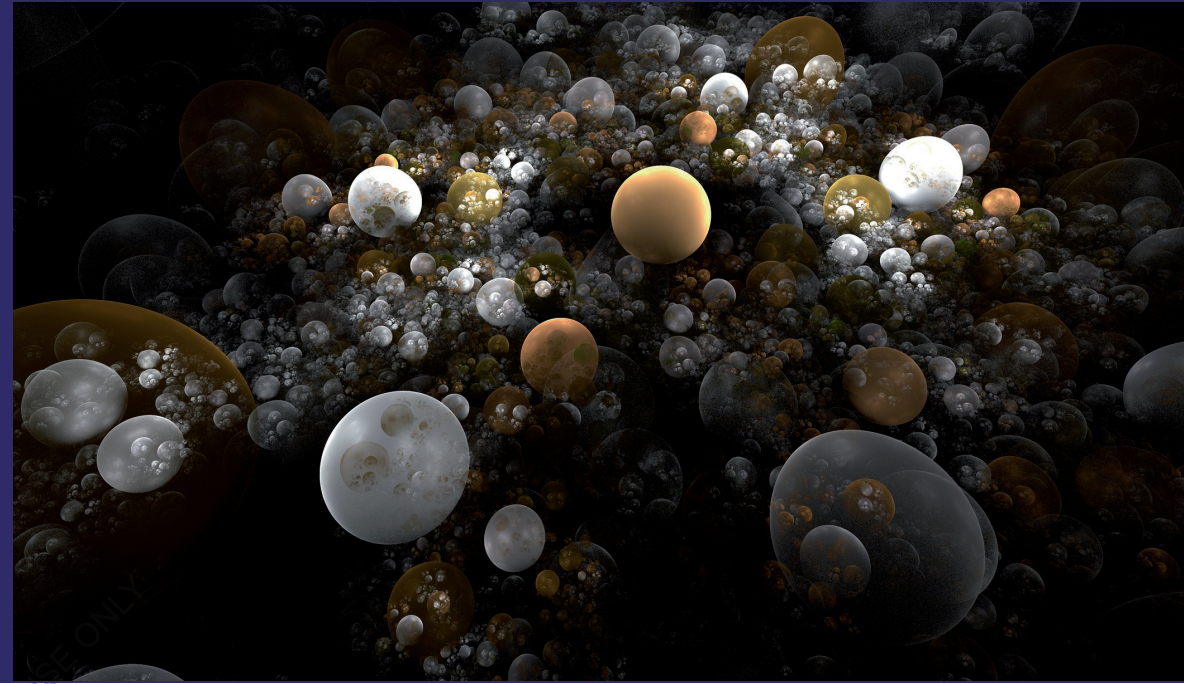


This book deals with the confined energy of a two electron in a spherical quantum dot. The interaction energy and its effect on confined energy are also been discussed. The singlet and triplet state of electron also analyzed. The external perturbation effects on hydrostatic pressure and temperature are also been studied. One can get the idea of finding energy of two electron quantum using perturbation method.

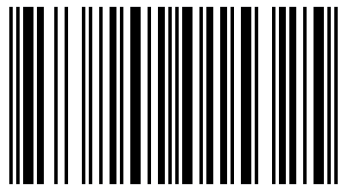


A. Rejo Jeice

Confined Energy Of Two Electrons In a Spherical Quantum dot



A. Rejo Jeice has authored or Co-authored more than 17 research papers in Quantum Mechanics. He has 10 years of teaching and research experience. His recent research focuses on Nanostructures and Quantum devices. At present he is working as Assistant Professor in Physics, in Annai Velankanni College, Thalayavattam, TamilNadu, India.



978-620-2-01532-5

 **LAMBERT**
Academic Publishing

A. Rejo Jeice

Confined Energy Of Two Electrons In a Spherical Quantum dot

FOR AUTHOR USE ONLY

FOR AUTHOR USE ONLY

A. Rejo Jeice

**Confined Energy Of Two Electrons In
a Spherical Quantum dot**

FOR AUTHOR USE ONLY

LAP LAMBERT Academic Publishing

Imprint

Any brand names and product names mentioned in this book are subject to trademark, brand or patent protection and are trademarks or registered trademarks of their respective holders. The use of brand names, product names, common names, trade names, product descriptions etc. even without a particular marking in this work is in no way to be construed to mean that such names may be regarded as unrestricted in respect of trademark and brand protection legislation and could thus be used by anyone.

