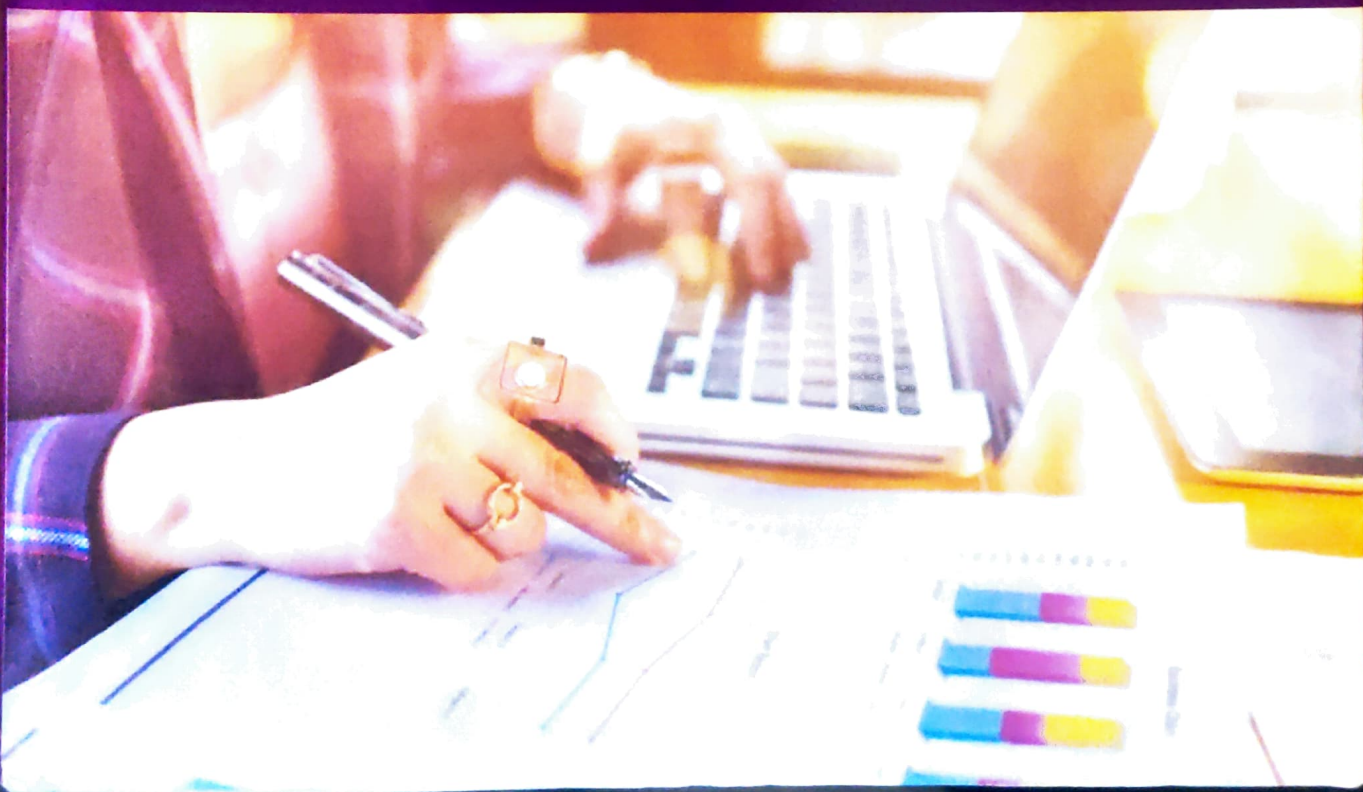




# Research Methodology



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# Research Methodology

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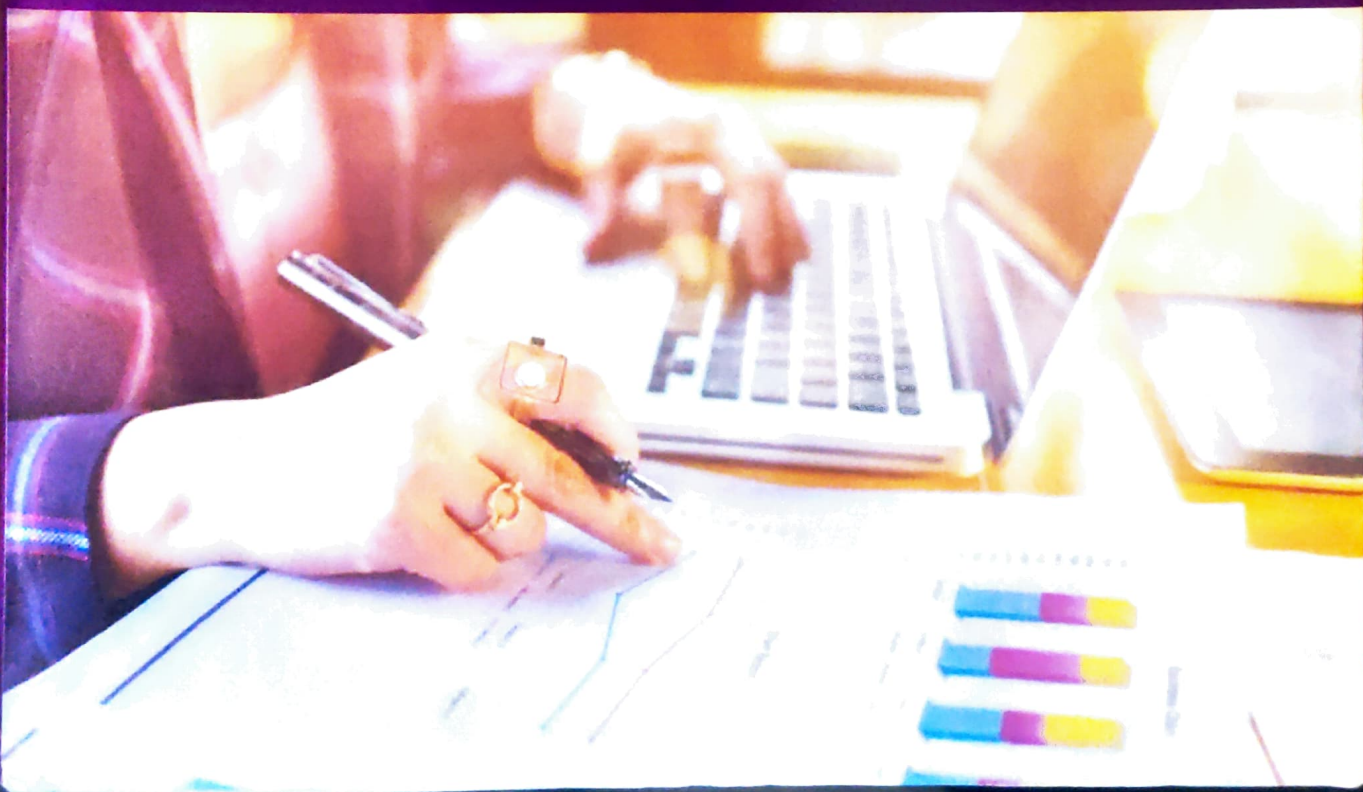




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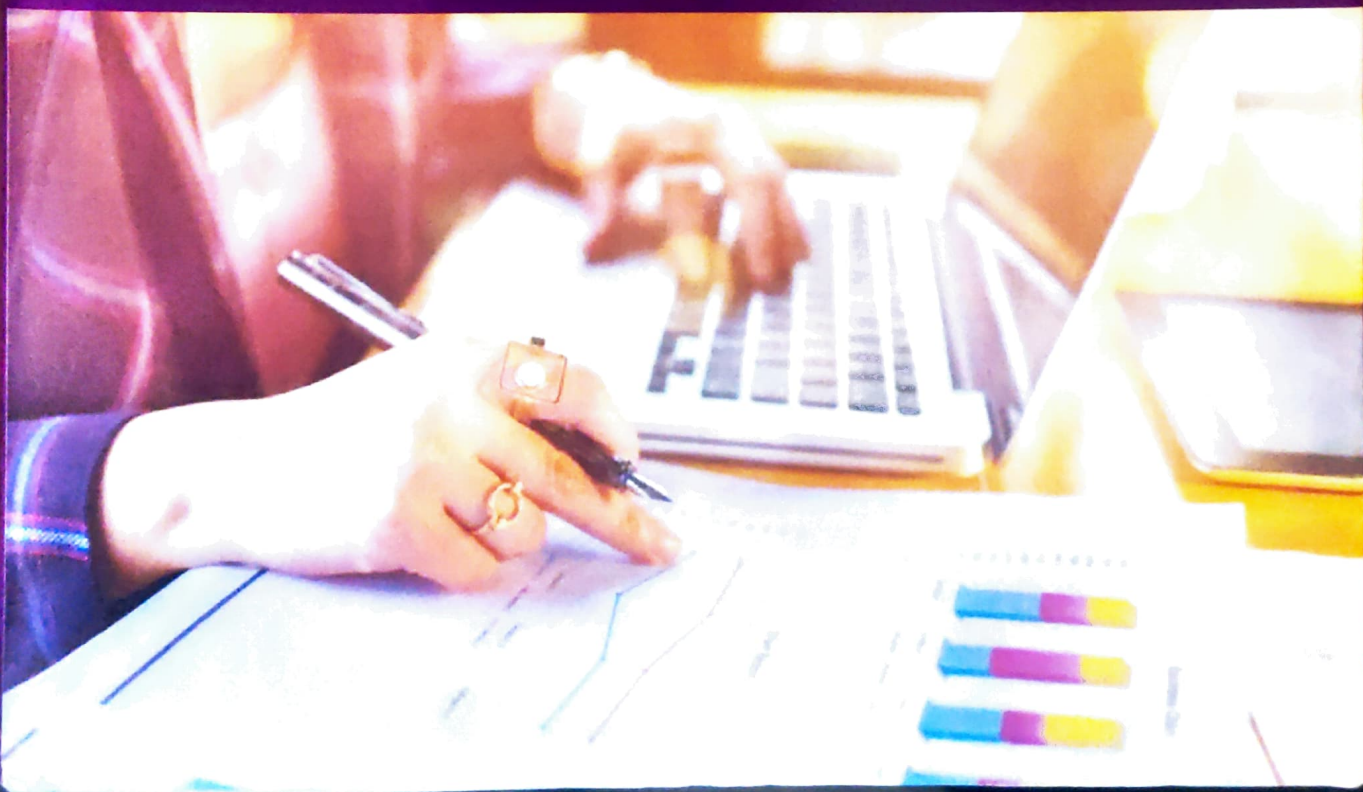




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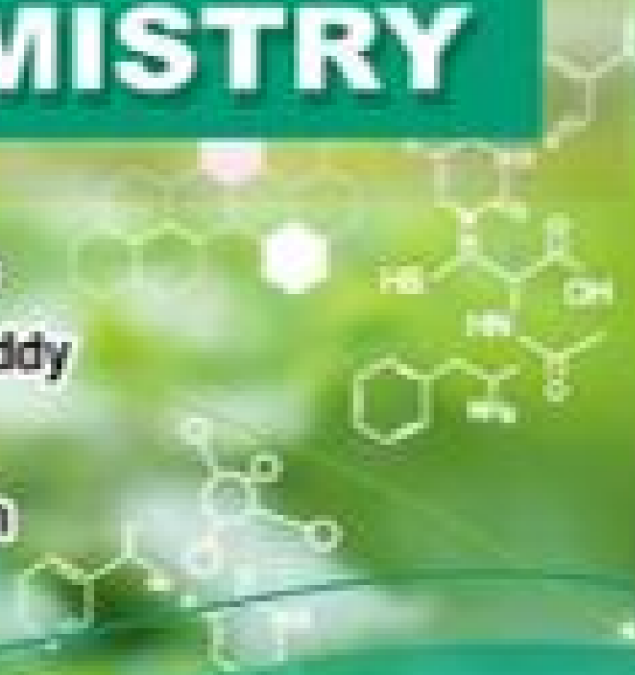
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**Dr. Bhimraj Gawade**

**Dr. D. Nagarjuna Reddy**

**Dr. Anamika Gupta**

**Dr. N.R. Rajagopalan**



# Organic Chemistry

FIRST EDITION

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## कोविड-19 चा समाजजीवनावर झालेला परिणाम

प्रा.डॉ.आव्हाड भगवान भानुदास\*



गोषवारा: कोरोना व्हायरस हा अतिसूक्ष्म घातक विषाणू आहे. या व्हायरसला कोविड-19 म्हटले जाते. हा व्हायरस सर्वप्रथम डिसेंबर 2019 मध्ये चीनमधील वूहान या शहरात आढळून आला होता. 19 मार्च रोजी जागतिक आरोग्य संघटनेने या व्हायरसला महामारी म्हणून घोषित केले आहे. हा संसर्गजन्य रोग असल्याने याचा प्रसार जगभरातील २१३ पेक्षा अधिक देशांमध्ये वेगाने झाला आहे. आजअखेर जगभरात या विषाणूच्या संसर्गांमुळे लाखोच्या संख्येने लोक मृत्युमुखी पावले आहेत. कोरोना विषाणूने संपूर्ण जगाला विळखा घातला आहे. याची उत्पत्ती, प्रभाव, फैलाव, लक्षणे आणि उपायांच्या पद्धती यावरून सर्वत्र चर्चा सुरु असून या आरोग्याला घातक असलेल्या विषाणू विरुद्ध प्रत्येकजण उभा राहताना दिसतोय. तरीपण यामुळे सामान्य जनता मात्र हवालदिल झालेली दिसते. वास्तविक कोरोना व्हायरस नवा नाही. काही वर्षांपूर्वी आलेला सार्स रोगही कोरोनाचाच एक प्रकार होता. मात्र कोविड-19 नावाच्या नव्या विषाणूने सर्वांवर मात करत सर्वत्र धुमाकूळ घातला आहे. जगाचा विचार केला तर १५.११ कोटी व्यक्तींना कोरोना झाला आहे आणि ३१.७६ लाखापेक्षा जास्त व्यक्तींचा बळी घेतला आहे. भारतातही २,४२,३६२ पेक्षा जास्त व्यक्तींचा मृत्यू झाला असून महाराष्ट्रात ७५,२७७ व्यक्तींचा मृत्यू झालेला आहे आणि लागण झालेल्या रुग्णांची संख्या सातत्याने वाढत आहे. याचा परिणाम समाजातील सर्वांवर झालेला दिसतो.

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## कीवर्ड- कोविड-19, व्यक्तीच्या सामाजिक, आर्थिक, मानसिक जीवनावर परिणाम

**परिचय:** चीनमधील वुहान या शहरामधून उदयास आलेल्या कोविड-19 चा जवळजवळ प्रत्येक समाजात गंभीर परिणाम झाला आहे. आरोग्यावर होत असलेल्या विपरीत परिणामामुळे कोविड-19 ला जागतिक आरोग्य संघटनेने जागतिक महामारी म्हणून घोषित केले आहे. मोठ्या प्रमाणात पसरलेल्या कोविड-19 ने जगाचा प्रवास थांबविण्यास भाग पाडले आहे. व्यक्तीनेही स्वतःला काही बंधने घातली आहेत. तसेच, लॉकडाऊनला जगभर पसरलेला रोग नियंत्रित करण्यासाठी एकमेव उपाय म्हणून ओळखले गेले आहे. भारतीय समाजातील लॉकडाऊन सामाजिक, शैक्षणिक, आर्थिक, राजकीय, कृषी, मानसिक स्तर आणि इतर बऱ्याच गोष्टींशी निगडित आहे ज्यामुळे लोकांच्या जीवनावर विनाशकारी परिणाम झाला आहे. भारतीय समाजात पूर्वी जसे उच्च जातीतील लोक अस्पृश्यांशी सामाजिक-अंतर राखत असत तसेच अंतर कोविड-19 च्या कारणास्तव समकालीन समाजात व्यक्ती-व्यक्ती अंतर ठेवत असल्याचे दिसून येत आहे. अर्थव्यवस्थेच्या दृष्टीकोनातून ग्रामीण आणि शहरी दोन्ही ठिकाणी विपरीत परिणाम झाला आहे. ग्रामीण भागातून शहरामध्ये रोजगारासाठी स्थलांतरित झालेला मोठा वर्ग आहे. लॉकडाऊनच्या निर्णयाचा या वर्गावर देखील अपरिमित परिणाम झाला. सध्या जगभरात कोरोना विषाणूच्या साथीने थैमान घातले आहे. या साथीपुढे जगातील विकसित देश देखील हतबल झालेले दिसत आहेत. या विषाणूने समाजातील बहुसंख्य व्यक्तींची परिस्थिती चिंताजनक केली आहे. या रोगाच्या होत असलेल्या प्रसारामुळे 'जिवंत राहणे' हीच प्राथमिकता आहे हे अधोरेखित करायला भाग पाडले आहे. या शोधनिबंधात कोविड-19 चे समाजावर झालेले परिणाम यावर लक्ष वेधले आहे.

