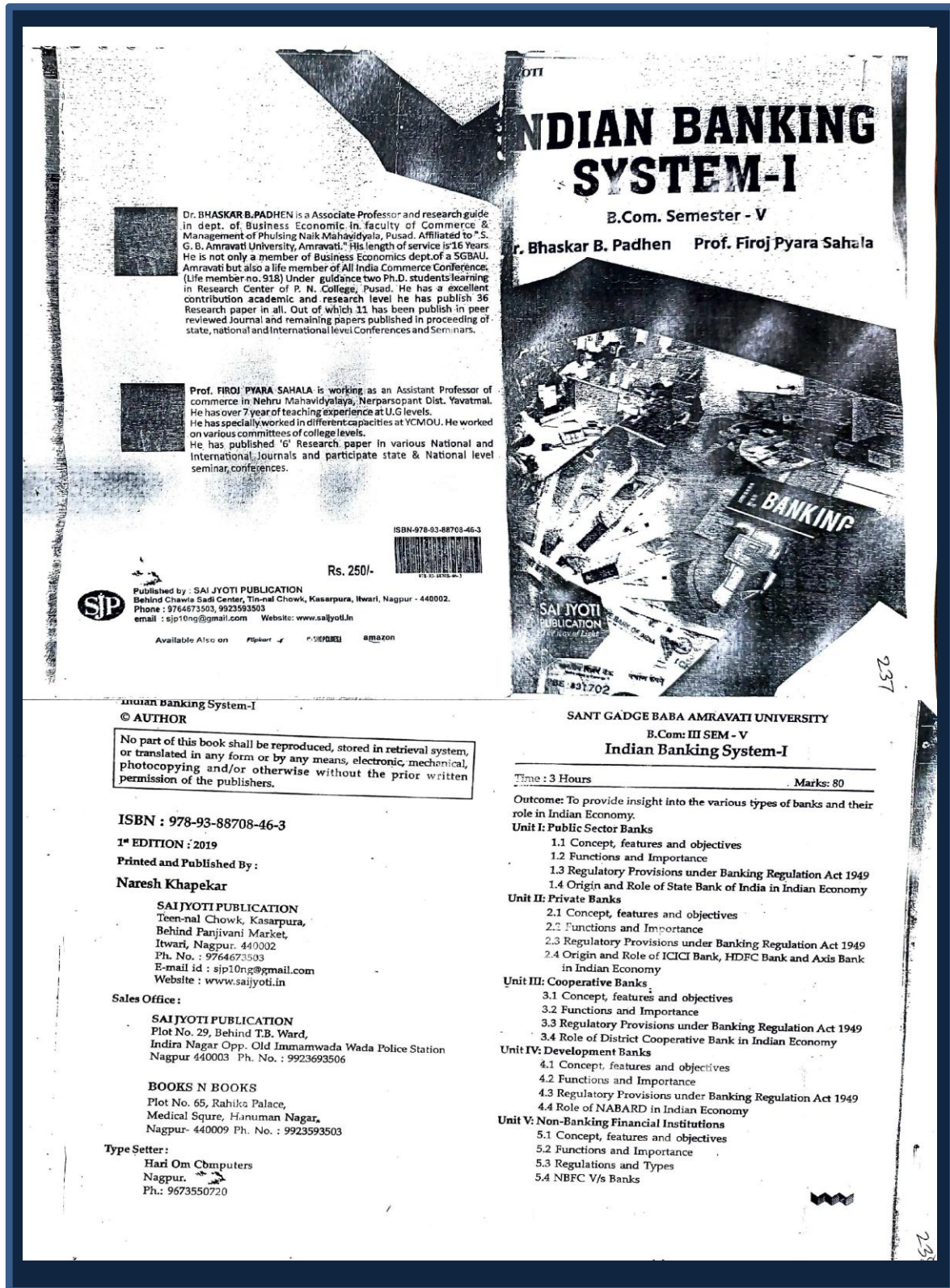


Photo 3.5.1.15: Research Collaborations (Mr. F. P. Sahala and Dr. B. B. Padhen)