Cover image: www.ingimage.com

Publisher:

LAP LAMBERT Academic Publishing

is a trademark of

International Book Market Service Ltd., member of OmniScriptum Publishing Group

17 Meldrum Street, Beau Bassin 71504, Mauritius

Printed at: see last page

ISBN: 978-620-2-01532-5

Copyright © A. Rejo Jeice

Copyright © 2017 International Book Market Service Ltd., member of OmniScriptum Publishing Group

All rights reserved. Beau-Bassin 2017

FOR AUTHOR USE ONLY

TABLE OF CONTENTS:

Abstract	1
1. 1 Introduction	2
1. 2 Methods and Calculations	9
1. 3 Results and Discussion	19
1. 4 Conclusion	37
References	39

FOR AUTHOR USE ONLY

FOR AUTHOR USE ONLY

CONFINED ENERGY OF TWO ELECTRONS IN A SPHERICAL QUANTUM DOT AND THEIR CORRELATION EFFECTS WITH EXTERNAL PERTURBATIONS

A. Rejo Jeice*

* Department of Physics, Annai Velankanni College, Tholayavattam,
kanyakumari dist -Tamil Nadu, India – 629157
rejojeice@gmail.com

Abstract

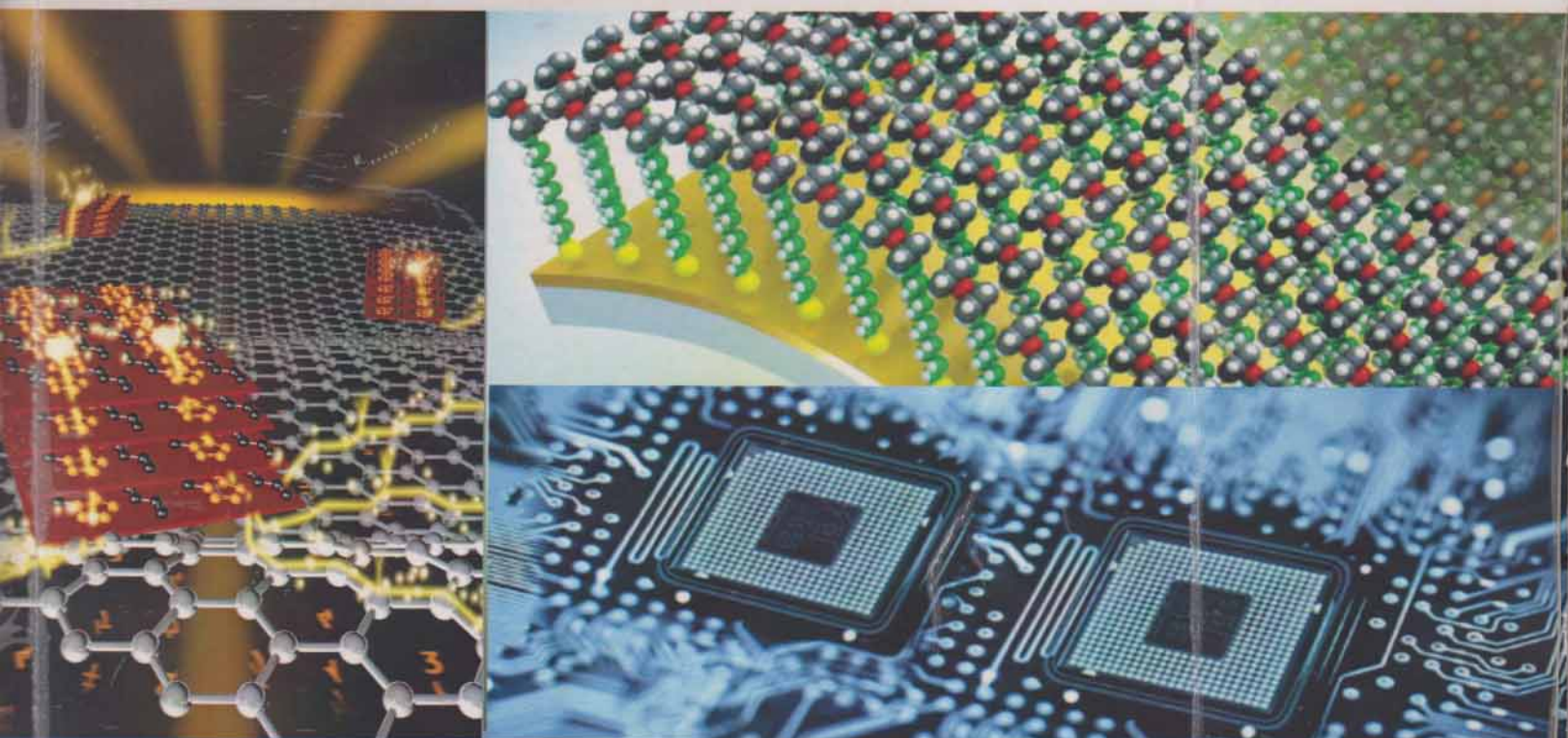
In the present chapter the confined energy of two electrons in a spherical QD and its interaction effects with external perturbations are investigated. The perturbation method is used to find the confined energy and interaction energy. The combined effect of hydrostatic pressure and temperature on interaction energy in a triplet state of two electron spherical quantum dot is computed. All the calculations have been carried out with finite models. The confined energy and its interaction effects of singlet and triplet state of GaAs/GaxIn_{1-x}Sb are discussed. A brief introduction about quantum dot also been given.