**सामाजिक परिणाम:** भारतात मोठा प्रमाणावर कोरोनाची साथ पसरली आहे. गेल्या २४ मार्च २०२० रोजी देशाला संबोधित करताना २१ दिवसांच्या संचारबंदीची घोषणा पंतप्रधानांनी केली. त्या आधीदेखील २२ मार्च रोजी एक दिवसाचा 'जनता कर्फ्यू' पाळण्याचे आवाहन नागरिकांना केले होते. कोरोनाचा प्रादुर्भाव रोखण्यासाठी बरेच कर्तव्यदक्ष लोक अहोरात्र आपल्या जीवाची परवा न करता सेवा करत आहेत. तर याउलट काही लोक कर्फ्यूचे गांभीर्याने पालन करताना दिसत नाहीत. जेव्हा लोकांचे मनोधैर्य वाढवण्यासाठी पंतप्रधानांनी थाळी वाजवण्याचे आवाहन केले तेव्हा काही जण ढोल-ताशा, फटाके घेऊन रस्त्यावर पोहोचले. अशा अवघड परिस्थितीमध्ये सर्वांनी एकत्र येऊन कोरोनाच्या विरुद्ध लढायला पाहिजे. आता सुमारे वर्षभरानंतर देखील कोरोनाच्या स्थितीत बदल झालेला दिसत नाही. परिणामी देशभरात विविध ठिकाणी पूर्णतः किंवा अंशतः लॉकडाऊन लवण्यात आलेले आहे. या काळात प्रत्येकाने घरी बसून शासकीय यंत्रणांना सहकार्य केले पाहिजे. कोरोना रुग्णांना मिळणार्या सोयींपासून ते किराणामाल आणि जीवनावश्यक गोष्टींसाठी आता विविध



पातळीवर सुविधा करण्यात आल्या आहेत. परंतु आपल्या देशातील लोकसंख्या पाहता केलेल्या सुविधा फारच त्रोटक आहेत. त्यामुळे प्रत्येकाने जबाबदारीने वागणे हाच प्राधान्यक्रम आहे. या महामारीच्या सुरुवातीच्या काळात विशिष्ट धर्माच्या लोकांना कारणीभूत ठरवणे, दिलेल्या निर्देशांचे पालन न करणे, शहरातून येणार्या लोकांना गावात प्रवेश न देणे, प्रवेश रोखण्यासाठी गावाच्या वेशीवर अडथळे निर्माण करणे, एखाद्या व्यक्तीला संशयावरून गावाबाहेर काढणे अशा गोष्टी निदर्शनास आल्या. सद्यस्थितीत कोरोनाविषयी मोठ्या प्रमाणात सामाजिक सजगता आली आहे परंतु त्याचबरोबर जबाबदारीचे भान येणे हेदेखील तेवढेच क्रमप्राप्त आहे. कारण सध्या भारतामध्ये एकूण उपलब्ध असणाऱ्या डॉक्टरांची संख्या, बेडची संख्या तसेच व्हेंटिलेटर, मास्क आणि इतर अत्याधुनिक उपकरणे ही भारताच्या एकूण लोकसंख्येपेक्षा खूपच कमी आहेत. तसेच रुग्ण तपासाच्या वेळी लागणार्या साधन सामुग्रीचा तुटवडा असल्याने डॉक्टर, नर्स, पोलीस आणि इतर जे लोक जबाबदारीने काम करत आहेत त्यांना थेटपणे संसर्ग होण्याचा धोका आहे. समाजातील इतर घटक लक्षात घेता जे मोठे शेतकरी नाहीत त्यांच्याकडे धान्याचा साठा नाही. जे लोक स्थलांतर करून गेलेले असतात ते आर्थिकदृष्ट्या शक्य असेल तेवढे धान्य घेऊन ठेवतात परंतु तो साठा पर्याप्त नसतो. शहराकडे गेलेले कित्येक स्थलांतरित मजूर आपल्या गावी परतले. ते जिथे कामासाठी गेले होते तिथे त्यांना दिवसाला काहीतरी काम मिळून त्याचा मोबदला मिळायचा आणि त्यावर त्यांचा उदरनिर्वाह व्हायचा. परंतु ते गावी आल्यानंतर त्यांचा रोजगार बंद झाला आहे. हातावरचे पोट असल्यामुळे बहुसंख्य व्यक्तींची बँक बचत नाही. ज्याच्या शेतीला पाण्याची व्यवस्था आहे त्यांच्या घरी अन्नधान्य आहे. पण जे आदिवासी शेतकरी शेतीसाठी पावसाच्या पाण्यावर अवलंबून आहेत त्यांच्याकडे साठा असणे अवघड आहे. एकंदरीत सामाजिक दुराव्यासोबतच माणसाच्या उदरनिर्वाहाच्या प्रश्न कोरानाने उभा केला आहे।

अर्थव्यवस्थेवर परिणाम: कोविड-19 या साथीच्या आजाराचा आणि लॉकडाऊनचा फटका भारतीय अर्थव्यवस्थेवर झालेला आहे. लघुउद्योग, शेतकरी, मजूरवर्ग, लघुव्यावसायिक यांच्यासाठी हा काळ आव्हानाचा आहे यात शंका नाही आणि गेल्या वर्षभरात आपण त्याचा परिणाम देशाच्या जीडीपीवर झालेला पाहिला. परंतु सद्यस्थितीत बरेच व्यवसाय चालवण्यास सरकारने अनुमती दिलेली आहे, त्यामुळे व्यापारी वर्गाला थोडी सवलत मिळाल्याचे दिसते. दुसरीकडे ग्रामीण भागातील अर्थव्यवस्था बेरोजगारीमुळे जास्तच प्रभावित होत आहे. आरोग्याच्या दृष्टीने कोरोनाकडे पाहणे महत्वाचे आहेच पण या कोविड-19 व्हायरसचे अर्थकारणावर होणारे परिणामही अतिशय तीव्र आहेत. या आजारामुळे जागतिक अर्थव्यवस्थेवर होणारा परिणाम आता स्थानिक पातळीवर ठळकपणे दिसू लागलाय. जागतिक व्यापाराची पुरवठा साखळीच विस्कळीत करून या विषाणूने जागतिक अर्थव्यवस्थेला जेरीस आणले असेच म्हणावे लागेल. काही अब्ज डॉलर्सचा



फटका केवळ कोरोनामुळे जागतिक अर्थव्यवस्थेला बसलाय आणि अजूनही तो वाढतच जात आहे. तेल उत्पादक देश, रशिया व अमेरिका यांच्यात सुरु झालेल्या तेलयुद्धाचा अन्य देशांना आणि तो ग्राहकांनाही काही फायदा मिळालेला दिसून येत नाही. इंटरनेट व तंत्रज्ञानामुळे व्यावसायिकदृष्ट्या जग हे खूप छोटे झाले आहे. विकसित देशांना सेवा पुरवणार्या आयटी कंपन्यांची जागतिक पातळीवरची देवघेव इतकी वाढली आहे की एका देशातील उद्योग बंद पडताच दुसऱ्या देशाला त्याचा लगेच फटका बसतो. देशातील वाहन उद्योगही अडचण पित आहे. चीनमधून भारतात येणार्या गाड्यांचे सुटे भाग व औषधांसाठी लागणारा कच्चा माल उपलब्ध होत नसल्याने त्याचा औषध व वाहन उद्योगांवर विपरीत परिणाम झाला आहे. अलीकडेच अमेरिकेने औषधासाठी लागणार्या कच्च्या मालाच्या निर्यातीवरील बंदी उठवल्याने थोडा दिलासा मिळाले म्हणण्यास हरकत नाही. आपल्याकडील पर्यटन व वाहतूक क्षेत्र मंदीच्या सावटाखाली आहे. तीर्थक्षेत्रे, खाण्याच्या जागा, शॉपिंग मॉल तसेच गर्दीच्या जागा ओस पडलेल्या दिसतात. कृषी क्षेत्रालाही मोठा फटका या कोरोनामुळे बसला आहे. काद्याला मिळणारा भाव कमी होत असताना पालेभाज्या आणि फळांची मागणीही घटलीय. देशातून मासे आणि कोळंबीचीही मोठ्या प्रमाणात निर्यात होते परंतु सध्या कृषि सोबतच मत्स्य व्यवसाय देखील मंदावलेला दिसून येत आहे. कोरोना संदर्भात पसरलेल्या अफवांचा सर्वात मोठा फटका पोल्ट्री व्यवसायाला बसला. या व्यवसायाला दरमहा हजारो कोटी रुपयांचा फटका सहन करावा लागला. खाद्य निर्मिती करणार्या कंपन्यांनी खरेदी थांबवल्यामुळे मका व सोयाबीन सारखी पिके घेणारे शेतकरीही अडचणीत आले आहेत. केवळ महाराष्ट्रात प्रत्यक्ष-अप्रत्यक्षरीत्या पोल्ट्री व्यवसायावर अवलंबून असलेल्या लाखो लोकांना याची झळ सोसावी लागत आहे. कोरोनाचा पहिला फटका बसला तो निर्यातीला. अनेक देशांची निर्यात ठप्प झाली आहे. आपल्याकडील आंबा, द्राक्ष निर्यातदार शेतकऱ्यांपासून तर व्यापार्यांपर्यंत आणि कामगारांपासून तर उद्योजकांपर्यंत सगळेच हवालदिल झाले आहेत. ग्लोबल इकॉनॉमीमध्ये प्रत्येक देश सध्या दुसऱ्या देशावर अवलंबून आहे. त्यामुळे या प्रश्नाची दाहकता अधिक वाढते. अनेक उद्योग बंद पडण्याच्या स्थितीत आहेत. औषध कंपन्यांचीही तीच गत आहे. कापड, यंत्रमाग, छोट्या-मोठ्या इंजिनिअरिंग इंडस्ट्रीज, आयटी सर्विहसेस या सर्वच उद्योगांना त्याची जबर किंमत मोजावी लागू शकते. आपल्याकडे ६० टक्के नोकऱ्या या असंघटित क्षेत्रात आहेत. अगदी रिक्षावाला, हातगाडीवाला, टॅक्सीवाले, रस्त्यावरचे खेळणी विक्रेते यापासून तर वेटर, गॅरेजवाले, मॉल मधील तरुण-तरुणी, बांधकाम क्षेत्रात काम करणारे मजूर, अर्धकुशल, अकुशल कामगार अशा हातावर पोट असलेल्या लोकांच्या रोजगारावर कोरोनामुळे संक्रांत आली आहे. नोटबंदीच्या तडाख्याने घायाळ झालेल्या अर्थव्यवस्थेतील हे घटक आता कुठेतरी कसंबसं सावरत असताना अचानक कोरोनाचे संकट कोसळले. साधे चहाचे उदाहरण घेता येईल. राज्याची

लोकसंख्या बारा कोटीच्या घरात आहे. यापैकी अवघ्या एक कोटी लोकांनी जरी एका वेळेस हॉटेलमध्ये चहा घेणे सोडले आणि पाच रुपयाला एक चहा याप्रमाणे हिशेब केला तर महिन्याला काही कोटी रुपयांचा फटका केवळ चहावाल्यांना बसणार आहे. त्यातही मुळातच हातावर पोट असलेल्या या वर्गाकडून बचत केली जात नाही. शिल्लक काही उरतच नसल्यामुळे बचत करणार तरी कशी? अशातच कोरोनाची स्थिती आणखी एक—दोन महिने कायम राहिली तर या वर्गाचं जगणं कठीण होणार आहे. अशा परिस्थितीत पोटाची खळगी भरण्यासाठी अनेक कुटुंबं सावकारांकडून अब्बाच्या सव्वा व्याज दराने पैसे घेऊन ते कर्जाच्या दुष्टचक्रात अडकण्याचीही शक्यता आहे. नाट्यक्षेत्रातील कलाकार आणि पडद्यामागे काम करणारे कामगार यांच्या उत्पन्नावरही गदा आली आहे. या सर्व बाबीकडेही लक्ष देण्याची गरज आहे. सध्या राज्यात आणि एकूणच देशभरात बेकारीने कळस गाठला आहे. त्यातच कोरोनामुळे आणखी वाढ होण्याची भीती आहे. त्यामुळे याचाही लगेचच अभ्यास करून कोणत्या उद्योगावर काय परिणाम होईल आणि त्यासाठी काय उपाययोजना कराव्या लागतील याचाही विचार करावा लागणार आहे. त्याची सुरुवात संवादापासून होऊ शकते. त्यासाठी छोटे, मध्यम व मोठ्या व्यवसायिकांशी आणि त्यांच्या संघटनांशी लगेचच चर्चा सुरु केली तर त्यावर लवकर मार्ग शोधून काढणे शक्य होईल. भारतासारख्या विकसनशील अर्थव्यवस्थेसाठी प्रगतीची दारे उघडणारा काळ म्हणूनही या रोगाकडे पाहिल जातय. कधी कधी वाईटातूनही चांगले घडत असते. त्याप्रमाणेच कोरोनाच्या सकटातून संधीही निर्माण होऊ शकतात. फक्त त्या शोधण्याची आणि त्याला मूर्त रूप देण्याची तत्परता राज्यकर्त्यांकडे असावी लागते. आपल्याकडील राज्यकर्ते तशी तत्परता दाखवतील, अशी आशा करायला हरकत नाही. चीनपासून घास्तावलेल्या व पर्यायी उत्पन्नाच्या शोधात असणाऱ्या उद्योगांना भारत व विशेषतः महाराष्ट्र हा एक सुरक्षित पर्याय होऊ शकतो. यामुळे गलितगात्र झालेल्या आपल्या अर्थव्यवस्थेलाही नवसंजीवनी मिळू शकेल. पण त्यासाठी केंद्र व राज्य सरकारने पुढाकार घेऊन करसवलती व अन्य शक्य त्या उपाययोजना त्वरेने करणे आवश्यक आहे. तसेच अर्थतज्ञांची समिती नेमून येत्या काही वर्षात कोरोना विषाणूच्या प्रादुर्भावामुळे उद्योगांवर होणाऱ्या अल्प व दीर्घकालीन परिणामाचा अभ्यास करून वेळीच योग्य ती पावलेही उचलली पाहिजेत. एकमेकांशी येणाऱ्या जवळच्या संबंधांमुळे कोरोनाचा वेगाने प्रसार होतो. म्हणून राज्य सरकारने शाळा—महाविद्यालये, मॉल, थिएटर बंद केले आहेत. काही कंपन्यांनीही कार्यालयात न येता घरून काम करण्याची मुभा दिली आहे. यातून एक नवी कार्यप्रणालीही उदयास येऊ शकते. याचा भविष्यात काय परिणाम होईल हे आताच सांगणे कठीण असले तरी अर्थव्यवस्थेवर याचा थेट परिणाम आताच दिसून येत आहे.

कोविड-19: मानसिक आरोग्याच्या समस्यांत वाढरू— आत्महत्येचा विचार करणाऱ्यांच्या किंवा स्वतःरुला ईजा करून घेणाऱ्यांच्या संख्येत अलीकडील काळात वाढ झाली आहे. गुगलवर 'सुइसाइड' हा सर्च देणाऱ्या लोकांच्या



संख्येत प्रचंड वाढ दिसून येत आहे. कोरोनाशी संबंधित आत्महत्यांच्या बातम्या आल्यामुळे तसेच आत्महत्येची कल्पना व भावनिक ताणासंदर्भातील फोनकॉल्स व ईमेल्समध्ये तिपटीने वाढ झाली आहे. कोरोनाच्या साथीमुळे देशभरातील लोकांना वेगळ्या जीवनपद्धतीशी जुळवून घेणे भाग पडत आहे आणि त्यामुळे त्यांच्या मानसिक आरोग्यावर मोठा ताण येत आहे. एरवीही जगात सर्वाधिक आत्महत्या होणार्या देशात लॉकडाऊनचा लोकांच्या मानसिक आरोग्यावर प्रतिकूल परिणाम झाला आहे. "समाजाच्या वंचित घटकांमध्ये आत्महत्येचा विचार नक्कीच वाढीस लागलेला आहे." "मानसिक आजार, आर्थिक असुरक्षितता आणि कामाचा ताण या पूर्वीपासून प्रचलित धोक्यांमध्ये लॉकडाऊनमुळे आणखी वाढ झाली आहे. या समस्या लोकसंख्येच्या सर्व स्तरांमध्ये, सर्व आर्थिक व सामाजिक गटांमध्ये जाणवत आहेत, असे त्यांनी स्पष्ट केले. यातील अनेक रुग्णांना औषधे किंवा उपचार मिळवणे कठीण झाले असल्याने त्यांचे आजार पुन्हा डोके वर काढत आहेत. हे प्रमाण ग्रामीण भागात अधिक आहे. चिंता, नोकरी जाणे, ताण, एकाकीपणा आणि आर्थिक असुरक्षितता ही मानसिक आजारांसाठी उपचार घेऊ इच्छिणाऱ्या रुग्णांनी दिलेली प्रमुख कारणे आहेत. बहुतेक प्रकरणांमध्ये चिंतेचा स्तर खूप अधिक आहे. हा बहुतेकदा कोरोनाशी थेट संबंधित नाही पण पूर्वीच्या समस्यांची तीव्रता या कालखंडात नक्कीच वाढली आहे. यामुळे दडपल्यासारखी भावना निर्माण होत आहे आणि त्यातून आत्महत्येचा विचार वाढीस लागत आहे, "एकंदर देशातील मानसिक आरोग्याची स्थिती गंभीर आहे असे निरीक्षणातून दिसून येत आहे. मानसिक आरोग्यासाठी मदत मागणाऱ्यांमध्ये तरुण व्यावसायिक, विद्यार्थी आणि स्त्रियांचे प्रमाण अधिक आहे. मानसिक आजारांचे प्रमाण मात्र लोकसंख्येच्या सर्व वर्गांमध्ये, सर्व स्तरांवर खूप आहे. सरकारनेही आधार देण्यासाठी आणखी काही मार्गांचा विचार करणे अत्यंत आवश्यक आहे.

निष्कर्ष: सामाजिक परिणामाचा विचार केला तर व्यक्ती-व्यक्ती जाणीवपूर्वक अंतर ठेवत आहेत कारण कोविड-19 मुळे आत्तापर्यंत भारतात २,२६,०२,५६६ अधिक लोक बाधित झाले आहेत, तर २,४५,२७० अधिक मृत्युमुखी पडले आहेत. महाराष्ट्रात सुमारे ६,५७,०१६ बाधित असून ७४,४१३ व्यक्ती मृत्युमुखी पडले आहेत आणि अजूनही ही हानी दिवसेंदिवस वाढतच जाणार आहे, कारण अजून साथ आटोक्यात आलेली नसून ती वाढतच आहे. त्यामुळे जगातील बहुतांश देशांना जागतिक आर्थिक मंदीची झळ बसल्याचे दिसून येते. आपल्या देशात कोविड-19 पूर्वीच आर्थिक मंदी ठाण मांडून बसली होती. त्यामुळे आणखी गंभीर आर्थिक मंदीला आपल्याला तोंड द्यावे लागत आहे. सर्वांनी सर्व व्यवहार बंद करून आहे तिथे थांबणे आणि संसर्ग टाळणे, हाच मार्ग सर्व देशांनी निवडला आहे. त्यामुळे 'न भूतो न भविष्यती' अशी परिस्थिती निर्माण झाली. बहुतांश उद्योगधंदे-व्यवसाय बंद झाले आहेत. आर्थिक व्यवहार रोडावले आहेत. यातून फक्त जीवनावश्यक गोष्टींना सूट दिली गेली-जसे की भाजी, औषधे,



किराणा इत्यादी. एरवी गर्दीने ओसंडून वाहणारे रस्ते सुनसान झाले आहे. एक दिवस नाही तर अनेक दिवस, काही महिने. एवढी गंभीर वेळ येईल अशी कुणी कल्पना केलेली नव्हती. उलाढालीत घट व त्यामुळे नफ्यावर विपरीत परिणाम. विमान वाहतूक, बँकिंग, हॉटेल, बांधकाम व पर्यटन क्षेत्राचे प्रचंड नुकसान. जीडीपीमध्ये घट. क्रयशक्तीत मोठी घट व त्यामुळे अर्थव्यवस्था आकुंचन पावण्याचा धोका, लोकांमधील वाढलेले नैराश्य असे अगणित परिणाम या महामारीमुळे समाजाच्या सामाजिक, आर्थिक तसेच मानसिक स्थितीवर झालेले दिसून येतात.

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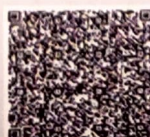
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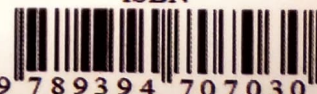
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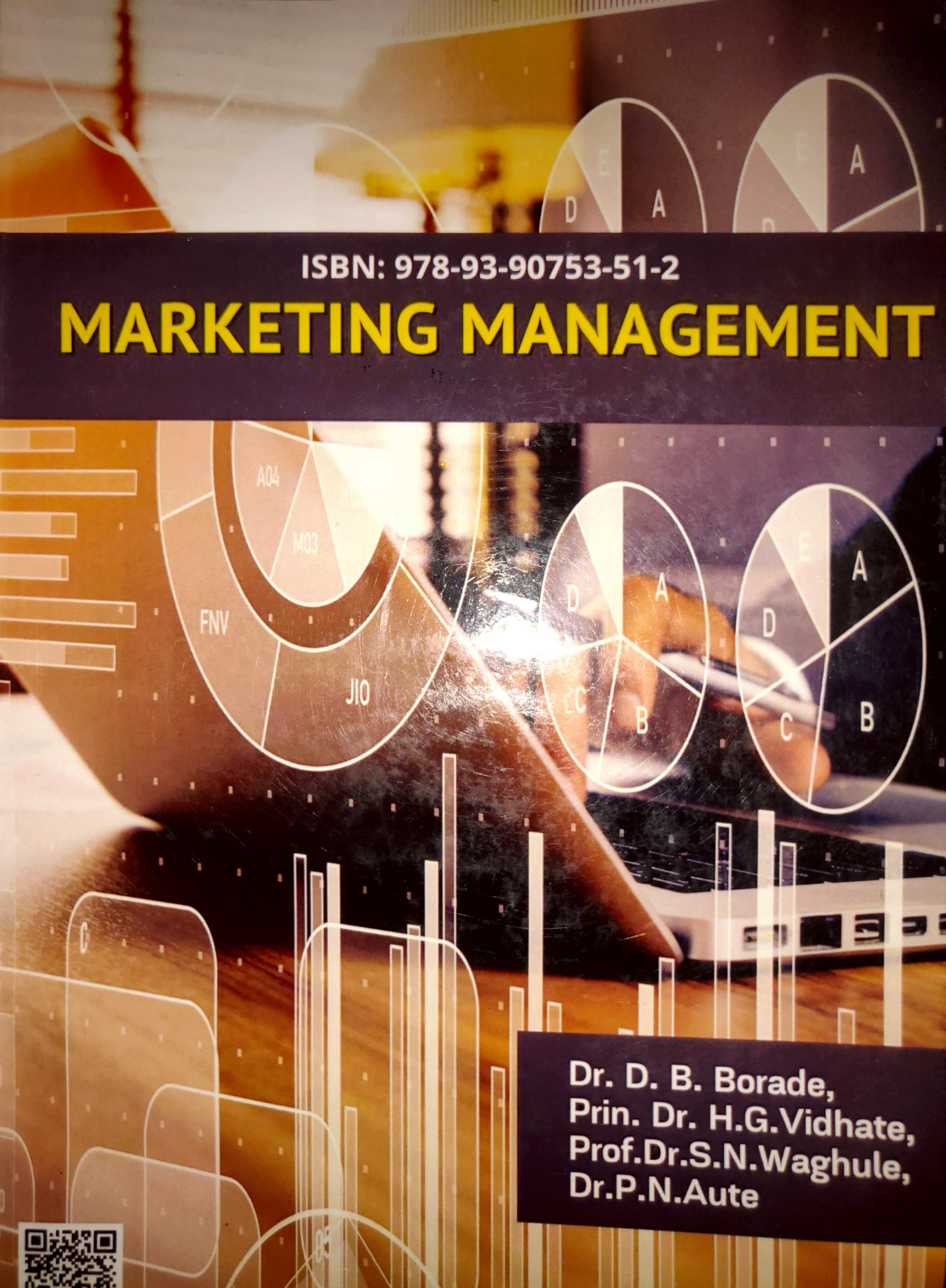
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# MARKETING MANAGEMENT

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# PREFACE ....