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<b>ग्रंथालय व माहितीशास्त्र संशोधनामध्ये गृहीतकृत्य (Hypothesis) चे महत्त्व व उपयुक्तता</b>		
<b>सुरेश किसनराव इंगळे</b> ग्रंथपाल नेहरू महाविद्यालय, नेरपरसोपंत जि. यवतमाळ. ईमेल आयडी:sureshingale666@gmail.com मोबाईल नं. ८०८७६०२२८८	<b>प्रा.डॉ. संजय जगन्नाथराव शेणमारे</b> ग्रंथपाल भाऊसाहेब भोरे शिवशास्त्री महाविद्यालय बाभुळगांव जि. यवतमाळ ईमेल आयडी: sjshenmare@gmail.com मोबाईल नं. ९४२३६३४५४४	
<b>सासंशः :</b> कोणत्याही समस्येचे संशोधकांला वैज्ञानिक पद्धतीने अध्ययन करावे लागते. त्यासाठी त्याला संबंधीत विषयाचे थोड्या फार प्रमाणात पूर्वज्ञान आवश्यक असते. ग्रंथालय व माहितीशास्त्रामध्ये संशोधन करीत असताना सुद्धा या ज्ञानाच्या आणि अनुभवाच्या आधारे संशोधक आपल्या संशोधन विषयासंबंधी कोणते तरी सामान्य अनुमान निश्चित करतो हेच पूर्वानुमान संशोधकांला संशोधन कार्यशाही मार्गदर्शक ठरते. ह्याच पूर्वानुमान (गृहीतकृत्य) मुळे समस्येच्या नियमरणा करीता मदत होते. सदर शोध निबंधामध्ये गृहीतकृत्याचा अर्थ सांगून गृहीतकृत्याचे वैशिष्ट्य, मार्ग आणि उपयोग स्पष्ट केले आहेत. परिणामकारक गृहीतकृत्य कसे असावे याबाबतचे निकष विशद केले आहे. संशोधन पूर्वानुमान आणि शून्य पूर्वानुमानाचे स्वरूप स्पष्ट केले आहे गृहीतकृत्याच्या चाचणीचे स्वरूप विशद केले आहे. <b>महत्वाच्या संज्ञा :</b> गृहीतकृत्याची मार्ग—उगमस्थाने,गृहितकृत्याचे प्रकार,शून्य गृहितकृत्य,गृहीतकृत्याची चाचणी. <b>प्रस्तावना:</b> संशोधनाचे संभाव्य निष्कर्ष काय असतील, याबाबत संशोधक संशोधनाच्या सुरुवातीलाच काही अनुमान बांधत असतो. संशोधनाच्या विशिष्ट दोन चलांमध्ये विशिष्ट प्रकारचे संबंध आहेत किंवा नाहीत, याबाबतही संशोधक काही कल्पना करत असतो. संशोधकाने प्रस्तावित संशोधनाच्या निष्कर्षाबाबत संशोधनपूर्व—काळात केलेले अनुमान म्हणजे पूर्वानुमान. पूर्वानुमान समस्या सुवणदरम्यान मांडले जाते. समस्या सुवणाद्वारे संशोधन समस्या स्पष्ट केली जाते, समस्या विधान तयार केले जाते. समस्या विधानाचे संभाव्य उत्तर म्हणजे गृहीतकृत्य होय. समस्या सुवणाचा एक भाग म्हणून संशोधनाची उद्दिष्टे मांडली जातात. पूर्वानुमानाद्वारे उद्दिष्टांचे सूक्ष्मीकरण (Narrow down) केले जाते. म्हणजेच एक प्रकारे गृहीतकृत्य (पूर्वानुमान) संशोधनाची उद्दिष्टे अधिक स्पष्ट करण्यास मदत करते. विशेषतः चलांमधील संबंधांबाबत सर्व शोधू इच्छिणा—या उद्दिष्टांबाबत पूर्वानुमान मांडले जाते. म्हणजेच दोन वा अधिक चलांमधील संबंधांबाबतचा अंदाज पूर्वानुमानाद्वारे मांडला जातो. जसे, विशिष्ट दोन चलांमध्ये फरक आहे. “अ” चलाचा “ब” चलावर परिणाम होतो इत्यादी. तसेच विशिष्ट परिस्थितीस कारणीभूत असू शकणाऱ्या घटकांबाबतही पूर्वानुमानाद्वारे अनुमान केले जाते. एवढेच नाही तर संशोधन समस्येबाबतचे ताल्युर्ते उपायही पूर्वानुमानाद्वारे सुचविले जाते.नमुन्यांच्या मदतीने संकलित केलेल्या माहितीच्या मदतीने गृहीतकृत्याची चाचणी घेतली. गृहितकृत्याच्या चाचणीच्या निष्कर्षाद्वारे लक्ष्यगटाबाबत अंतिम निष्कर्ष काढले जातात. अगदी दोंबळ मानाने		

Photo 3.5.1.16: Research Collaborations (Mr. S. K. Ingle and Dr. S. J. Shenmare)