Key Words: Spherical quantum dot. Square well confinement. Correlation energies. Singlet and Triplet states. Total Confined energies

*E-mail address: rejojeice@gmail.com.

Phone. No: 08807841121

**Proceedings of the
International Workshop on
Advanced Functional Materials and Devices
8 - 12 January 2017**



Organised by
Department of Physics & Department of Chemistry
Manonmaniam Sundaranar University
Tirunelveli



41	BIOLOGICAL EVALUATION OF NOVEL Cu (II), Ni (II) AND Zn (II) TRANSITION METAL COMPLEXES OF NNO FUNCTIONALIZED SCHIFF BASE LIGANDS FROM CINNAMALDEHYDE AND SEMICARBAZIDE S. Ajith Sinthuja and Y. Christabel Shaji	49
42	CONTAMINATION OF HEAVY METALS IN THE SEDIMENTS OF COIR-RETTING AREAS R. GladisLatha,D. VethaRoy	50
	THERMAL PERFORMANCE OF SPIRAL CONCENTRATING TYPE SOLAR COOKER UNDER THE CLIMATE OF KANYAKUMARI DISTRICT - AN ANALYSIS T.K. Jayaleka, J.Packiam Julius and D.Usha	51
43	SYNTHESIS OF NATURAL CELLULOSIC FIBER FROM THE PEDUNCLE OF <i>ARTOCARPUS HETEROPHYLLUS</i> M. Abisha, R. Krishna Priya, SuthaShobana, JeyaprakashDharmaraja, Manokaran Vadivel,Sundaram Arvindnarayan	52
44	COMPARATIVE STUDY MADE ON STRUCTURAL CHARACTERIZATION OF NATURAL CELLULOSIC FIBER MATERIAL DERIVED FROM FICUS BENGHALENSIS AND MUSA ACUMINATA V. SahayaRansifa, V. Namitha, K.R. Jaya Sheeba,R. Krishna Priya, SuthaShobana	53
45	<i>INVITRO</i> ANTIPROLIFERATIVE AND CYTOTOXIC EVALUATION OF RUTHENIUM(II)-PHENANTHROLINE-PHENDIONE COMPLEX S. Santhiya and Sheeba Daniel	54
46	SYNTHESIS AND CHARACTERIZATION OF NOVEL AROMATIC POLY (ESTER-IMIDE) S CONTAINING BULKYPENDANT GROUPS Y. Christabel Shaji and S. AjithSinthuja	55
47	QUANTUM CHEMICAL INSIGHT INTO MOLECULAR STRUCTURE, CHARGE TRANSFER INTERACTIONS HIRSHFELD SURFACES AND MOLECULAR DOCKINGOF N (7-FLUORO-2-OXO-2H- CHROMEN-4-YL)METHYL MORPHOLINE-4- CARBODITHIOATE - AIDED BY DENSITY FUNCTIONAL THEORY S.J. Jenepha Mary, C. James	56
48	INVESTIGATION ON PADDY CHAFF AS STORAGE MATERIAL FOR SPIRAL CONCENTRATOR T.K.Jayaleka, J.Packiam Julius and D.Usha	57
49	A FUNCTIONAL DEEP UV NONLINEAR OPTICAL CRYSTAL SULPHAMIC ACID ADMIXTURE PHOSPHORIC ACID (SAPA): SYNTHESIS, GROWTH AND CHARACTERIZATION Y. Samson, S. Anbarasu, D.Prema Anand	58
50	ALBUMEN ASSISTED SYNTHESIS OF NANOCRYSTALLINE COPPER FERRITE PHOTOCATALYST P. Aji Udhuaya, M. Meena, M. Abila Jeba Queen, T. Regin Das	59
51	STRUCTURAL AND SURFACE BEHAVIOUR OF CuO AND Pt/CuO NANOSTRUCTURED THINFILMS Jintha. C.G., M. Abisha, S. Sonia	60
52	DETERMINATION OF CATION DISTRIBUTION IN $Mg_xZn_{(1-x)}Fe_2O_4$ SPINELS BY X-RAY DIFFRACTION METHOD M.B. Arthina Titlin, T.R. Beena	61
53	SYNTHESIS AND CHARACTERIZATION OF COPPER OXIDE NANOCUBES BY SPIN COATING METHOD J.Juno Rexmi , C.S.Sajitha, S. Sonia, Naidu Dhannel Jayaram	62