Marketing is just about as old as civilization. However marketing is discussed and talked about in business terms today, its starting point returns to the old human advancement when man utilized images, signs, and material ancient rarities to execute and speak with others. Present day marketing spins around the ideas, which are age-old. The main signs man-made to speak with others brought forth marketing. The advancement of marketing has made it an organized discipline to study; if not, marketing existed in the antiquated past. Marketing was likewise utilized as an equivalent word for the craft of selling before. Indeed, even today much disarray exists among marketing and selling among understudies of management and specialists, in regards to the two prevailing methods of business and trade. Without clients, the business doesn't exist. A marketing system or plan is tied in with characterizing the client or target market and fitting the item, evaluating appropriation, and advanced techniques to fulfill that target market. Nursery organizations that are item situated—those that attempt to sell what they can create without first seeing clients' requirements—hazard developing plants and blossoms that won't sell at a value that will deliver a benefit. All things being equal, best nurseries are client situated—they configure marketing methodologies around the requirements of their clients. Contemporary marketing believed anxieties that valuing choices should be made inside the setting of the association's whole marketing blend. Cost is nevertheless one feature of an organization's enticement for buyers and should be completely incorporated with the actual item, its bundle, publicizing, advancement, circulation, etc, so as to empower it to supplement, backing and improve each and every part of the marketing blend. Channels of Distribution—meaning—choice of Distribution channel—marketing broker's capacities and types Wholesaling—types and administrations of distributor Retailing—types and administrations of retailer Those new to marketing regularly accept it is exactly the same thing as promoting. Positively our inclusion such a long ways in these Principles of marketing instructional exercise has recommended this isn't true. Marketing includes many assignments and choices, of which publicizing may just be a little part.

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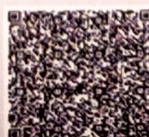
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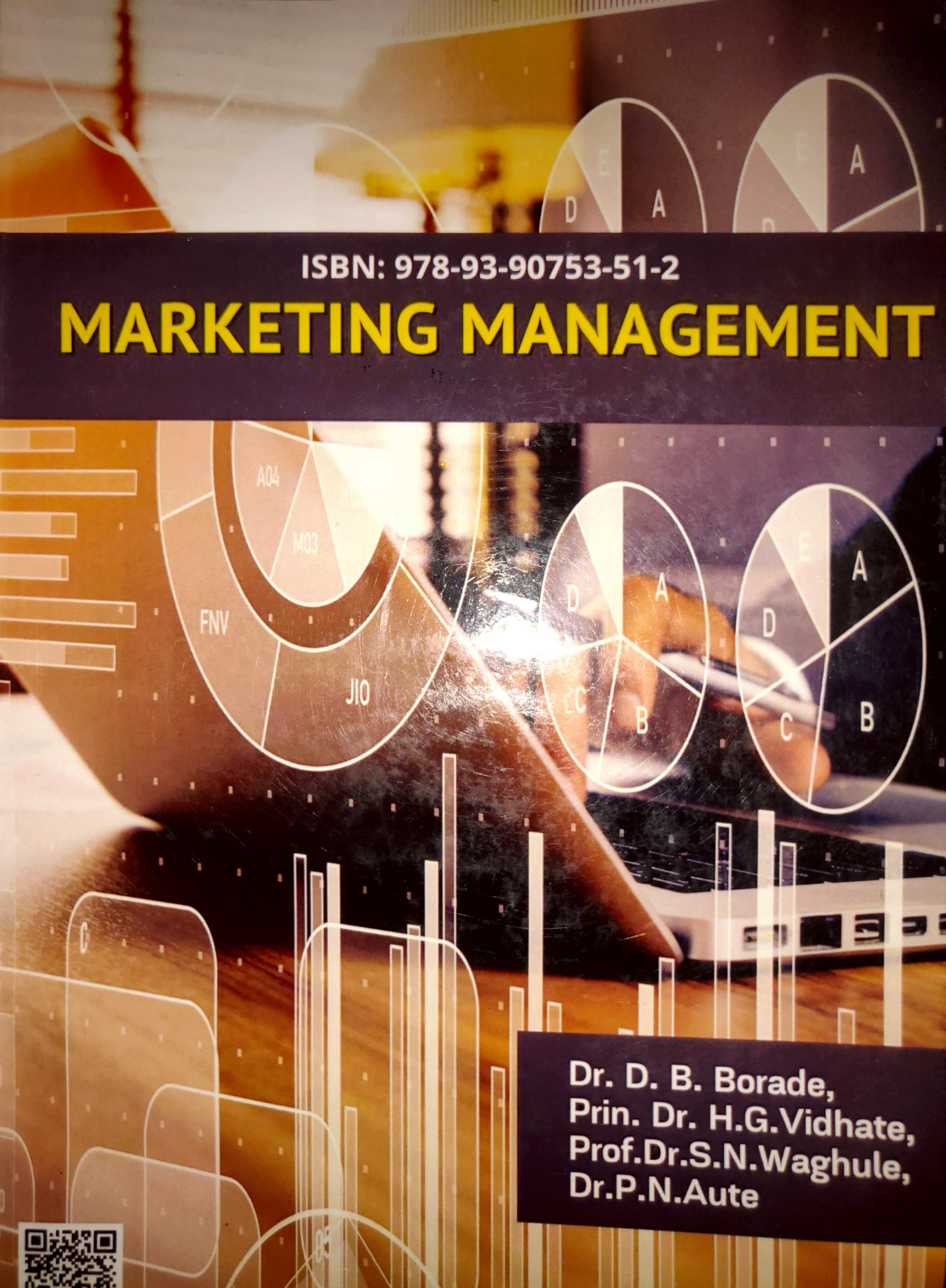
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# MARKETING MANAGEMENT

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# **PREFACE ....**

Marketing is just about as old as civilization. However marketing is discussed and talked about in business terms today, its starting point returns to the old human advancement when man utilized images, signs, and material ancient rarities to execute and speak with others. Present day marketing spins around the ideas, which are age-old. The main signs man-made to speak with others brought forth marketing. The advancement of marketing has made it an organized discipline to study; if not, marketing existed in the antiquated past. Marketing was likewise utilized as an equivalent word for the craft of selling before. Indeed, even today much disarray exists among marketing and selling among understudies of management and specialists, in regards to the two prevailing methods of business and trade. Without clients, the business doesn't exist. A marketing system or plan is tied in with characterizing the client or target market and fitting the item, evaluating appropriation, and advanced techniques to fulfill that target market. Nursery organizations that are item situated—those that attempt to sell what they can create without first seeing clients' requirements—hazard developing plants and blossoms that won't sell at a value that will deliver a benefit. All things being equal, best nurseries are client situated—they configure marketing methodologies around the requirements of their clients. Contemporary marketing believed anxieties that valuing choices should be made inside the setting of the association's whole marketing blend. Cost is nevertheless one feature of an organization's enticement for buyers and should be completely incorporated with the actual item, its bundle, publicizing, advancement, circulation, etc, so as to empower it to supplement, backing and improve each and every part of the marketing blend. Channels of Distribution—meaning—choice of Distribution channel—marketing broker's capacities and types Wholesaling—types and administrations of distributor Retailing—types and administrations of retailer Those new to marketing regularly accept it is exactly the same thing as promoting. Positively our inclusion such a long ways in these Principles of marketing instructional exercise has recommended this isn't true. Marketing includes many assignments and choices, of which publicizing may just be a little part.

We are respected thankful to the Hon. Bhimraoji Dhonde Saheb, Former President of Anand Charitable Sanstha Ashti's for his encouragement and support to complete this work. Finally, my sincere thanks to the Prin. Dr. H. G. Vidhate and Publishers, Distributors, for their acceptance in publishing the book.

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# Impact of Globalization on Higher Education

Professor S.N.Waghule

**Abstract:** Globalization trends and innovations in the instructional technologies are widely believed to be creating new markets and forcing a revolution in higher education. Much of the rhetoric of "globalists" has presented a simplistic analysis of a paradigm shift in higher education markets and the way nations and institutions deliver educational services. Globalization does offer substantial and potentially sweeping changes to national systems of higher education, but there is no uniform influence on nation-states or institutions. All globalization is in fact subject to local influences. A growing body of case studies point to the complexity of globalization in influencing the future of higher education. The objective of this analysis is to provide a framework for a more encouraging, and a more nuanced, understanding of this phenomenon and the true influence of globalization and the future path for higher education.

(Keywords: Globalization, Governing and managing higher education systems.)

## Introduction:

Higher education has become a huge enterprise. World-wide tens of millions of students are enrolled in more than 15,000 public institutions, and a growing number of private institutions. Governing and managing higher education systems at all relevant levels especially system level, central institutional level, faculty and department level, program level) has become a profession on its own. However, the possibilities for higher education leaders and managers at all relevant levels inside and outside the higher education institutions to prepare and train themselves with respect to the governance and management side of their job are limited, especially concerning the threats and challenges of its global dimensions. Global initiatives promoting greater corporate social responsibility has made specific references to education as a sector or as an issue



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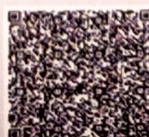
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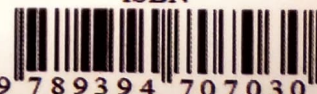
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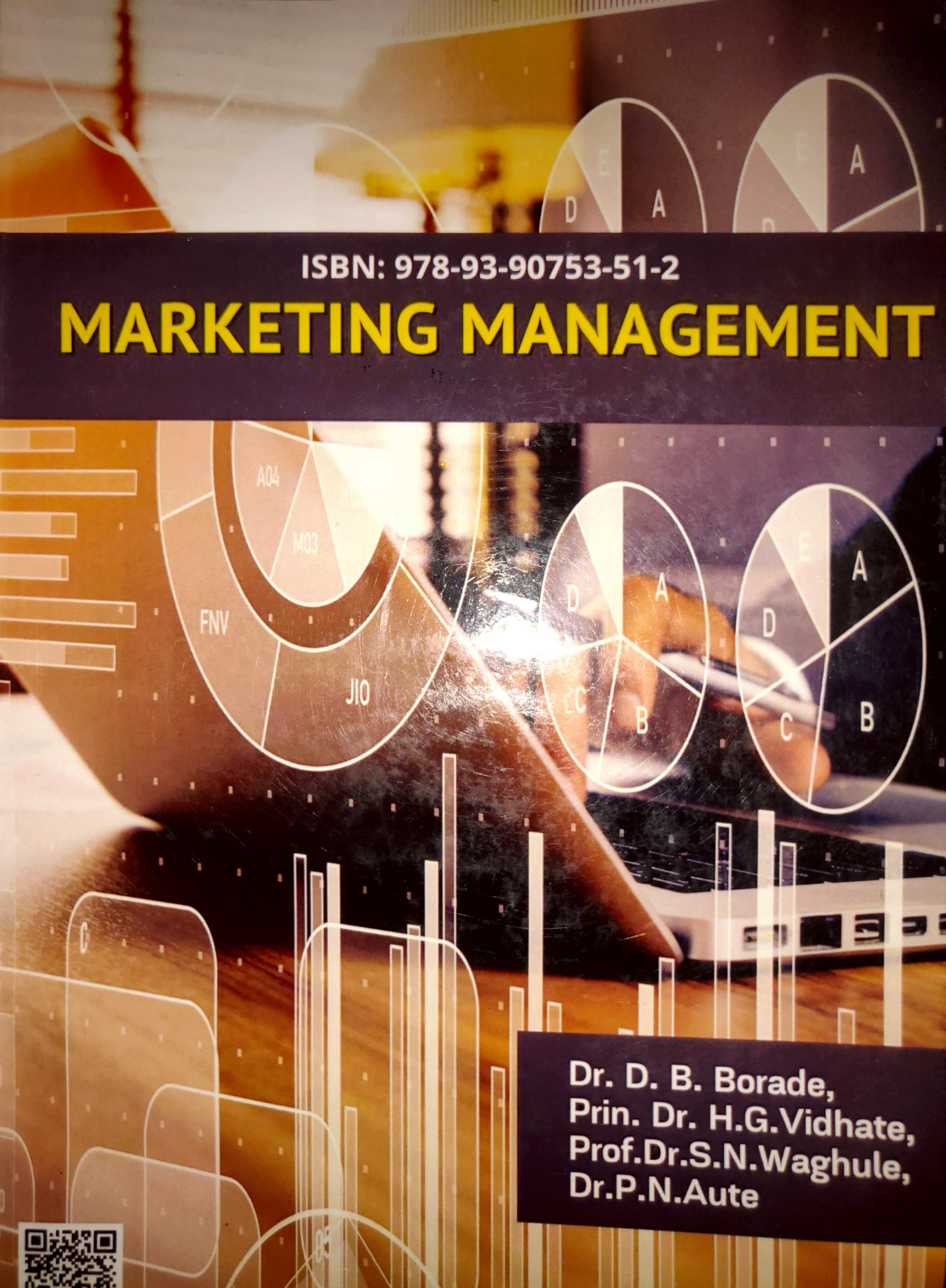
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- Dr. P.N.Aute. (M.Com. M.Phil., Ph.D.)
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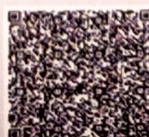
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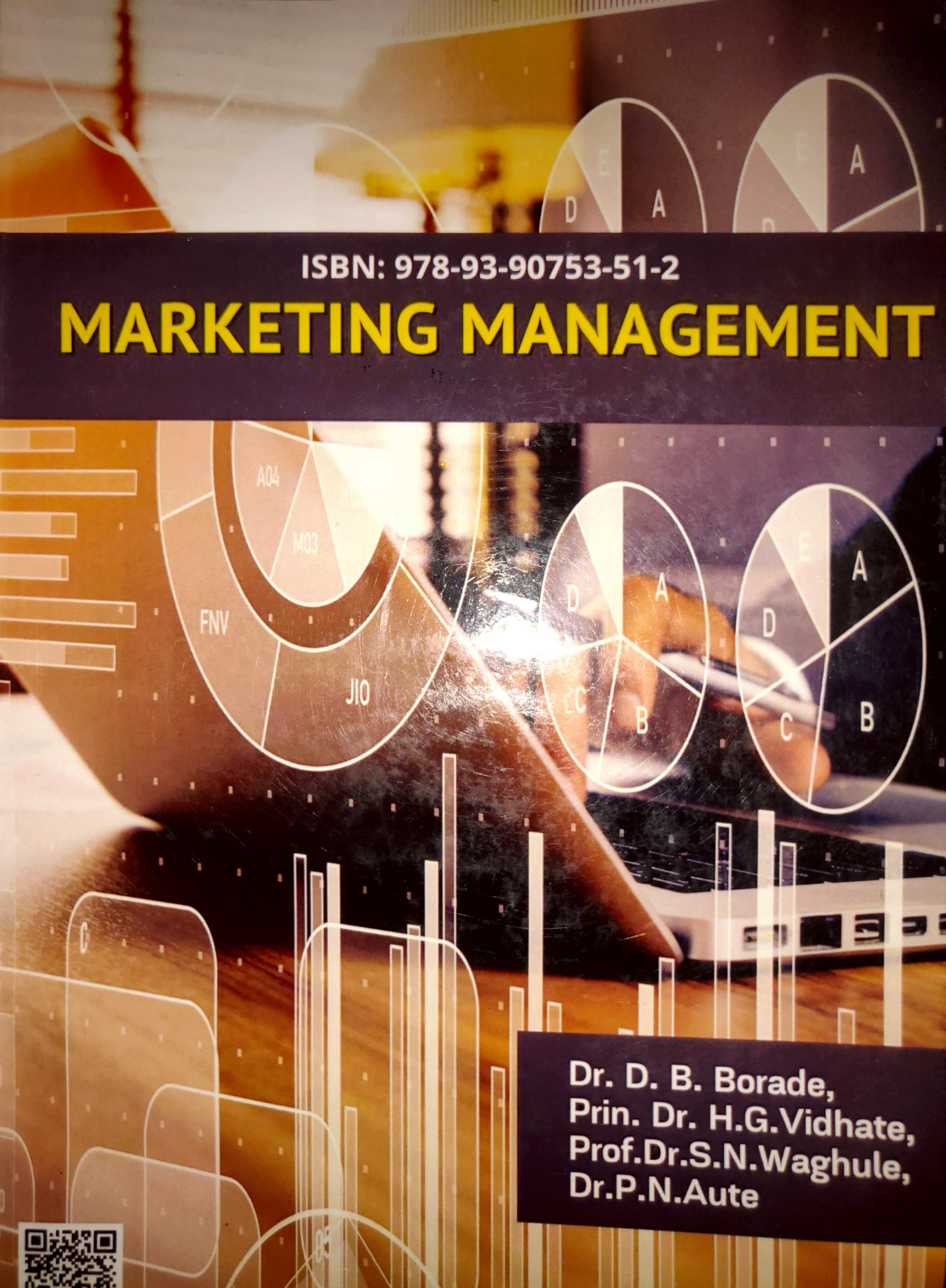
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Dr. D. B. Borade,  
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# Chromatography



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# CHROMATOGRAPHY

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# CHAPTER 1

## BASIC CONCEPTS OF CHROMATOGRAPHY

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### 1.1 INTRODUCTION

Analytical chemists have not many instruments as strong as chromatography to quantify unmistakable analytes in complex examples. The force of chromatography comes from its capacity to isolate a combination of compounds, or "analytes", and decide their individual personality (substance construction) and focus. Chromatography can be isolated into three fundamental sorts that incorporate gas, liquid, and supercritical liquid chromatography. Liquid chromatography can additionally be partitioned into particle trade, divisions dependent on size, and surprisingly stretched out to gel based electrophoretic strategies. This book will give a fundamental prologue to various sorts of liquid and gas chromatography. The connection between each sort of chromatography is delineated in Figure 1.1.



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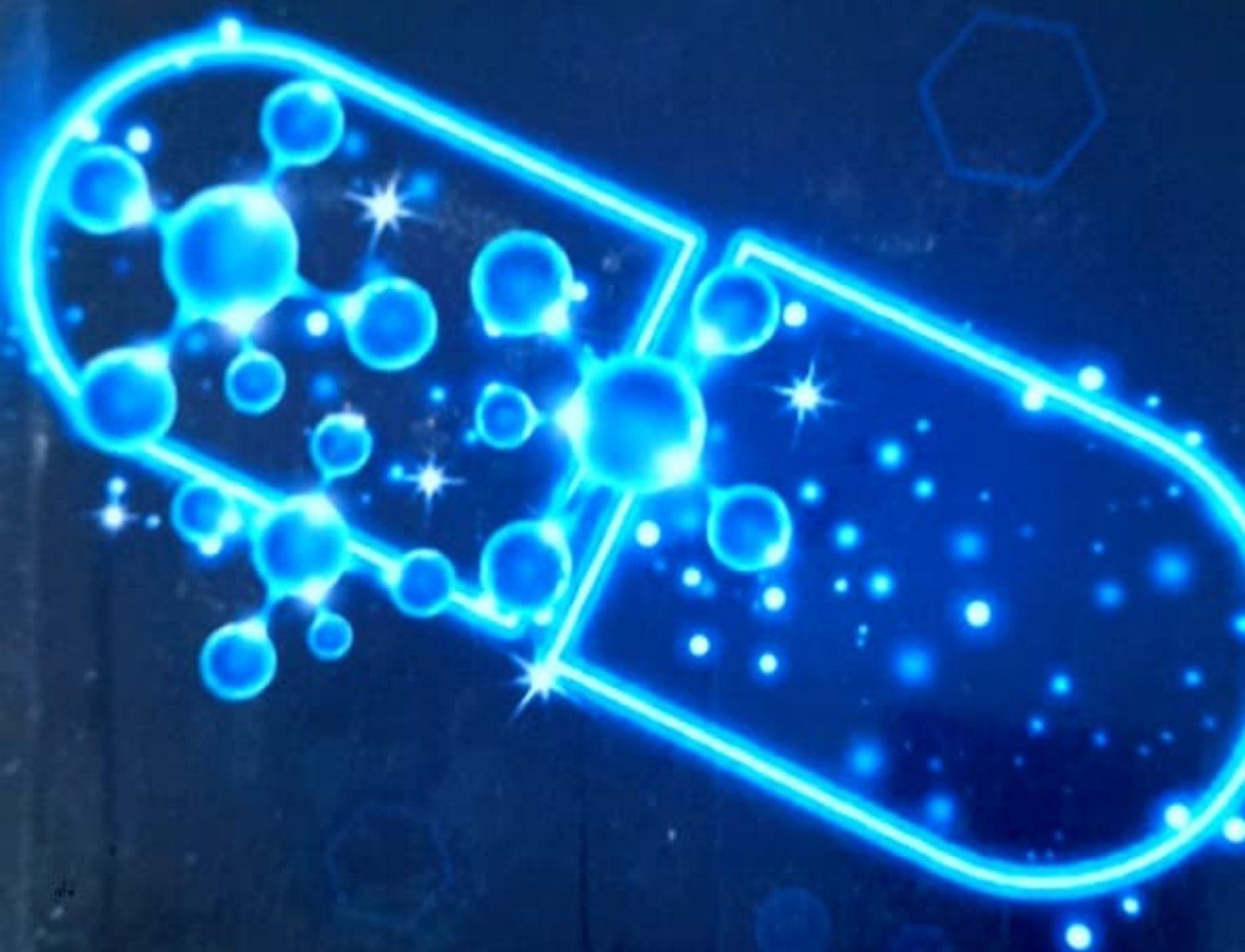
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# Medicinal Chemistry



-Dr. Ghumare Pramila Pandurang  
-Dr. Dattatraya Jirekar (M. Sc. M. Phil. Ph. D.)

# MEDICINAL CHEMISTRY

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# CHAPTER 1

## INTRODUCTION

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# CHAPTER 1

## BASIC CONCEPTS OF CHROMATOGRAPHY

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### 1.1 INTRODUCTION

Analytical chemists have not many instruments as strong as chromatography to quantify unmistakable analytes in complex examples. The force of chromatography comes from its capacity to isolate a combination of compounds, or "analytes", and decide their individual personality (substance construction) and focus. Chromatography can be isolated into three fundamental sorts that incorporate gas, liquid, and supercritical liquid chromatography. Liquid chromatography can additionally be partitioned into particle trade, divisions dependent on size, and surprisingly stretched out to gel based electrophoretic strategies. This book will give a fundamental prologue to various sorts of liquid and gas chromatography. The connection between each sort of chromatography is delineated in Figure 1.1.





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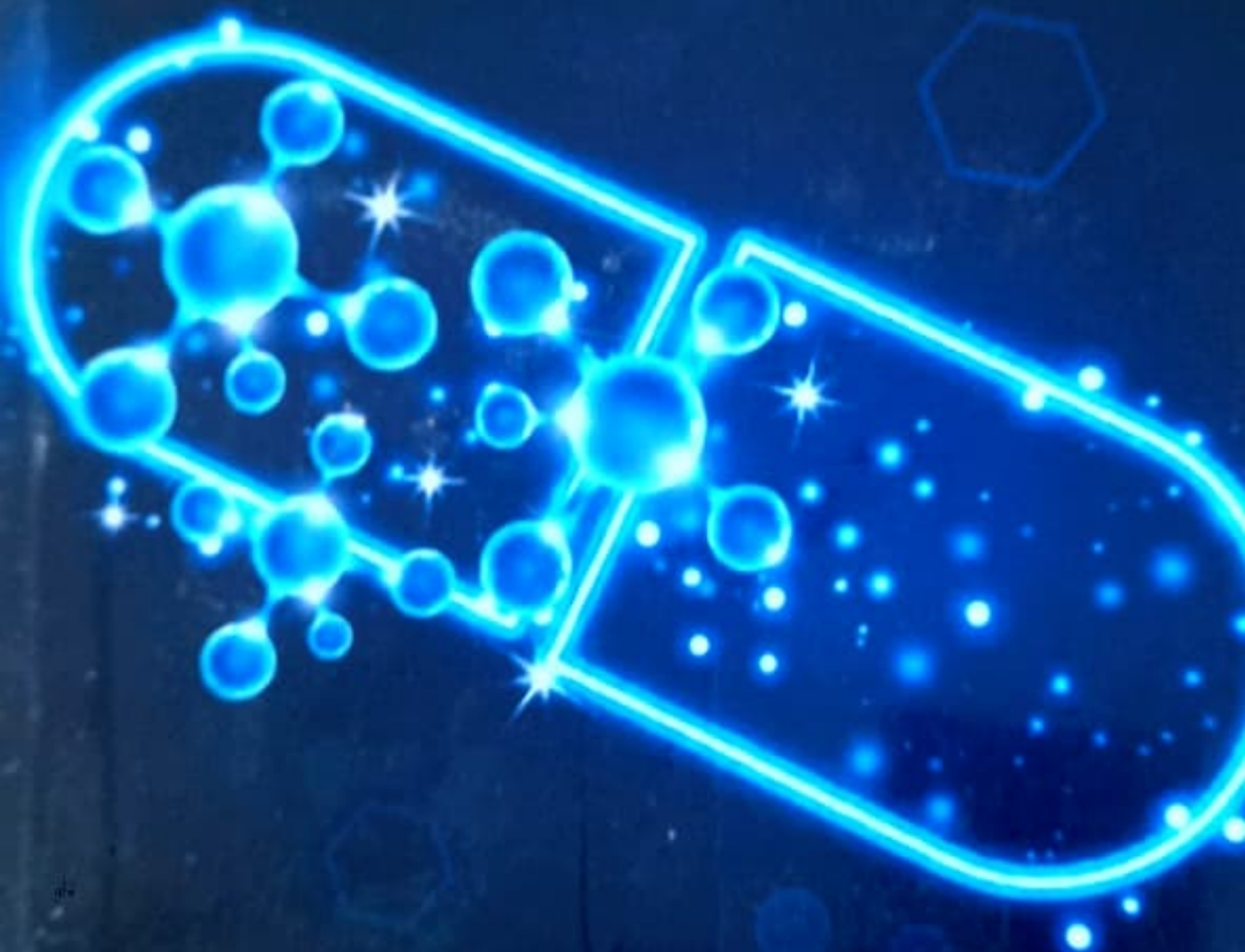
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-Dr. Bhimraj Gawade  
-Mr. I. G. Nannaware



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**Dr. Bhimraj Gawade & Mr. I. G. Nannaware**

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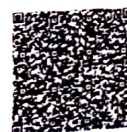
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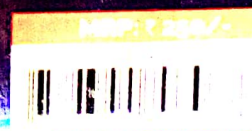


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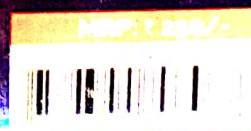


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An artistic illustration of a woman with long brown hair, wearing a red shawl and dark pants, sitting on the ground in a forest. She is holding an open book and looking down at it. The forest is filled with tall trees and many leaves are falling around her, creating a warm, golden atmosphere. The background is a soft, glowing light. The title and authors' names are overlaid on the image.

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# *Style & Technique*

-Dr. Shailaja B. Kuchekar  
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## *Style & Technique*

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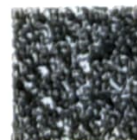
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# PREFACE

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*This reference book aims to provide a comprehensive set of named reactions and reagents for organic chemistry, which will be suitable for scholars of chemistry. The reference book concentrates on core topics name reactions and reagents which are most likely to be common to those organic chemistry courses which follow on from a foundation or introductory general chemistry course. The knowledge of organic reactions and reagents are must for the study of fundamentals of organic chemistry as reactions are the heart of organic chemistry. Mechanism of reactions tells as how the molecules initiate reaction; permit us to find pathways of all reactants, which enable us to predict the nature of product expected. Many name reactions and reagents available in literature. We have selected some common reactions and reagents which are useful to understand the fundamentals of organic chemistry for any university undergraduate and postgraduate students. Out of them, some reactions for the synthesis of compounds have been described which have great synthetic utility in the field of pharmaceuticals. In deciding the depth of topic, we relied upon my experiences as a classroom teacher and interaction with organic chemistry scholars.*

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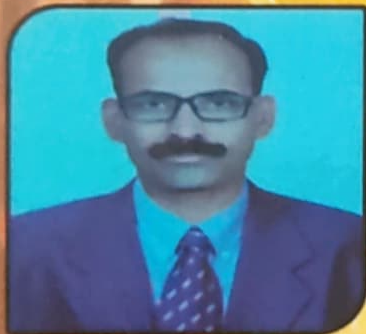
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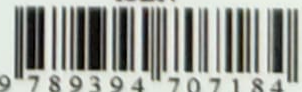
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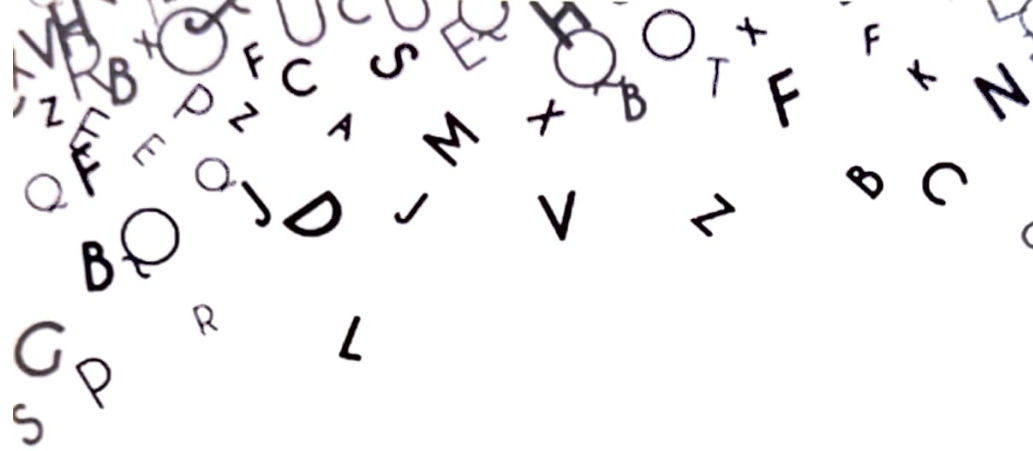


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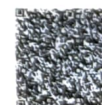
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# PREFACE

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*The Word Grammar means different things to different people. To the ordinary citizen, it connotes to correctness or incorrectness of the language that he or she speaks. To a school student, it means an analytical and terminological study of sentences. Knowledge of grammar helps the student in the correction of mistakes and improvement of written work. A person can't learn a foreign language accurately only through a process of unconscious assimilation. Grammar is a sure ground of reference when linguistic habits fail us. So grammar is indispensable for the student. In this paper my aim is to bring the attention of the language teacher as well as the learner about the real utility of grammar in teaching English language. Hence, let's discuss some basic things about English grammar and composition.*

*Grammar is the study of words and the ways words work together; an invisible force that guides us as we put words together into sentences. Any person who communicates using a particular language, consciously or unconsciously becomes aware of the grammar of that language. But in this context I would like cite a wonderful example as described "A writer has given a beautiful analogy to illustrate the use of knowledge of Grammar. Imagine two car drivers. The first driver knows only driving and nothing about the working of the engine. He feels helpless whenever there is some trouble with the machinery. The second driver knows driving and also understands the working of the machinery. The person who knows grammar is like this second driver. In case he doubtful about the correctness of a particular thing, his knowledge of grammar comes to his rescue". Therefore, to speak in a clearer and more effective manner we have to study grammar. For the person who has unconscious knowledge of grammar, it may be sufficient for simple language use. But the persons who wish to communicate in the artistic manner with well-defined structures must go for the greater depth of understanding and proficiency what the study of grammar offers.*

*The next activity that helps significantly is reading and listening to English-speaking sources that contain mostly understandable words and/or phrases. The more learners process these input and make efforts to understand, the better and the sooner their mind will approximate the system of the English language. In other words, the principle is simple: the more one listens to and reads English input that he or she can understand, the more quickly their mind operates like the English grammar system.*

*Another activity that supports and expedites grammar learning is noticing English grammatical patterns. If the first strategy above draws on simple understanding of the input, this strategy draws attention to the patterns and silently commits them to the language system in the mind. This also involves parsing the sentences and analyzing the elements of sentences in order to produce output with the same patterns. In addition to the two activities above, an old adage "practice makes perfect" still works effectively. Mastery of grammar calls for a lot of intensive practice. This is where grammar books play out their roles. If done regularly, the exercises in the books will enable a learner to gain increasing mastery of the patterns.*

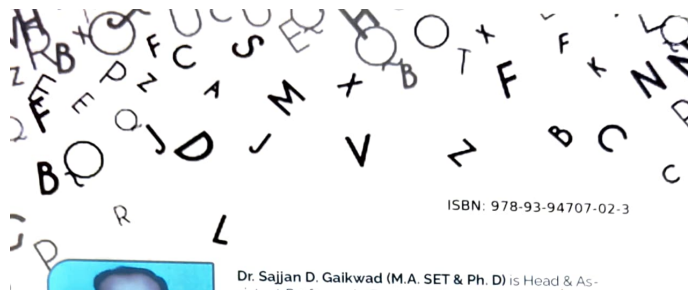
*Last but not least, the learning of grammar benefits from error corrections. Learners will come to a stage where they need to produce utterances or sentences, and it is at this stage that they should heed the corrections given by their teachers or more able friends.*

*In short, processing a lot of comprehensible input, noticing patterns, and attending to feedback are some strategies for mastering English grammar and composition.*



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डॉ. सज्जन गायकवाड

देशात हस्तविक काळासाठी शिक्षणाची कोणती नीती असावी, कोणता दृष्टीकोन असावा याबाबत सविस्तर माहिती प्रकाशित करण्याच्या क्रियेला शैक्षणिक धोरण म्हणतात. त्याला संसदेने मान्यता दिली की त्याचे कायद्यात रुपांतर होते. स्वतंत्र भारतात पहिल्यांदा १९६८ मध्ये कोळरी कमिशन (१०+२) या नावाने शैक्षणिक धोरण आले होते. यानंतर १९८६ मध्ये दुसरे शैक्षणिक धोरण अंमलात आले, तेव्हा भारताचे पंतप्रधान स्व. राजीव गांधी होते. १९९२ मध्ये याच धोरणात थोडा बदल करून दुसरी करण्यात आली. यानंतर २०२० पासून सध्या ज्याबाबत आपण बोलणार आहोत ते धोरण अंमलात येत आहे. या धोरणासाठी मा. सुब्रमन्यन यांची नियुक्ती करण्यात आली होती. सुब्रमन्यन यांनी जेव्हा अहवाल सादर केला तो सरकारला पटला नाही म्हणून पुन्हा मा.कस्तुरीरंगन यांची नेमणूक करून त्यांना अहवाल देण्यास सांगितले. २०१९ मध्ये कस्तुरीरंगन यांनी आपला अहवाल सरकारला सादर केला. २०२० मध्ये संसदेत याच्यावर कायदा संमत केला. या कायद्याने राज्यांचे अधिकार कमी केले जातील अशी भीती वाटत होती, परंतु ड्राफ्ट वाचल्या नंतर तरी तसे वाटत नाही. वरून धार्मिक रंगही यामध्ये दिसत नाही. या मध्ये अंतर्भूत असलेल्या काही महत्वाच्या स्तुत्य गोष्टी अशा आहेत.

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- २) लहान मुलांना सध्याच जेवण व वसुंधरा breakfast देणार ही अर्थी चांगली गोष्ट घात आहे.
  - ३) Drop out Rate कमी करण्याचे आव्हान स्वीकारलेले दिसते. सध्याचा Drop out Rate अत्यंत भयावह आहे.
  - ४) लहान मुलांचा सार्वजनिक विकास ८ वर्षांपर्यंतच होत असतो, म्हणून नवसे आणि प्री प्रायमरी stages मुलांच्या जीवनातील खूप महत्वाच्या वाटतात. या अनुषंगाने याकडे लक्ष या धोरणात दिलेले दिसते. त्यामुळे नवीन शिक्षण धोरणात ५+३+३+४ असा फार्मूला दिसतो तो अगदी योग्यच आहे. यामध्ये मुलाला वयाच्या ३ वर्षांपर्यंतच शाळेत दाखल केले जाईल. त्यानंतर दोन वर्षे ते मूल पहिली व दुसरी इयत्ता करील त्यालाच foundation course (५) म्हंटलेले आहे. त्यानंतरची तीन वर्षे पाचवीपर्यंत Preparatory (३), त्यानंतरची तीन वर्षे Middle Stage (३) सहावी सातवी आणि आठवी यामध्ये असेल, त्यानंतरची ४ वर्षे secondary stage असेल यामध्ये विद्यार्थी १२ वीत शिक्षण असेल.
  - ५) शाळेत सर्व विद्यार्थ्यांना समान वागणूक.
  - ६) शाळांचे infrastructure व सुविधा वाढविण्यावर भर देण्यात येईल. त्याचबरोबर Group Facilities देण्यात येतील.
  - ७) Fair Recruitment ऑफ teachers, नो Guest teacher
  - ८) Medium ऑफ instruction Regional language असेल.
  - ९) Multi disciplinary education, Liberal education या अतिशय चांगल्या गोष्टी इथे दिल्या आहेत. थोडक्यात, सध्याचे शिक्षण धोरण हे अति सुंदर आहे; परंतु व्यवहारात जेव्हा याचा वापर होईल तेव्हा याचे सत्य-असत्य निदर्शनास येईल हे मात्र तेवढेच खरे आहे.
- या नवीन धोरणाबाबत माझ्या मनात जी भीती आहे ती मी खालीलप्रमाणे मांडत आहे.