A functional deep UV nonlinear optical crystal Sulphamic acid admixed Phosphoric acid (SAPA): Synthesis, growth and Characterization

Y.Samson^{1,3}, S. Anbarasu², M. Ambrose Rajkumar³ D. Prema Anand^{3*}

¹Department of Physics, Annai Velankanni College, Tholayavattam- 629157, Tamilnadu, India

²Department of Physics, Loyola College of Arts & Science, Mettala-Oilpatty, Rasipuram (Tk.), Namakkal (Dt.)-636202, Tamilnadu, India

³Physics Research Centre, Department of Physics, St. Xavier's College (Autonomous), Palayamkottai-627002, Tamilnadu, India.

* Corresponding Author(s): devarajanpremanand@gmail.com (D. Prem Anand)

Abstract:

An advanced optical functional DUVNLO Sulphamic acid admixed Phosphoric acid (SAPA) crystal was synthesized and grown from aqueous solution by slow evaporation technique at room temperature. SAPA crystallizes in Tetragonal P. It exhibits a short absorption edge closer to 200 nm in UV spectrum. SHG efficiency is measured as 0.59 times of KDP.

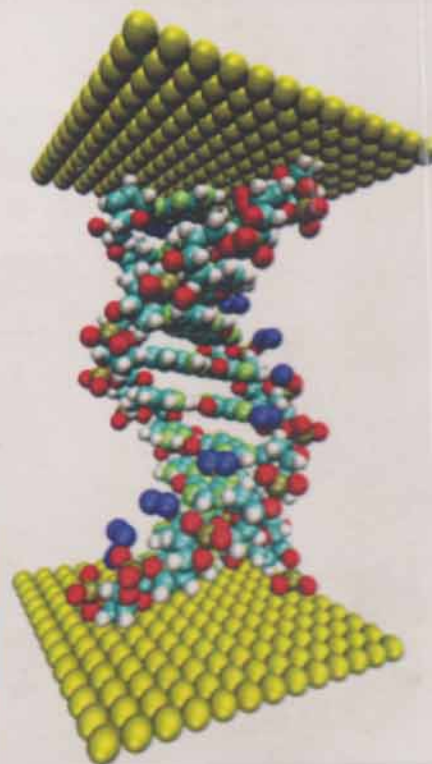
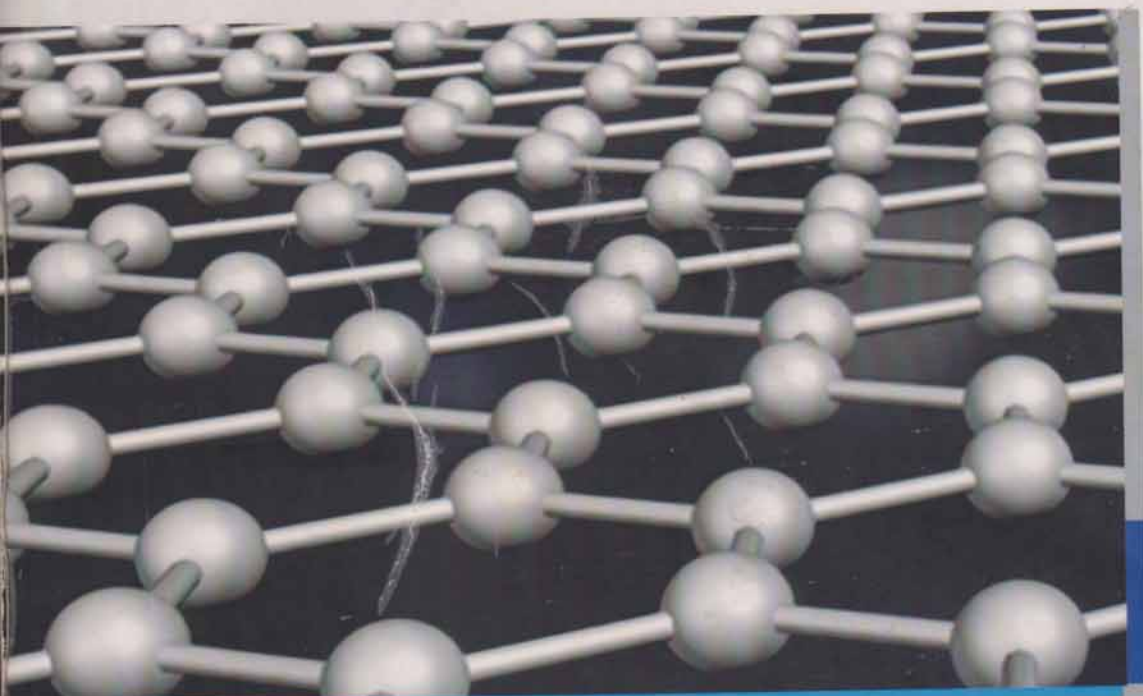
Key-words: SAPA, slow evaporation technique, deep UVNLO, SHG

Introduction:

Global concern has been converged on functional nonlinear optical (NLO) materials which charted the path to harvest energy hugely profitable in laser micromachining, photochemistry, photoemission spectroscopy, lithography, fluorescence detection, surface-enhanced Raman scattering, communication, surgery, atto-second pulse generation etc^[1,2]. Functional NLO materials are capable of functioning to control and alter electromagnetic radiation in