जगात प्रथम कोणी शिक्षण सुरु केले सांगता येणार नाही, परंतु युरोपमध्ये ग्रीस आणि रोमन साम्राज्यात स्त्री सत्ताक पद्धती होती. तेव्हाच आणि तिथेच शिक्षणाची सुरुवात झालेली आपणास पहावयास मिळते. शिक्षणातून सामाजिक सांस्कृतिक क्रांती होते. माणसाचे मानसिक बौद्धिक आणि भौतिक दारिद्र्य दूर करणारे ते खरे शिक्षण. शिक्षणाच्या संधीमुळे माणसाला ज्ञान, सत्ता आणि संपत्ती ही तीन बलस्थाने प्राप्त होतात. ही बलस्थाने सर्वसामान्यांना मिळू नये म्हणून पूर्वी काहीजण प्रयत्न करत होते. दुबळ्यातून आपणास स्पर्धक तयार होऊ नयेत अशी व्यवस्था प्रस्थापित करत असतात. शिक्षणामुळे माणूस शहाणा होतो, बदल स्वीकारतो, दुबळ्यांना शिक्षण मिळाले की ते अधिकार व हक्कांवर समानता सांगतील याची प्रस्थापितांना कायम भीती असते. प्रस्थापित दुबळ्या समाजाला शिक्षण देतात ते आपल्या सोयीसाठी. आगामी शिक्षण धोरण कुशल मजूर तयार करण्यावर भर देणारे तर नाही ना अशी मला भीती वाटते आहे.

अस्पष्टता, अंतर्गत विरोधाभासी स्थिती कल्पनांची वैचारिक अस्पष्टता आणि नक्कल हे आजच्या नवीन शैक्षणिक धोरणास चिन्हांकित करतात. हे शैक्षणिक धोरण मूलभूत कर्तव्याचा संदर्भ देते, परंतु मूलभूत अधिकारावर मात्र मौन बाळगते आहे. अनौपचारिक व औपचारिक शिक्षणातील फरक सुद्धा या नवीन शैक्षणिक धोरणात धुसर झालेला दिसतो. अलीकडच्या काळात शैक्षणिक विषमता अधिकच गडद झालेली आपणास पहावयास मिळते. पहिल्यापासूनच भारतीय शिक्षणावर सामाजिक, कौटुंबिक आणि आर्थिक समस्यांचा परिणाम होत असल्याचे दिसते. भारतीय शिक्षणात ग्रामीण-शहरी, महिला-पुरुष आणि प्रादेशिक विषमता ठसठशीत दिसून येते. अगदी अलीकडच्या अहवालानुसार देशातील ७० % जनता गावात राहते, परंतु ६० % ग्रामीण महिला व ४२ % पुरुषांना लिहिता वाचता येत नाही. ही विषमता दिवसेंदिवस वाढताना दिसते आहे. या नवीन शैक्षणिक धोरणात १०० विदेशी विद्यापीठांना पायघड्या घालण्यात आल्या आहेत. या संस्थांना केवळ संस्था काढण्यास परवानगी दिली असे नाही, तर त्यांच्या हितसंबंधानुसार बदल करण्याची खुली परवानगी दिली जाईल. या संस्था स्वायत्त असतील यावरून हे शिक्षण सर्वसामान्यांच्या आवाक्याबाहेरच असेल यात



काही तिळमात्र शंका नाही. तसेच परावलंबी विद्यापीठांच्या शिक्षण संस्थांच्या आधारावर आत्मनिर्भर भारत कसा बनेल बरे?

नवीन धोरण बनवताना देशातील दारिद्र्य, साक्षरता, साधनसामुग्री यांचा विसर पडलेला दिसतो. प्रगतीपुस्तकाला स्मार्ट प्रगतीपुस्तक म्हटल्याने जास्तीचा काही फरक पडेल असे वाटत नाही. बाजारु शिक्षण संस्थांमध्ये गुणवत्ता ही मालकाच्या घरी पाणी भरते त्यामुळे मालक जे ठरवतील तेच शिक्षकांना शिकवावे लागते. या नवीन धोरणात नैतिक मूल्यांचे शिक्षण असा उल्लेख आहे. परंतु या नैतिक मूल्यांची दिशा कोणती आहे ते समजत नाही. 'सभी बच्चों में भारतीय मूल्य जैसा- सेवा, अहिंसा, स्वच्छता, सत्य, निष्काम कर्म, सहनशीलता, इमानदारी, कड़ी मेहनत, महिलाओं के प्रति आदर, बुजुर्गों के प्रति आदरभाव, सभी के लिये आदरभाव, पर्यावरण के लिए आदरभाव, आदी परंपरा पोषित विकसित किया जायेगा'. असे शब्द या धोरणात पहावयास मिळतात.

आगामी काळात भारतीय स्त्री चिकित्सक दृष्टी व वैज्ञानिक दृष्टीकोण गमावून बसते की काय अशी भीती वाटते आहे. अर्थात तिला गुलामगिरीच्या बंड्या टाकल्या जातील. ज्या देशातील स्त्री गुलाम त्या देशाचा समाज गुलाम, समाज गुलाम झाला की तो देश गुलाम बनतो हा इतिहास आहे. मनुस्मृतीने स्त्री, शूद्र, अतिशूद्र यांना शिक्षण नाकारून गुलामीला आमंत्रण दिले होते, हे विसरून चालणार नाही. नवीन शैक्षणिक धोरण हे खाजगीकरण, बाजारीकरण जातकेंद्री आणि धर्मकेंद्री वाटते. बहुजन समाजाकडे हे धोरण केवळ 'कुशल मजूर' म्हणून पाहते आहे असा समज धोरण वाचताना होतो. त्यापलीकडे डॉक्टर, वकील इंजिनियर, प्राध्यापक आणि संशोधक इत्यादी होण्यासाठी मोठी किंमत मोजावी लागेल. प्रशिक्षण घ्यावे लागेल हे तेवढेच खरे.

बहुजन समाजाला शिक्षणापासून वंचित ठेवून चालणार नाही हा विचार देशाला गुलामगिरीच्या खाईत लोटणारा आहे. शिक्षण नाकारून सर्वसमावेशक सर्वाना समान संधी देणारे सक्तीचे आणि मोफत शिक्षण देण्यासाठी शिक्षणाचे राष्ट्रीयकरण हाच एकमेव उपाय आहे. देशाची गरज वजा करून राष्ट्रीय शिक्षण

धोरण राबविले जाणार असेल तर देशाला आम्ही मध्ययुगीन अंधारात घेऊन जात आहोत. या नीतीमुळे शिक्षणाचे प्रचंड बाजारीकरण होऊन पैसे उभे करणारे कोर्सस महाविद्यालय व विद्यापीठ सुरू करतील; व्यवसायभिमुख च्या नावाखाली ही नवीन शिक्षण पद्धती भांडवली अर्धव्यवस्थेला सेवा देणारा 'मजूर' निर्माण करणार नाही कशावरून. शिक्षणाचा संबंध मूलभूत अधिकाररशी जोडला जायला हवा होता तो जोडलेला दिसत नाही. मग कोणत्या परंपरा आणि मूल्ये आपल्याला पुढे न्यायचे आहेत हे ही स्पष्ट जाणवत नाही. जग चौथ्या औद्योगिक क्रांतीच्या उंबरठ्यावर उभे आहे आणि आपला Gross enrolment rate सध्या २५ % आहे तो आपणास ५०% २०३५ पर्यंत करायचा आहे. लोकशाहीत शिक्षणाचे विकेंद्रीकरण महत्त्वाचे असते त्यामुळे समाजातील विविध घटकांपर्यंत व क्षेत्रांपर्यंत शिक्षण पोहोचत असते. २०४० पर्यंत उच्च शिक्षण संस्थांची संख्या खूप कमी होईल, परंतु कॉलेजमध्ये विद्यार्थी संख्या वाढेल हे या धोरणातून स्पष्ट दिसते आहे.

१८८२ मध्ये हंटर कमिशन समोर महात्मा ज्योतिबा फुले यांनी शिक्षणाचे माध्यम मातृभाषा असले पाहिजे असे ठणकावून सांगितले होते. मागच्या इतिहासात आपण पाहिले आहे शिक्षणाच्या बाजारीकरणाला व खासगीकरणाला प्रोत्साहन देण्यासाठी इंग्रजी माध्यमाच्या शाळांना महत्त्व जाणीवपूर्वक दिले गेले. त्यामुळे मातृभाषेला थोरवी देऊन शिक्षणक्षेत्र इंग्रजीमय केले व शेवटी ते हिनत्वेला गेले. आजतरी या इंग्रजी माध्यमांच्या शाळांना कोणी लगाम घालेल असे वाटत नाही. मातृभाषेचा मुद्दाही भारतासारख्या जाती समाजात क्लिष्ट आहे त्रिभाषा सूत्राचा उल्लेख या नवीन धोरणात ठेवलेला दिसतो. भाषा म्हणजे केवळ शब्द आणि व्याकरण नव्हे किंवा भावना व विचारांचे आदान-प्रदानाचे साधन नव्हे तर ती एक जिवंत दृष्टी असते; ती एक संस्कृती आणि सुखदुःखाचे प्रकटीकरण आहे. या धोरणात प्राचीन शिक्षण पद्धती व बहुविद्याशाखीय (Liberal Education) आणि (Multi disciplinary education) एकमेकांशी जोडण्याचा प्रयत्न केला आहे. हे केवळ अशक्य आहे, देशातील उपलब्ध सर्व साधने व त्रुटी लक्षात घेतल्याशिवाय हे करता येणार



नाही. या धोरणात २०३० पर्यंत प्रत्येक जिल्ह्यांत एक मॉडेल बहुविद्याशाखीय उच्च शिक्षण संस्था असेल असे नमूद केले आहे. मग अगोदरच्या मॉडेल शिक्षण संस्थांचे काय? शिक्षण संस्था म्हणून टिकून राहयचे असेल तर प्रत्येक शिक्षण संस्थेला खालीलपैकी काहीतरी दर्जा प्राप्त करावा लागेल .

१.संशोधन करणे २.संशोधन व शिकविणे ३.शिकविणे आणि डिग्री देणारे उच्च शिक्षण संस्था या तीनपैकी एका स्तरात आपला दर्जा प्रत्येक महाविद्यालयास निश्चित करावा लागेल. नाहीतर महाविद्यालय बंद होतील. योगा, गणित, सांख्यिकीय आणि संगीत इत्यादी विषयांचे शिक्षण अनिवार्य असेल.भारतातील नालंदा तक्षशिला, वल्लभी विक्रमशिला ही आदर्श विद्यापीठे त्यांची निर्मिती कशी झाली त्याचा उहापोह न करता या विद्यापीठांचा सरळ संबंध बहुविद्याशाखीय शिक्षणाशी जोडला आहे. माझ्या मते (गृध्रत्तद्गृध्रं कद्रघच्छद्गृध्रं कृदद्गृध्रं कृच्छद्गृध्रं) या सुबक नावाखाली विद्यार्थ्यांची हद्दपारी कायदेशीर केली जाणार आहे. त्यामुळे कागदावर गळती कमी होऊन ५० % पर्यंत Gross Enrolment ratio पूर्ण होणार आहे. एक-दोन वर्षांचे कोर्सेस केलेले विद्यार्थी अर्धकुशल राहून वडिलांच्या व्यवसायात ढकलले जाण्याची दाट शक्यता आहे. स्वायत्त महाविद्यालयातून 'बाजार केंद्रीय' अभ्यासक्रम सुरू करण्याचे स्वातंत्र्य महाविद्यालयांना मिळणार आहे. लोकल टीचर्स, लोकल experts, लोकल volunteers इत्यादींची भरती कंत्राटी पद्धतीने केली जाण्याची दाट शक्यता आहे. यासाठी एक अमेरिकन शब्द tenure हा वापरण्यात आला आहे. यूजीसी चे अस्तित्व नष्ट होऊन त्या ठिकाणी हायर एज्युकेशन कौन्सिल ऑफ इंडिया येईल. यामध्ये १२ सदस्य असतील. त्यातील फक्त दोन सदस्य academician असतील असा उल्लेख आहे. विद्यापीठमध्ये बोर्ड ऑफ गव्हर्नर्स असेल, त्यांची नियुक्ती सरकार करेल. यामध्ये विद्यार्थी, प्राध्यापक, रोटेशन नुसार येणारे इत्यादींचा समावेश आढळत नाही. लोकशाही प्रक्रियेला आव्हान निर्माण होणार आहे. नवीन धोरणानुसार Vice Chancellor जाऊन त्या ठिकाणी चीफ एक्झिक्युटिव्ह येणार असेल तर ते लोकशाहीला मारक ठरेल. शिक्षणाच्या

खाजगीकरणामुळे व बाजारीकरणामुळे भांडवली कंपनीना कमी मोददल्यात श्रम विकण्या व सेवा देणारा मजूर लाभणार आहे.

अशाप्रकारे नवीन शिक्षणविषयक धोरणात अनेक गोष्टी चांगल्या आहेत त्याचबरोबर वाईटही दिसत आहेत. विशाल महासागरासारखे जरी धोरण असले तरी ते पाण्यावर लिहिण्यासारखे कुचकामाचेही आहे. याचे सारे यश-अपयश हे अंमलबजावणीवर अवलंबून राहिल.

*Sajjangaikwad68@gmail.com*

आनंदराव घोडे उर्फ बाबाजी महाविद्यालय,

कदा,ता.आष्टी,जि.बीड.

\*\*\*\*\*

*multiple entry and exit*



An artistic illustration of a woman with long brown hair, wearing a red shawl and dark pants, sitting on the ground in a forest. She is holding an open book and looking down at it. The forest is filled with tall trees and many leaves are falling around her, creating a warm, golden atmosphere. The background is a soft, glowing light filtering through the trees.

CONTEMPORARY INDIAN ENGLISH NOVELISTS:

# *Style & Technique*

-Dr. Shailaja B. Kuchekar  
-Dr. Sajjan D. Gaikwad

*Lejint*

# CONTEMPORARY INDIAN ENGLISH NOVELISTS:

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-Dr. Shailaja B. Kuchekar (M.A. M.Phil. NET & Ph.D.)

- Dr. Sajjan D. Gaikwad (M.A. SET & Ph.D.)

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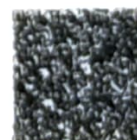
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# PREFACE

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*This reference book aims to provide a comprehensive set of named reactions and reagents for organic chemistry, which will be suitable for scholars of chemistry. The reference book concentrates on core topics name reactions and reagents which are most likely to be common to those organic chemistry courses which follow on from a foundation or introductory general chemistry course. The knowledge of organic reactions and reagents are must for the study of fundamentals of organic chemistry as reactions are the heart of organic chemistry. Mechanism of reactions tells as how the molecules initiate reaction; permit us to find pathways of all reactants, which enable us to predict the nature of product expected. Many name reactions and reagents available in literature. We have selected some common reactions and reagents which are useful to understand the fundamentals of organic chemistry for any university undergraduate and postgraduate students. Out of them, some reactions for the synthesis of compounds have been described which have great synthetic utility in the field of pharmaceuticals. In deciding the depth of topic, we relied upon my experiences as a classroom teacher and interaction with organic chemistry scholars.*



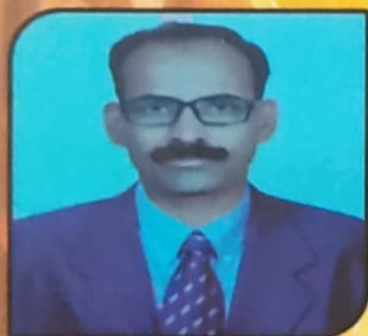
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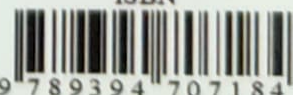
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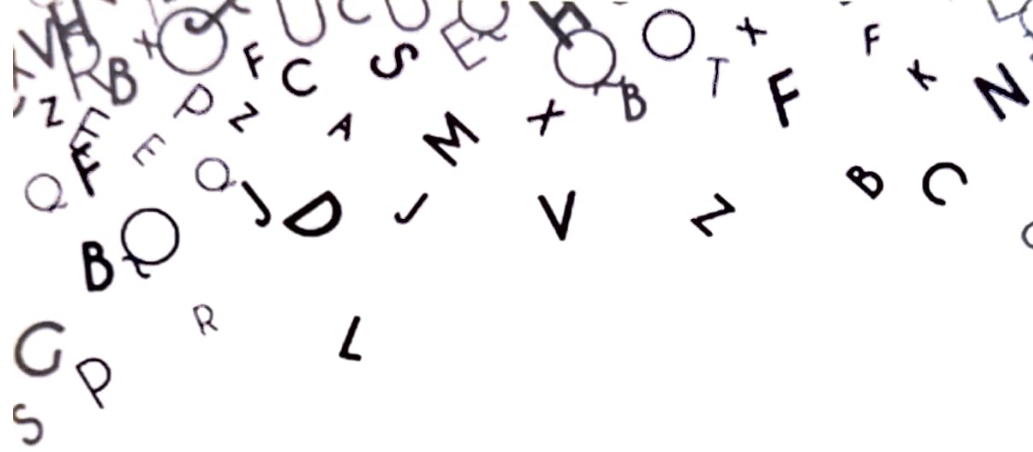
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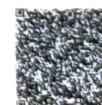
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# PREFACE

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*The Word Grammar means different things to different people. To the ordinary citizen, it connotes to correctness or incorrectness of the language that he or she speaks. To a school student, it means an analytical and terminological study of sentences. Knowledge of grammar helps the student in the correction of mistakes and improvement of written work. A person can't learn a foreign language accurately only through a process of unconscious assimilation. Grammar is a sure ground of reference when linguistic habits fail us. So grammar is indispensable for the student. In this paper my aim is to bring the attention of the language teacher as well as the learner about the real utility of grammar in teaching English language. Hence, let's discuss some basic things about English grammar and composition.*

*Grammar is the study of words and the ways words work together; an invisible force that guides us as we put words together into sentences. Any person who communicates using a particular language, consciously or unconsciously becomes aware of the grammar of that language. But in this context I would like cite a wonderful example as described "A writer has given a beautiful analogy to illustrate the use of knowledge of Grammar. Imagine two car drivers. The first driver knows only driving and nothing about the working of the engine. He feels helpless whenever there is some trouble with the machinery. The second driver knows driving and also understands the working of the machinery. The person who knows grammar is like this second driver. In case he doubtful about the correctness of a particular thing, his knowledge of grammar comes to his rescue". Therefore, to speak in a clearer and more effective manner we have to study grammar. For the person who has unconscious knowledge of grammar, it may be sufficient for simple language use. But the persons who wish to communicate in the artistic manner with well-defined structures must go for the greater depth of understanding and proficiency what the study of grammar offers.*

*The next activity that helps significantly is reading and listening to English-speaking sources that contain mostly understandable words and/or phrases. The more learners process these input and make efforts to understand, the better and the sooner their mind will approximate the system of the English language. In other words, the principle is simple: the more one listens to and reads English input that he or she can understand, the more quickly their mind operates like the English grammar system.*

*Another activity that supports and expedites grammar learning is noticing English grammatical patterns. If the first strategy above draws on simple understanding of the input, this strategy draws attention to the patterns and silently commits them to the language system in the mind. This also involves parsing the sentences and analyzing the elements of sentences in order to produce output with the same patterns. In addition to the two activities above, an old adage "practice makes perfect" still works effectively. Mastery of grammar calls for a lot of intensive practice. This is where grammar books play out their roles. If done regularly, the exercises in the books will enable a learner to gain increasing mastery of the patterns.*

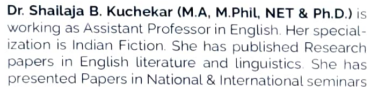
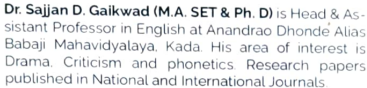
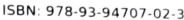
*Last but not least, the learning of grammar benefits from error corrections. Learners will come to a stage where they need to produce utterances or sentences, and it is at this stage that they should heed the corrections given by their teachers or more able friends.*

*In short, processing a lot of comprehensible input, noticing patterns, and attending to feedback are some strategies for mastering English grammar and composition.*



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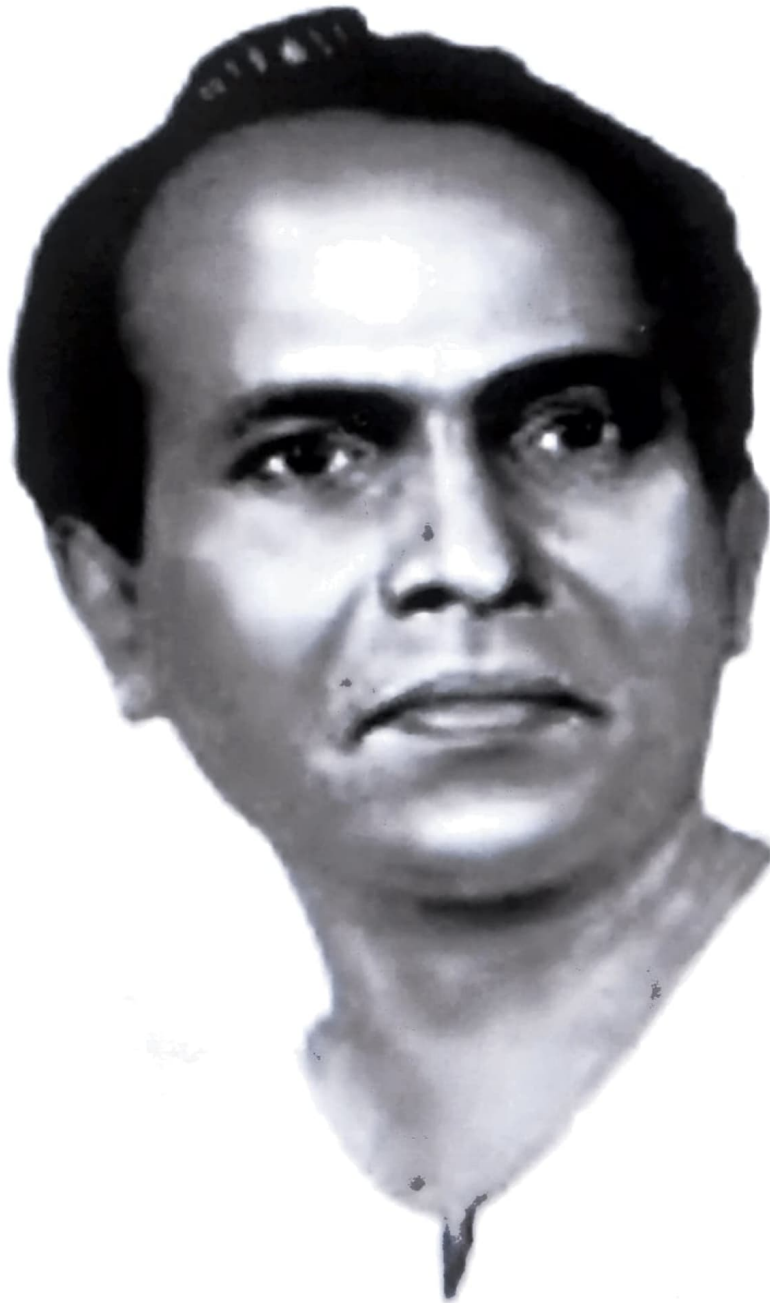


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# **ANNA BHAU SATHE**

*A Voice of Marginalized Society*



*Editor*

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## Chapter-4

# Anna Bhau Sathe: Maker of Indian Literature

-Ms. Shailaja B. Kuchekar

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### Abstract

Indian literature is read all over the world. Various regional languages and regional writers have contributed to Indian literature. These writers presented their regional and social problems. Among them, Anna Bhau Sathe is one of the Indian writers who has created his own place in the world of literature. The contribution he has made to Indian society as a social reformer is greater than the contribution as a writer. He has used his skill of writing to awaken the weaker part of Indian society. He tried to lessen the lower class exploitation and sufferings through his literature. He used popular forms of literature like *Powada* and *Lawani* to make the society aware of the reality about the lower caste. He became popular as a writer and poet as well as a reformer. His way of writing for the sake of enlightenment made him different from other writers. This gave way to shape the Indian literature. He created a group of followers who read and created the similar type of literature. He was inspired by Dr. Babsaheb



Ambedkar's writing. But Dr. Babasaheb Ambedkar himself was inspired by Anna Bahu Sathe's literary works and with his struggle as a reformer. The coming generations inspired by Sathe's works as he gave a new direction to the Indian literature and created a different place in the world literature.

**Key Words:** *Dalit*, Literature and Indian Literature

## Introduction

India is the land of culture. Its culture is followed and appreciated all over the world. 'Indian Culture' has been the area of interest of the research scholars and students. Not only culture but the Indian literature is also the thing that has been the topic for discussion. Literature in India has started around late 19th century. There are many Indian writers who have contributed great pieces of literature to the world of literature. But Bankimchandra Chatterjee's *Rajmohan's Wife* is said to be the first Indian English novel. It is evident that history of Indian literature does owe a lot to Bengali literature. As K. R. Srinivasa Iyengar states in his book *Indian Writing in English*, "It was in Bengal that the literary renaissance first manifested itself; but almost immediately afterwards, the signs of 'new life' were to be seen in Madras, Bombay and other parts of India as well."<sup>1</sup> Bengali writer started writing in English; others translated their Bengali works into English. Thus, the literary renaissance was begun in Bengal. But the writers throughout India were trying their hands in English. Their new ideas in writing were coming out with the literary works they created. In those days the writers from Madras, Bombay and some other parts of India were creating new and innovative literary pieces in English.

## Anna Bhau Sathe: Maker of Indian Literature

Indian writers not only wrote in English but also in their mother tongue. Literature in various regional languages was created by the Indian writers. Anna Bhau Sathe is also among them. He was a social reformer, poet and novelist. He has

written novels, poems and other literary genres in Marathi. He depicted rural Indian society and the lower caste people with their problems. Being a lower caste, rustic and a downtrodden he could experience and feel the situations and present it with truth and reality. Unfortunately, he couldn't take education. He could attend only a one and half day school. Indian caste system, the mentality of not allowing lower caste people to learn and live a good life and economically low condition of his family forced him to do odd jobs. He could somehow manage to have bread for his family by working as a labour. But he had a strong feeling for education. So he learned to write and started writing novels and poems to uplift the caste and the society in which he lives. His works are the best pictures of the lower social class. He himself had witnessed the men and women bullied by the upper class people. The rustic men and women depicted in his works were brave; they were ready to fight for the undertrodden. The characters in his novels are appreciated and adored by the readers. Specially, bravery and the ability to fight for the downtrodden are shown in his works.

Anna Bhau Sathe wrote in the age when upper middle class writers like Phadake and V.S. Khandekar were writing entertaining pieces of literature. There was no place for *Dalit* literature. But Anna Bhau Sathe began to write on the workers, exploited lower class people, rustic and economically poor people. This kind of writing gave birth to the *Dalit* movement. Being a worker, he has experienced a great deal of suffering. So his works were the real picture of the pathetic condition of lower class people. Dr. B. R. Ambedkar's participation in social movements and his works have been great impact on Anna Bhau Sathe's writings and his social activities. Dr. B. R. Ambedkar also believed that Anna Bhau Sathe's one ballad is more powerful than Ambedkar's one speech. Thus, his literature was getting shaped and it was giving shape to the literature created in India.

Like Dr. B.R. Ambedkar, Anna Bhau Sathe also has the impact of Jyotirao Phule's writings and his social work. He



was using his skill of writing for the development of weaker class of the society. For that he presented the exploitation of lower social class by the upper class. This proved helpful for the enlightenment and the awakening of the exploited people. His characters and themes revolve around the reality in the society. He belonged to a lower caste. This untouchable caste was not allowed to get along freely in society. They have no right to get education and participate in the religious programmes. So the people belonging to this caste have to do the lower type of jobs like cleaning, sweeping, etc. Many times they have no works so no food to eat. In such situations they have to steal something for the urge of stomach. Sathe has presented the characters belonging to this lower caste that they are not merciless but full of self-respect. His characters are rebellious against the unnecessary social customs. They actually fight for the protection of human rights. Through his literature, Anna Bhau Sathe shows the hard-working labor class. The literature also shows the strong feeling that the hard-working and suppressed should be respected. His characters are full of self-respect and bravery. Presentation of the lower class, their exploitation by the upper class and the bravery and the self respect of the lower class men and women in Sathe's literature helped to get the new dimension to the Indian literature. Ballads and poems, being a popular literary form also contributed to give shape to the Indian literature.

His writings depict rural India, true picture of lower class society, changing image of rustic women, communal conflict, social class conflict, etc. He chooses his themes and characters as to represent the true picture of Indian society. This gave birth to social reforms. Sathe became icon to *Dalits*. He chose the folkloric narrative styles like *Powada* and *Lawani*. This kind of narrative poems easily made him popular. He became popular not for his literature but also for his way of social reform. The community was awakening. There was impact of foreign literature on Indian literature, specially, on Marathi literature. But Sathe inserted new ways and styles in writings which helped the Indian literature to take a new shape and



new style. New generations inspired and imitated his styles. Gangadhar Pantawane, Namdev Dhasal carried on this heritage of *Dalit* literature. They wrote books like *Dalitanche Prabodhan* and *Aambedkari Chalval Aani Socialist, Communist* respectively. Sathe's impact can be seen easily in the writings of these writers. The heritage is now followed by many new writers who are the followers of Sathe's literature. Laxman Mane's *Upara*, Narendra Jadhav's *Ambedkar: Awakening India's Social Conscience*, Laxman Gaikwad's *Uchalya* are the books which are related to lower class conflict and social awakening. Thus, Anna Bhau Sathe's writings have proved to be a turning point in Indian literature. It gave new shape and style to the Indian literature. Not only to the period which Sathe belongs to but also to the coming generations Sathe's writings is the inspiration in the area of literature.

## Conclusion

Being an icon to *Dalits* Anna Bhau Sathe has contributed great literary pieces to the Indian literature. His writings have proved inspiration to the generations. Not only in India but his literature has been read all over the world. The translation of his works in different languages is in itself a great honour to Anna Bhau Sathe and his contribution. He was not the icon of *Dalits* for his writings only. He was a social reformer. He presented the pathetic and real situation of undertrodden. He used his writings as a tool in his social fight. He was unaware of the fact that his literary works are going to be the turning point in shaping the Indian literature. His literature stands as a literature of entertainment as well as the literature of reform.

## REFERENCES

- Iyengar, K. R. Srinivasa. *Indian Writing in English*. New Delhi: Sterling Publishers Private Limited. 2006.
- Gajarwala, T. J. *Untouchable Fictions: An Introduction to Dalit Writing*. New York: Modern Language Initiative. 2012.

Iyengar, K. R. Srinivasa. *Indian Writing in English*. New Delhi: Sterling Publishers Private Limited. 2006.

Patil, V. Waghmare, M. Gaikwad, V. Satyashodhak Anna Bhau Sathe: A Humanist Philosopher. Latur: Shaurya Publications. 2018.

Tharu, Susie. *The Exercise of Freedom: An Introduction to Dalit Writing*. New Delhi: Navayana Publishers. 2013.

Wadgujar, Vandana. *Anna Bha Sathe: Sahitya aani Samantha*. Jalgaon: Prashant Publications, 2015.

— — — — / / — — — — — *Sahityaratna Lokshahir Anna Bhau Sathe: Niwadak Wangmay* (Vol. I). Pune: Charitra Sadhane Prakashan Samiti. 2017.

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## Role of Language in New Education Policy

Dr. Kuchekar Shailaja Baburao

India has been appreciated for its ancient culture, tradition and customs. Its heritage has become the attraction for the world. It is being adored and should be taken care of as to keep it safe for the coming generations. Young generation is the future of nation. It is necessary to hand over the ancient and rare things to the next generation. New Education Policy formed in 2020 but yet to be implemented has some points which help to keep the tradition and culture alive. The government of India has designed the new education policy to become 'global knowledge superpower'. They have included some necessary methods and removed some unnecessary points in the policy design.

With the reformation of New Education Policy India's overall educational system is remodeled. Particularly, ancient tradition and language are focused on in the new policy. Children's overall personality development is expected through New Education Policy. The way in which the instructions are given affects the teaching-learning process. Medium of instruction plays a vital role in the process. Children understand in a proper manner if they are taught in their native language. The New policy does not insist a particular language as a medium of instruction. Children are free to take two or three regional languages. There is no force of a particular or foreign language. It is actually a process of universalisation of education from preschool to secondary school. The children learned through this new system will be ready to face the world, not only India. Innovative ideas in the learner's minds are given shape with this new education policy. They will be given quality education through using proper language. Their mental health as well as social interaction will be improved. Interaction happens with the help of language. The native language or mother tongue will make them



Indian culture and ancient languages are the attraction for the whole world. New education policy has included ancient Indian languages in the system. Learners are free to choose ancient ent

This will again show the importance of mother tongue.

Way to teach is through mother tongue. Translation will make it easy. The will not be wasted on knowing the language. The proper tongue or regional language. It will make the learner's understand language content in other languages will be translated into mother provide the concepts in the native language. As the focus is on the understand in other languages. So translation is the best way to innovative ideas and concepts. Some of the concepts are not easy to The language plays vital role in the understanding of the

teachers. Such teachers will be created for the new education system. best out of the learners it requires highly qualified and well-equipped emphasis is on experimental learning and social interaction. To get burden of examination are also the features of this new policy. More health, social interaction and no compulsion about language and no understand the other concepts. Focus is on understanding, mental enough knowledge about the language it will become easier to the acquisition of language occurs in this stage. If learner's have speaking, reading, writing language. This stage is very important as secondary stage. Among these stages preparatory stage deals with like foundational stage, preparatory stage, middle stage and Different stages are included in the teaching-learning process

focus is given to the Mother tongue or regional language.

they understand it. So the burden of translation is reduced as the other language they try to translate it in their mother tongue and then Children understand in their native language. If they listen or read in mother tongue they will have to understand the language first. intellectual as well as mental health. If they are not taught in their language is very much important in preparing the learner's high quality education with the focus on language. The knowledge of The new policy becomes platform for vocational training and

policy aims at children's all over growth with mental stability. The comfortable and they will understand the concepts properly. The

languages like Sanskrit or any other language. It will fulfil the aim of saving ancient Indian traditions and languages. The learner's will choose the languages themselves and so will learn without any burden.

Today's modern world can not avoid technology. The modern technology must be included in the education system. So the artificial intelligence is included in the education. The new policy is based on access, equity, quality and accountability. Thus the mathematical thinking, scientific temper coding and vocational education is included in the system. At a particular stage these concepts will be introduced to the students. Step by step learning will enhance the quality of education and understanding of new concepts. Knowledge of technology, e-learning will make the learners technically strong and the study of ancient, regional traditions, ethical reasoning, and socio-emotional learning will make them aesthetically strong. The education will inculcate the feeling of social responsibility through the social interaction. It will develop the learner thoroughly. Quantitative and logical reasoning, digital literacy, computational thinking and scientific temper are necessary in the building of human personality. All these features are included in the new policy. But knowledge of languages and communication skills are equally important. Communication skills are developed with the knowledge of language. So languages are very important. The policy fulfils all the needs of a perfect personality as it includes the languages in the education system.

Understanding is very important so the medium of instruction is mother tongue upto particular age group. Mother tongue is a proper medium to learn new things. Basic knowledge will be perfect if learned through mother tongue. Not only the medium of instruction but also the text books are in mother tongue. With the help of mother tongue learners will understand spoken as well as written language properly. They will hardly need any help to understand the concepts. Teachers will play the role of mentor only. The students are given the option of two to three regional languages. If they have some difficulty in their mother they can choose some other regional language.



So that the learner can not find any difficulty in the process of learning as the learners cross the initial stage they are able to opt for the foreign language. There is no compulsion of language. It can be learner's own choice. Thus at an initial stage help of mother tongue and at the secondary stage knowledge of foreign language by his own choice will make the process of learning easier and interesting.

The role of language has been the important part of teaching-learning process. The compulsion of language, particularly a foreign language increases unnecessary burden on the learner's mind. Three language formulas have compulsion about languages. But the revised education policy has no compulsion about language. So the learner's can learn the concepts without bueder. They also have the option of selecting the language of their own choice. They can choose two to three regional languages. Mother tongue as a medium of instruction makes the learning comfortable. Translation is ok ne of the ways to provide various concepts in native languages. Thus the government has taken care of the learner's mental, intelectual as well as social abilities. Learners can have the better experience while learning at different age groups. The new education policy will create the better generations ahead.

#### References:

- 1) Aggarwal, J. C. Development of Education System in India, New Delhi: Shipra publication, 2012.
- 2) Bachhar, Subrata. Dr. Mitra (De), Mom. National Education Policy 2020: Unmasking the Perspectives, New Delhi: Crescent Publishing Corporation, 2021.
- 3) Dr. Washist, Yatish. Dr. Bala, Kiran. Dr. Naithani, Rajesh. Ed. National Education Policy 2020: Perspectives and Perspects, New Delhi: Pacific Books International, 2021.
- 4) Tilak. Jandhayala, B. G. Ed. Education in India: Policy and Practice, New Delhi: Sage Publications India Pvt. Ltd, 2021.

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# Plant Breeding and Seed Technology

Dr. Sangeeta Roshanlal Ahuja  
Dr. Vishal Atmaram Wakode  
Dr Suman Ambadas Khedkar



# Plant Breeding and Seed Technology

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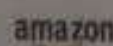
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# Investigation of Physical and Dielectric Properties of Indium Substituted Yttrium Iron Garnet

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## ABSTRACT

The Yttrium Iron Garnet (YIG) series having the general formula  $Y_3In_xFe_{5-x}O_{12}$  ( $x=0.0$ , and  $0.2$ ) were synthesized by using double sintering solid state reaction method. The samples were characterized by X-ray diffraction technique (XRD). The X-ray diffraction studies of compositions revealed the formation of single phase cubic structure with lattice constant ranging from  $12.37$  to  $12.40$  Å to  $x=0.0$  and  $0.2$ . The dielectric properties were investigated using LCR-Q meter (hp HEWLETT) in the frequency range  $100$  Hz to  $1$  MHz. The dielectric constant ( $\epsilon'$ ), dielectric loss ( $\epsilon''$ ) and dielectric loss tangent ( $\tan \delta$ ) were measured as a function of frequency by using LCR-Q meter. The frequency dependence of dielectric measurements was carried out for both the samples.

**Keywords:** Garnet, YIG, X-ray diffraction, Dielectric.

## 1. INTRODUCTION

Ferrite is a class of magnetic material used in various applications. In this current decade, ferrite has most demand in the developments of nanotechnology and its applications. Ferrites represent an important category of materials, which are in great demands due to their numerous applications in many fields. Ferrite materials exhibits many properties. The electrical and magnetic properties of ferrites are strongly dependent on their chemical composition and their method of preparation [1, 2]. It is important to optimize the electrical and magnetic properties of ferrites, for desired applications. Due to their interesting properties scientists, researchers and engineers are still interested in designing the various types of ferrites material substituted with different cations with different valences and prepared by different techniques.