ultraviolet (UV), visible, infrared (IR) spectral region. Their optical character as a function of incident wavelength and frequency depends on inherent properties like structure, thermal, chemical stabilities and on external fields applied^[3]. Deep UV (DVU) NLO crystals are optically functioning to transmit the light of wavelengths lesser than 200 nm in UV region by cascaded frequency conversion. They have been fabricated by fusing borates, borate-fluorides, carbonate-fluorides and phosphates with various metal units (alkali, alkaline earth, transition elements). The challenges of decomposing nature of carbonates, hard growth habit and toxicity of berilyium borates, cost effective melt growth techniques were identified. In contrast, phosphate endowed with long chain geometry, good thermal, chemical stabilities, enhanced SHG, easily grown nature circumvent the aforesaid problems. It leverages us to design Sulphamic acid admixture Phosphoric acid (SAPA) optical functional crystal for desired DUVNLO applications.

Experimental Techniques and Material Characterization:

SAPA was obtained from an aqueous solution containing sulphamic acid admixed with phosphoric acid in equimolar ratio was stirred for 3 hrs and allowed for slow evaporation at room temperature. Centimeter sized crystal was harvested within 28-30 days. Crystallographic data was collected from Bruker Kappa APEXII Single Crystal X-ray Diffractometer. The crystalline phases were



Organised by
Department of Physics & Department of Chemistry
Manonmaniam Sundaranar University
Tirunelveli. Tamil Nadu, INDIA.