Among the various types of ferrites rare earth garnet especially yttrium iron garnet (YIG) is of great importance for scientist and technologist because of their applications in microwave communication devices such as circulators, gyrators and phase shifters because of its small ferromagnetic resonance line-width, high electrical resistivity and low dielectric loss in microwave regions in many fields [3]. Yttrium iron garnet (YIG) is microwave ferrite, which in polycrystalline form has specific characteristics. The magnetic and crystallographic properties of the magnetic iron garnet have been studied by many workers [4-7]. Substituted iron garnets have found extensive use in wide band non reciprocal microwave devices [8].

## 2. EXPERIMENTAL

Sample preparation is very important in the preparation of sample. Here, the samples of  $In^{3+}$  substituted  $Y_3In_xFe_{5-x}O_{12}$  garnets with  $x=0.0$  and  $0.2$  were prepared by well-known double sintering ceramic method in which a molar ratio of analytical  $Y_2O_3$ ,  $Fe_2O_3$  and  $In_2O_3$  (all 99.99% pure AR grade chemicals, Mumbai) were mixed thoroughly in stoichiometric proportions and then ground to very fine powder by using agate mortar for about 3 hr. These mixtures in powder form were pre-sintered in an Indfur Programmable muffle furnace at  $1200^\circ C$  for 24 h and cooled to room temperature slowly at the rate of  $2^\circ C/min$ . The samples were reground and re-fired at  $1350^\circ C$  for 30 h and slowly cooled to room temperature at the rate of  $2^\circ C/min$ , and then reground for 1 h. The fine powdered sample was pelletized under the pressure  $5$  ton/inch<sup>2</sup>.



### 3. RESULTS AND DISCUSSION

#### 3.1. Structure analysis

Mixed garnet ferrites system under investigation has been structurally investigated by X-ray diffraction technique. Typical XRD pattern for  $x = 0.2$  sample is shown in Fig. 1.

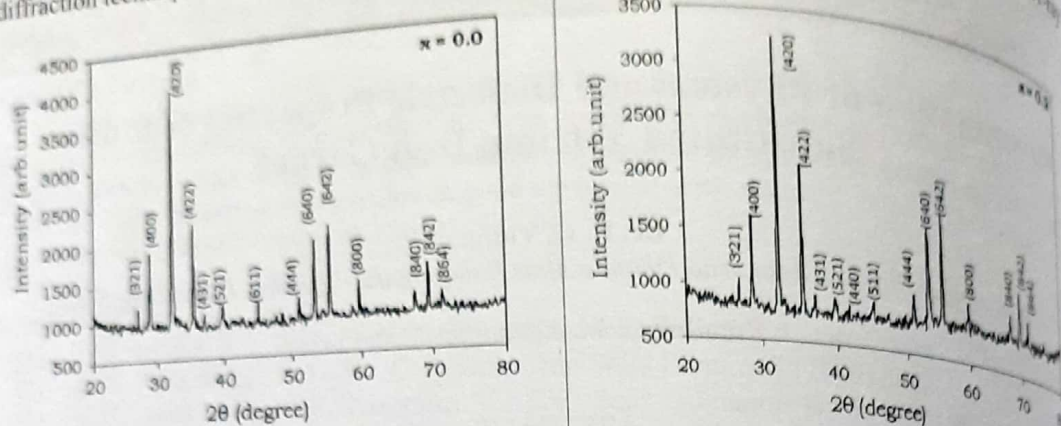


Fig. 1: XRD pattern of  $Y_3In_xFe_{5-x}O_{12}$  for  $x = 0.0, 0.2$  samples.

The XRD pattern shows the reflections namely (321), (400), (420), (422), (431), (521), (611), (444), (640), (642), (800) and (842). No extra peaks other than cubic structure have been observed in the XRD pattern. The Bragg peaks are sharp and intense. The lattice parameters are calculated using XRD data and are given in table-1. It is observed from table-1 that lattice constant increases with increase in indium content ' $x$ '. The ionic radii of yttrium ( $0.89\text{\AA}$ )  $Fe^{3+}$  is ( $0.67\text{\AA}$ ) and indium ( $0.81\text{\AA}$ ) hence we observe variation in the lattice parameter with indium substitution. The bulk density of all samples was measured using Archimedes principle and values are tabulated in table-1. Bulk density increases with increase in indium content ' $x$ '. Using the values of molecular weight and volume of the sample X-ray density was calculated. The values of X-ray density are also listed in Table 1.

X-ray density increase with composition ' $x$ '. The observed variation in X-ray density is attributed to increase in volume of the samples. The crystallographic parameters (lattice constant, X-ray density) are in good agreement with reported values [9]. The most intense peak (4 2 0) of XRD pattern was used to evaluate particle size of the samples. The particle size was calculated by using Scherrer's formula, the values of particle size for all the composition is listed in Table 1.

Table 1: Lattice constant ( $a$ ), X-ray density ( $d_x$ ), bulk density ( $d_B$ ), porosity ( $P$ ) and particle size ( $t$ ) of  $Y_3In_xFe_{5-x}O_{12}$ .

$x$	$a$ ( $\text{\AA}$ )	$d_x$ ( $\text{gm/cm}^3$ )	$d_B$ ( $\text{gm/cm}^3$ )	$P$ (%)	$t$ ( $\mu\text{m}$ )
0.0	12.370	5.179	4.13	20.25	3.42
0.2	12.401	5.224	4.19	19.97	3.25

#### 3.2. Dielectric constant measurements

The dielectric constant measurements were carried out on disc shaped pellets as a function of frequency by using two probe method. The real  $\epsilon'$  and imaginary  $\epsilon''$  parts of the dielectric constant and loss tangent  $\tan\delta$  of  $Y_3In_xFe_{5-x}O_{12}$  were computed according to Smith and Wijn [10, 11]. The variation of the dielectric constant  $\epsilon'$  and dielectric loss  $\epsilon''$  with respect to frequency at room temperature is shown in Fig.2 (a) and (b). It can be observed from Fig. 2 (a) and (b) that dielectric constant ( $\epsilon'$ ) and dielectric loss ( $\epsilon''$ ) both decreases with increase in frequency. It can also be observed that dielectric loss ( $\epsilon''$ ) decreases with increasing frequency much more rapidly than ( $\epsilon'$ ). The behaviour of dielectric constant is attributed by assuming that mechanism of polarization in ferrites is similar to that of conduction mechanism. Iwauchi [12] reported strong co-relation between the conduction mechanism and dielectric behaviour of the ferrites. Fig.2 (c) shows the variation of dielectric loss tangent with frequency at 300 K for all the values of ' $x$ '. It is observed from Fig.2 (c) that, the parameter  $\tan\delta$  decreases exponentially with the increase of frequency. Room temperature



dielectric constant ( $\epsilon'$ ), dielectric loss ( $\epsilon''$ ) and dielectric loss tangent ( $\tan\delta$ ) at 100Hz, 10 KHz and 1 MHz of  $Y_3In_xFe_{5-x}O_{12}$  as shown in the following Table 2.

Table 2: Room temperature dielectric constant ( $\epsilon'$ ), dielectric loss ( $\epsilon''$ ) and dielectric loss tangent ( $\tan\delta$ ) at 100 Hz, 10 KHz and 1 MHz of  $Y_3In_xFe_{5-x}O_{12}$ .

x	Frequency								
	100 (Hz)			10 (KHz)			1(MHz)		
	$\epsilon'$	$\epsilon''$	$\tan\delta$	$\epsilon'$	$\epsilon''$	$\tan\delta$	$\epsilon'$	$\epsilon''$	$\tan\delta$
0.0	864	268	0.31	714	120	0.28	487	112	0.23
0.2	877	324	0.37	814	284	0.35	502	140	0.28

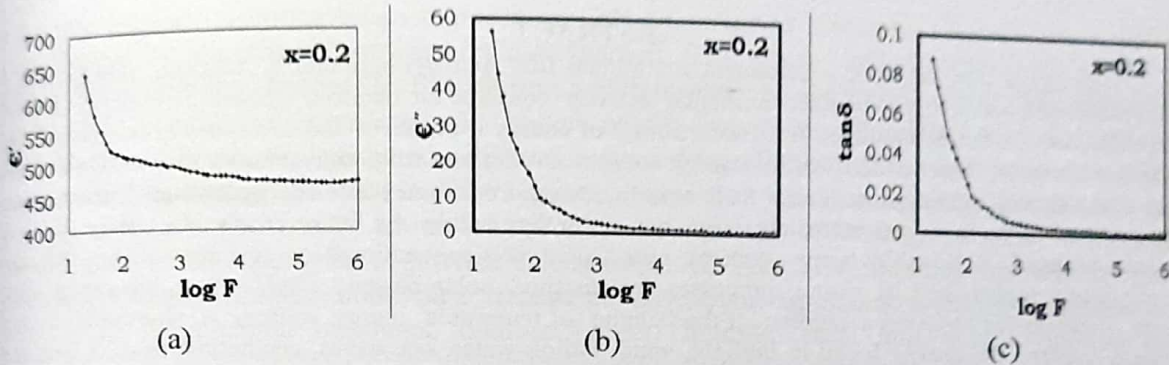


Fig .2: Variation of (a) dielectric constant ( $\epsilon'$ ), (b) dielectric loss ( $\epsilon''$ ) and (c) dielectric loss tangent ( $\tan\delta$ ) with logarithm of frequency ( $\log f$ ) of  $Y_3In_xFe_{5-x}O_{12}$  ( $x = 0.2$ ).

#### 4. CONCLUSIONS

The indium substituted yttrium iron garnet system  $Y_3In_xFe_{5-x}O_{12}$  ( $x = 0.0$ , and  $0.2$ ) have been successfully prepared by standard ceramic technique. The lattice parameter increases slightly with  $In^{3+}$  substitution. The dielectric constant ( $\epsilon'$ ) and dielectric loss ( $\epsilon''$ ) both decreases with increase in frequency. It can also be observed that dielectric loss ( $\epsilon''$ ) decreases with increasing frequency much more rapidly than ( $\epsilon'$ ). This behaviour of dielectric constant is attributed by assuming that mechanism of polarization in ferrite is similar to that of conduction mechanism. The dielectric loss tangent ( $\tan\delta$ ) also decreases exponentially with the increase in frequency.

#### REFERENCES

- [1]. B. K. Kuanr, P. K. Singh, P. Kisan, N. Kumar, S.L.N. Rao, G.P. Srivastava. J. Appl. Phys. 8 (1986) 63
- [2]. Ibetombi Soibam, Sumitra phanjoubam, H. B. Sharma, H N K Sharma and Chandra Prakash. Ind. J. Phys. 83 (3) (2009) 285.
- [3]. Guo Cuijing, Zhang Wei, Ji Rongjin, Zeng Yanwei. J.Magn. Magn. Mater. 323 (2011) 611.
- [4]. M. A. Gilleo and Geller S.Phys. Rev. 110, (1958) 73.
- [5]. S. Geller and M. A. Gilleo J. Phys. chem. Solids 3 (1957) 30.
- [6]. M. A.Gilleo, J. Phys. Chem. Solids 13 (1960) 33.
- [7]. E. E. Anderson, J. Phys. Soc. Japan Suppl. 17 (1962) 365.
- [8]. B. Lax and K. Button, "Microwave ferrites and ferri-magnetics", McGraw-Hill Book Co. Inc New York (1962).
- [9]. J. Richard Cunningham and Elmer, E. Anderson J.Appl.Phys.32,(1961)S388
- [10]. J. Smit and H. P. J. Wijn, Ferrites, New York, Wiley, 1959.
- [11]. Hongjie Zhao Zhou Yang Bai Zhilun Gui Longtu Li, J. Magn. Magn. Mater.280 (2004) 208.
- [12]. K. Iwauchi, Jap. Appl. Phys. 10 (1971) 1520.

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# Innovative Research in Science and Technology

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## ABSTRACT

The Yttrium Iron Garnet (YIG) series having the general formula  $Y_3In_xFe_{5-x}O_{12}$  ( $x=0.0$ , and  $0.2$ ) were synthesized by using double sintering solid state reaction method. The samples were characterized by X-ray diffraction technique (XRD). The X-ray diffraction studies of compositions revealed the formation of single phase cubic structure with lattice constant ranging from  $12.37$  to  $12.40$  Å to  $x=0.0$  and  $0.2$ . The dielectric properties were investigated using LCR-Q meter (hp HEWLETT) in the frequency range  $100$  Hz to  $1$  MHz. The dielectric constant ( $\epsilon'$ ), dielectric loss ( $\epsilon''$ ) and dielectric loss tangent ( $\tan \delta$ ) were measured as a function of frequency by using LCR-Q meter. The frequency dependence of dielectric measurements was carried out for both the samples.

**Keywords:** Garnet, YIG, X-ray diffraction, Dielectric.

## 1. INTRODUCTION

Ferrite is a class of magnetic material used in various applications. In this current decade, ferrite has most demand in the developments of nanotechnology and its applications. Ferrites represent an important category of materials, which are in great demands due to their numerous applications in many fields. Ferrite materials exhibits many properties. The electrical and magnetic properties of ferrites are strongly dependent on their chemical composition and their method of preparation [1, 2]. It is important to optimize the electrical and magnetic properties of ferrites, for desired applications. Due to their interesting properties scientists, researchers and engineers are still interested in designing the various types of ferrites material substituted with different cations with different valences and prepared by different techniques.

Among the various types of ferrites rare earth garnet especially yttrium iron garnet (YIG) is of great importance for scientist and technologist because of their applications in microwave communication devices such as circulators, gyrators and phase shifters because of its small ferromagnetic resonance line-width, high electrical resistivity and low dielectric loss in microwave regions in many fields [3]. Yttrium iron garnet (YIG) is microwave ferrite, which in polycrystalline form has specific characteristics. The magnetic and crystallographic properties of the magnetic iron garnet have been studied by many workers [4-7]. Substituted iron garnets have found extensive use in wide band non reciprocal microwave devices [8].

## 2. EXPERIMENTAL

Sample preparation is very important in the preparation of sample. Here, the samples of  $In^{3+}$  substituted  $Y_3In_xFe_{5-x}O_{12}$  garnets with  $x=0.0$  and  $0.2$  were prepared by well-known double sintering ceramic method in which a molar ratio of analytical  $Y_2O_3$ ,  $Fe_2O_3$  and  $In_2O_3$  (all 99.99% pure AR grade chemicals, Mumbai) were mixed thoroughly in stoichiometric proportions and then ground to very fine powder by using agate mortar for about 3 hr. These mixtures in powder form were pre-sintered in an Indfur Programmable muffle furnace at  $1200^\circ C$  for 24 h and cooled to room temperature slowly at the rate of  $2^\circ C/min$ . The samples were reground and re-fired at  $1350^\circ C$  for 30 h and slowly cooled to room temperature at the rate of  $2^\circ C/min$ , and then reground for 1 h. The fine powdered sample was pelletized under the pressure  $5$  ton/inch<sup>2</sup>.



### 3. RESULTS AND DISCUSSION

#### 3.1. Structure analysis

Mixed garnet ferrites system under investigation has been structurally investigated by X-ray diffraction technique. Typical XRD pattern for  $x = 0.2$  sample is shown in Fig. 1.

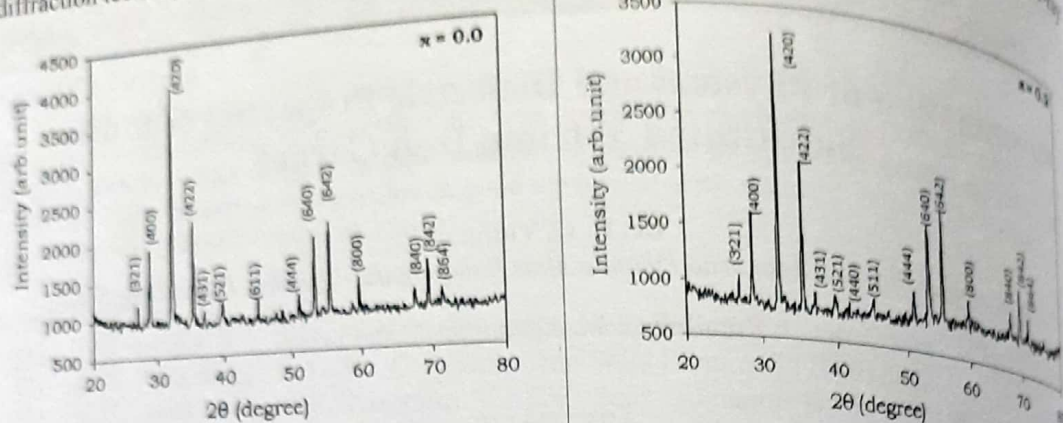


Fig. 1: XRD pattern of  $Y_3In_xFe_{5-x}O_{12}$  for  $x = 0.0, 0.2$  samples.

The XRD pattern shows the reflections namely (321), (400), (420), (422), (431), (521), (611), (444), (640), (642), (800) and (842). No extra peaks other than cubic structure have been observed in the XRD pattern. The Bragg peaks are sharp and intense. The lattice parameters are calculated using XRD data and are given in table-1. It is observed from table-1 that lattice constant increases with increase in indium content ' $x$ '. The ionic radii of yttrium ( $0.89\text{\AA}$ )  $Fe^{3+}$  is ( $0.67\text{\AA}$ ) and indium ( $0.81\text{\AA}$ ) hence we observe variation in the lattice parameter with indium substitution. The bulk density of all samples was measured using Archimedes principle and values are tabulated in table-1. Bulk density increases with increase in indium content ' $x$ '. Using the values of molecular weight and volume of the sample X-ray density was calculated. The values of X-ray density are also listed in Table 1.

X-ray density increase with composition ' $x$ '. The observed variation in X-ray density is attributed to increase in volume of the samples. The crystallographic parameters (lattice constant, X-ray density) are in good agreement with reported values [9]. The most intense peak (4 2 0) of XRD pattern was used to evaluate particle size of the samples. The particle size was calculated by using Scherrer's formula, the values of particle size for all the composition is listed in Table 1.

Table 1: Lattice constant ( $a$ ), X-ray density ( $d_x$ ), bulk density ( $d_B$ ), porosity ( $P$ ) and particle size ( $t$ ) of  $Y_3In_xFe_{5-x}O_{12}$ .

$x$	$a$ ( $\text{\AA}$ )	$d_x$ ( $\text{gm/cm}^3$ )	$d_B$ ( $\text{gm/cm}^3$ )	$P$ (%)	$t$ ( $\mu\text{m}$ )
0.0	12.370	5.179	4.13	20.25	3.42
0.2	12.401	5.224	4.19	19.97	3.25

#### 3.2. Dielectric constant measurements

The dielectric constant measurements were carried out on disc shaped pellets as a function of frequency by using two probe method. The real  $\epsilon'$  and imaginary  $\epsilon''$  parts of the dielectric constant and loss tangent  $\tan\delta$  of  $Y_3In_xFe_{5-x}O_{12}$  were computed according to Smith and Wijn [10, 11]. The variation of the dielectric constant  $\epsilon'$  and dielectric loss  $\epsilon''$  with respect to frequency at room temperature is shown in Fig.2 (a) and (b). It can be observed from Fig. 2 (a) and (b) that dielectric constant ( $\epsilon'$ ) and dielectric loss ( $\epsilon''$ ) both decreases with increase in frequency. It can also be observed that dielectric loss ( $\epsilon''$ ) decreases with increasing frequency much more rapidly than ( $\epsilon'$ ). The behaviour of dielectric constant is attributed by assuming that mechanism of polarization in ferrites is similar to that of conduction mechanism. Iwauchi [12] reported strong co-relation between the conduction mechanism and dielectric behaviour of the ferrites. Fig.2 (c) shows the variation of dielectric loss tangent with frequency at 300 K for all the values of ' $x$ '. It is observed from Fig.2 (c) that, the parameter  $\tan\delta$  decreases exponentially with the increase of frequency. Room temperature



dielectric constant ( $\epsilon'$ ), dielectric loss ( $\epsilon''$ ) and dielectric loss tangent ( $\tan\delta$ ) at 100Hz, 10 KHz and 1 MHz of  $Y_3In_xFe_{5-x}O_{12}$  as shown in the following Table 2.