Sponsored by



CYBA publication Series - IV

Biotechnology for Sustainable Development

Editors

Dr. V. A. J. Huxley

Dr. S. Prakash

Dr. J. M. Sasi Premila

Dr. T.Suresh

CONTENTS

S.No	Chapter	Page No
1	BIOTECHNOLOGICAL APPROACHES IN AQUACULTURE SUSTAINABILITY	7
2	BIOTECHNOLOGY FOR ENVIRONMENTAL SUSTAINABILITY- A REVIEW	28
3	ENVIRONMENTAL BIOTECHNOLOGY: DETAILED PROSPECTS	38
4	BIOTECHNOLOGY FOR DRUG DEVELOPMENT	58
5	THE BENEFITS OF SUSTAINABLE AGRICULTURE IN PUBLIC WELFARE	71
6	BIOTECHNOLOGY IN INTEGRATED PEST CONTROL	75
7	AQUAPONICS – A SUSTAINABLE AGRICULTURE	88
8	AN ECO-FRIENDLY TECHNOLOGY FOR ELECTRICITY PRODUCTION USING MICROBES	93
9	IMPACT OF BIOTECHNOLOGY ON CLIMATE CHANGE	100
10	APPLICATION OF BIOTECHNOLOGY IN MEDICINE	105
11	APPLICATION OF BIOTECHNOLOGY FOR THE SUSTAINABLE DEVELOPMENT OF AQUACULTURE	110
12	DEINOCOCOCCUS RADIODURANS – A TOUGHEST RADIATION RESISTANCE BACTERIUM	120
13	BIOTECHNOLOGY TOWARDS SUSTAINABLE AGRICULTURE AND ENVIRONMENT	125

BIOTECHNOLOGY TOWARDS SUSTAINABLE AGRICULTURE AND ENVIRONMENT

Dr.J.M.SASI PREMILA

Asst.Professor ,Department of Biotechnology

Annai Velankanni College, Tholayavattam.

Abstract:

Biotechnology is a frontline technologies today being developed and used to understand and manipulate biological molecules for applications in medical, agricultural, industrial and environmental sectors of the national economy. Biotechnology is safe, effective and widely used by more than 18 million farmers around the world. It is a proven tool that has successfully improved crop productivity for growers around the world since 1995, resulting in an abundant and affordable food supply. Various studies have shown the safety of the technology to human beings, animals and the environment. Increasing global food production within existing land area and the use of modern plant breeding methods have enhanced increased production of crops like legumes to improve soil structure, organic matter and fertility. These lead to conservation of bioresources and prevent soil erosion. The aim of this review is to emphasize the importance of Biotechnology towards attaining a safe and sustainable environment for increased global agricultural production.

Key words: Biotechnology, Bioresources, agricultural production,

Introduction:

Biotechnology can be defined as any technological application that uses biological systems, living organisms or derivatives to make or modify products or processes for specific use (UNCBD, 1992). Traditionally, micro-organisms have been deliberately used to produce beverages and fermented foods (Olatunji, 2007). Environmental biotechnology is the application of biotechnology to the study of natural environment. Environmental Biotechnology as the development, use and regulation of

Dr. M. Josephine Rani is an Associate Professor of Commerce, Annai Velankanni College, Thalayavattam. She obtained her Master degree in Commerce from St. Joseph's College, (Autonomous) Palayambottai, Master of Business Administration (MBA) from Tamil Nadu Open University and Doctoral Degree (Ph.D) from Manonmaniam Sundarman University, Tirunelveli. She has more than 10 years teaching experience in US as well as 10 and she had produced eight M.Phil students. She is a recognized research guide in Manonmaniam Sundarman University, Tirunelveli. She has published many articles in various approved research journals. She had attended and organized national as well as international conferences.

B-DIGEST Publications

16/7, Deshabattayan Street,
Hosurpet, Kanyakumari District,
Tamilnadu - 618 001. www.bdigest.in
e-mail: info@bdigest.com



IMPORT & EXPORT PROCEDURES



Dr. M. Josephine Rani

Reproduction or translation of any part of this book by any means without prior permission from the publisher is unlawful. Requests for permission or further information should be addressed to the publisher.

Rs. : 300/-

ISBN : 978-93-84734-56-5

Published by
B-DIGEST Publications
18/7, Devasahayam Stree,
Nagercoil, Kanyakumari District,
Tamilnadu - 629 001. www.bdigest.in
e-mail : bdigestpublications@gmail.com
Mobile : +91 94 88 88 84 00

Printed by
MeraPrinters
Mullanganavilai & P.O.
Ph : 04651-267344, 9345699988

CONTENTS

1. INTERNATIONAL TRADE	1
2. BALANCE OF TRADE	29
3. EXPORT PROCEDURES	54
4. IMPORT PROCEDURE	84
5. EXPORT PROMOTION	120
6. MODEL QUESTION PAPER	146