Table 2: Room temperature dielectric constant ( $\epsilon'$ ), dielectric loss ( $\epsilon''$ ) and dielectric loss tangent ( $\tan\delta$ ) at 100 Hz, 10 KHz and 1 MHz of  $Y_3In_xFe_{5-x}O_{12}$ .

x	Frequency								
	100 (Hz)			10 (KHz)			1(MHz)		
	$\epsilon'$	$\epsilon''$	$\tan\delta$	$\epsilon'$	$\epsilon''$	$\tan\delta$	$\epsilon'$	$\epsilon''$	$\tan\delta$
0.0	864	268	0.31	714	120	0.28	487	112	0.23
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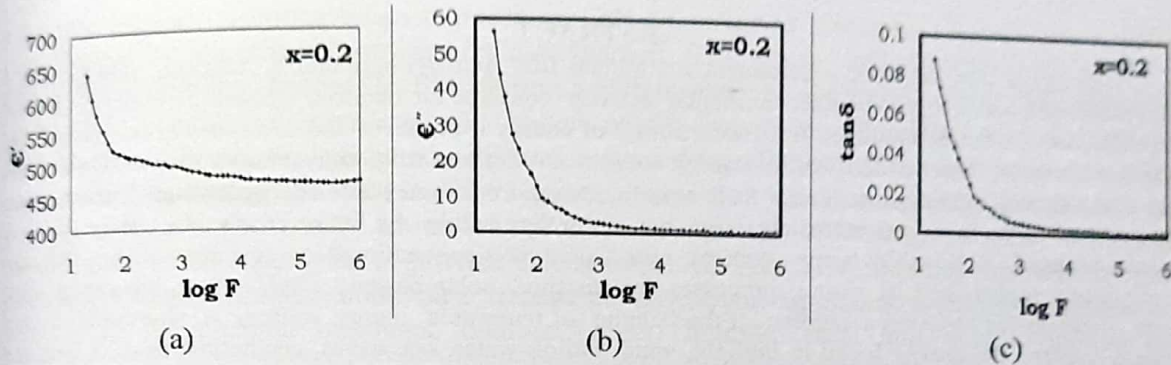


Fig .2: Variation of (a) dielectric constant ( $\epsilon'$ ), (b) dielectric loss ( $\epsilon''$ ) and (c) dielectric loss tangent ( $\tan\delta$ ) with logarithm of frequency ( $\log f$ ) of  $Y_3In_xFe_{5-x}O_{12}$  ( $x = 0.2$ ).

#### 4. CONCLUSIONS

The indium substituted yttrium iron garnet system  $Y_3In_xFe_{5-x}O_{12}$  ( $x = 0.0$ , and  $0.2$ ) have been successfully prepared by standard ceramic technique. The lattice parameter increases slightly with  $In^{3+}$  substitution. The dielectric constant ( $\epsilon'$ ) and dielectric loss ( $\epsilon''$ ) both decreases with increase in frequency. It can also be observed that dielectric loss ( $\epsilon''$ ) decreases with increasing frequency much more rapidly than ( $\epsilon'$ ). This behaviour of dielectric constant is attributed by assuming that mechanism of polarization in ferrite is similar to that of conduction mechanism. The dielectric loss tangent ( $\tan\delta$ ) also decreases exponentially with the increase in frequency.

#### REFERENCES

- [1]. B. K. Kuanr, P. K. Singh, P. Kisan, N. Kumar, S.L.N. Rao, G.P. Srivastava. J. Appl. Phys. 8 (1986) 63
- [2]. Ibetombi Soibam, Sumitra phanjoubam, H. B. Sharma, H N K Sharma and Chandra Prakash. Ind. J. Phys. 83 (3) (2009) 285.
- [3]. Guo Cuijing, Zhang Wei, Ji Rongjin, Zeng Yanwei. J.Magn. Magn. Mater. 323 (2011) 611.
- [4]. M. A. Gilleo and Geller S.Phys. Rev. 110, (1958) 73.
- [5]. S. Geller and M. A. Gilleo J. Phys. chem. Solids 3 (1957) 30.
- [6]. M. A.Gilleo, J. Phys. Chem. Solids 13 (1960) 33.
- [7]. E. E. Anderson, J. Phys. Soc. Japan Suppl. 17 (1962) 365.
- [8]. B. Lax and K. Button, "Microwave ferrites and ferri-magnetics", McGraw-Hill Book Co. Inc New York (1962).
- [9]. J. Richard Cunningham and Elmer, E. Anderson J.Appl.Phys.32,(1961)S388
- [10]. J. Smit and H. P. J. Wijn, Ferrites, New York, Wiley, 1959.
- [11]. Hongjie Zhao Zhou Yang Bai Zhilun Gui Longtu Li, J. Magn. Magn. Mater.280 (2004) 208.
- [12]. K. Iwauchi, Jap. Appl. Phys. 10 (1971) 1520.

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# ENVIRONMENTAL BIOLOGY

(ECOLOGY)

Dr. Bapu S. Khaire  
Dr. Ravindra S. Ganjure



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**“Environment Biology (Ecology)”**

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Dr. B. S. Khaire (M. Sc. Ph. D) is working as Associate Professor and Head Dept. of Zoology at Anandrao Dhonde Alias Babaji Mahavidya laya Kada Dist. Beed MS). He has 29 years teaching Experience at Under graduate level. He as good academic career with extensive research experience of 12 years. He has completed two Minor Research Projects successfully. He has been working as Ph. D. Supervisor in the Faculty of Science and Technology. He has published 33 Research articles in reputed National and International Journals and presented 18 research papers in national and

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# A MANUAL OF - FISH PATHOLOGY



Dr. Sambhaji Ovhal,  
Dr. Sandeep Anarse

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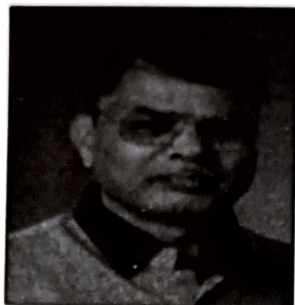
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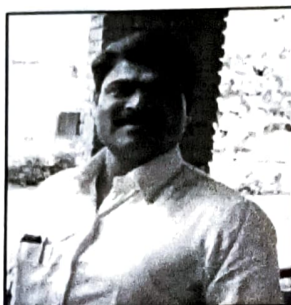
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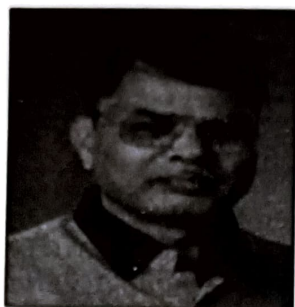
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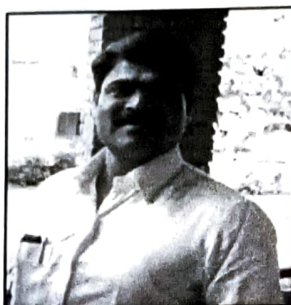
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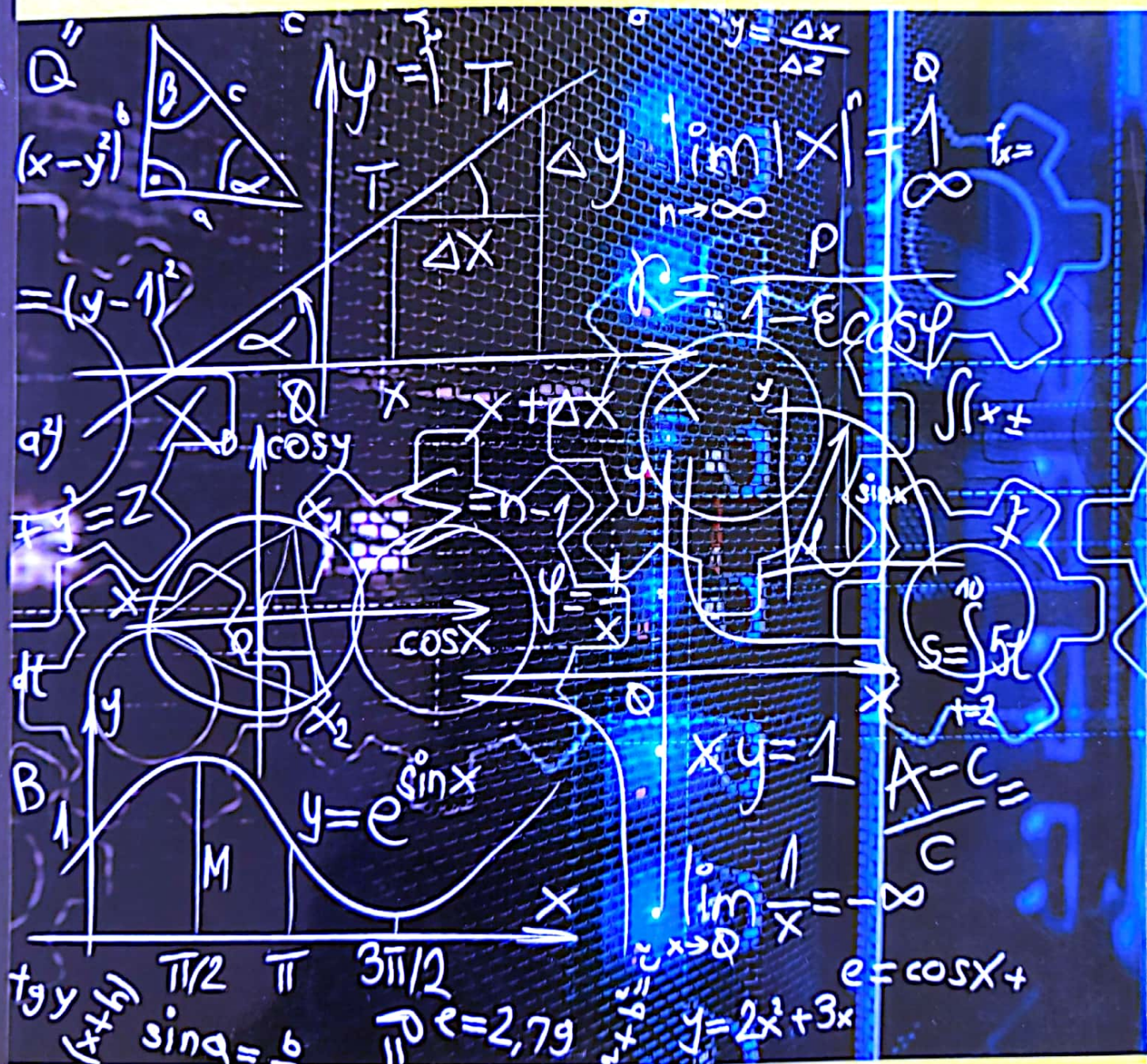
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# INTEGRAL TRANSFORM AND ITS APPLICATIONS



**Dr. D. S. Bodkhe,  
Dr. G. S. Jagtap**



# **Integral Transform and Its Applications**

**- Dr. D. S. Bodkhe**

**- Dr. G. S. Jagtap**



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## Preface....

---

*We present a novel complicated integral transform, the complex SEE transform, in this book. The features of this transform are studied. This complex integral transform is also used to simplify the core issue to a simple algebraic equation. The solution to this basic issue may then be determined by solving this algebraic equation and applying the inverse of this complex integral transform. Finally, the complex integral transform is employed to solve higher order ordinary differential equations. Also, we present several key engineering and physics applications. This chapter of the course teaches two incredibly effective ways to solve differential equations: the Fourier and the Laplace transforms. Beside its practical application, the Fourier transform is also of vital significance in quantum physics, establishing the relationship between the position and momentum representations of the Heisenberg commutation relations. An integral transform is valuable if it helps one to convert a difficult issue into a simpler one. The transforms we will be learning in this portion of the course are largely used to solve differential and, to a lesser degree, integral equations. The theory of Fourier series and integrals has always had considerable challenges and requires a huge mathematical apparatus in dealing with concerns of convergence. It encouraged the creation of techniques of summation, albeit they did not lead to a wholly adequate solution of the issue. ... For the Fourier transform, the inclusion of distributions (thus, the space  $S$ ) is inevitable either in an explicit or hidden form. ... As a consequence one may acquire everything that is wanted from the point of view of the continuity and inversion of the Fourier transform.*

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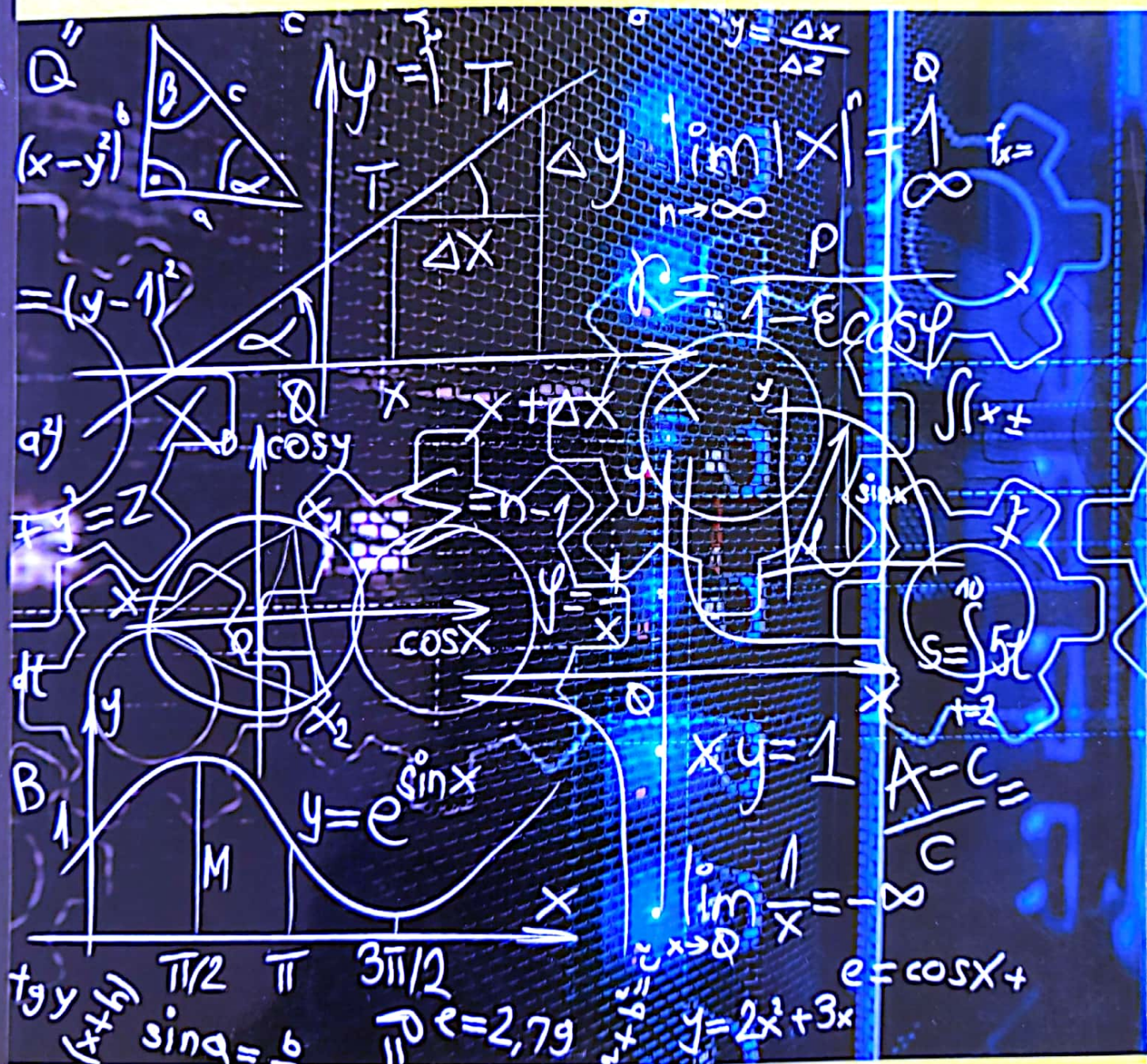
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## Globalization and Higher Education: Changing Trends in Cross Border Education

Dr.B.M.Dhonde, Dr.B.G.Kale

**Abstract:** Globalization is a market-driven process and it stems from a belief that markets play more important role than the State in development. Knowledge-based production has become the distinguishing characteristic of globalized economies. The intellectual capital produced by universities and research institutions has become a crucial factor of production in a globalized knowledge economy. Theological developments, especially in information technology transformed the way the world economy is organized and the way higher education is provided. This paper analyzes the effects of globalization on higher education on the one hand and trends in globalization of higher education on the other. It categorizes the globalization of higher education into three distinct, but related, phases. The first phase experienced a surge in cross-border student flow, the second phase saw the development of education hubs and branch campuses, and the third and the most recent phase witnessed program mobility and is revolutionized by the mystification of online courses such as Massive Open Online Courses.

**(Keywords:** branch campuses, cross-border mobility, education hubs, globalization, internationalization, knowledge economy, Massive Open Online Courses, MOOC)

### Introduction:

Globalization implies free flow of goods and services across borders resulting in an integrated world economy. It is a market-driven process and stems from a belief in markets, as opposed to the state, to promote economic growth and social welfare. Events such as the disintegration of the centralized system of the Soviet Union, spread of democracy among increasingly more countries, liberalization policies following the structural adjustment regime in developing countries, and foundation of the World Trade Organization (WTO) and General Agreement in Trade in Services (GATS) have all contributed to the shaping of a globalized economy. In the early 1990s, globalization was perceived to bring "unprecedented prosperity to all" The end of the same



# नवीन शैक्षणिक धोरण



डॉ. आरगडे अंबादास

# Globalization and Higher Education: Changing Trends in Cross Border Education

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**Abstract:** Globalization is a market-driven process and it stems from a belief that markets play more important role than the State in development. Knowledge-based production has become the distinguishing characteristic of globalized economies. The intellectual capital produced by universities and research institutions has become a crucial factor of production in a globalized knowledge economy. Theological developments, especially in information technology transformed the way the world economy is organized and the way higher education is provided. This paper analyzes the effects of globalization on higher education on the one hand and trends in globalization of higher education on the other. It categorizes the globalization of higher education into three distinct, but related, phases. The first phase experienced a surge in cross-border student flow, the second phase saw the development of education hubs and branch campuses, and the third and the most recent phase witnessed program mobility and is revolutionized by the mystification of online courses such as Massive Open Online Courses.

**(Keywords:** branch campuses, cross-border mobility, education hubs, globalization, internationalization, knowledge economy, Massive Open Online Courses, MOOC)

## Introduction:

Globalization implies free flow of goods and services across borders resulting in an integrated world economy. It is a market-driven process and stems from a belief in markets, as opposed to the state, to promote economic growth and social welfare. Events such as the disintegration of the centralized system of the Soviet Union, spread of democracy among increasingly more countries, liberalization policies following the structural adjustment regime in developing countries, and foundation of the World Trade Organization (WTO) and General Agreement in Trade in Services (GATS) have all contributed to the shaping of a globalized economy. In the early 1990s, globalization was perceived to bring "unprecedented prosperity to all" The end of the same