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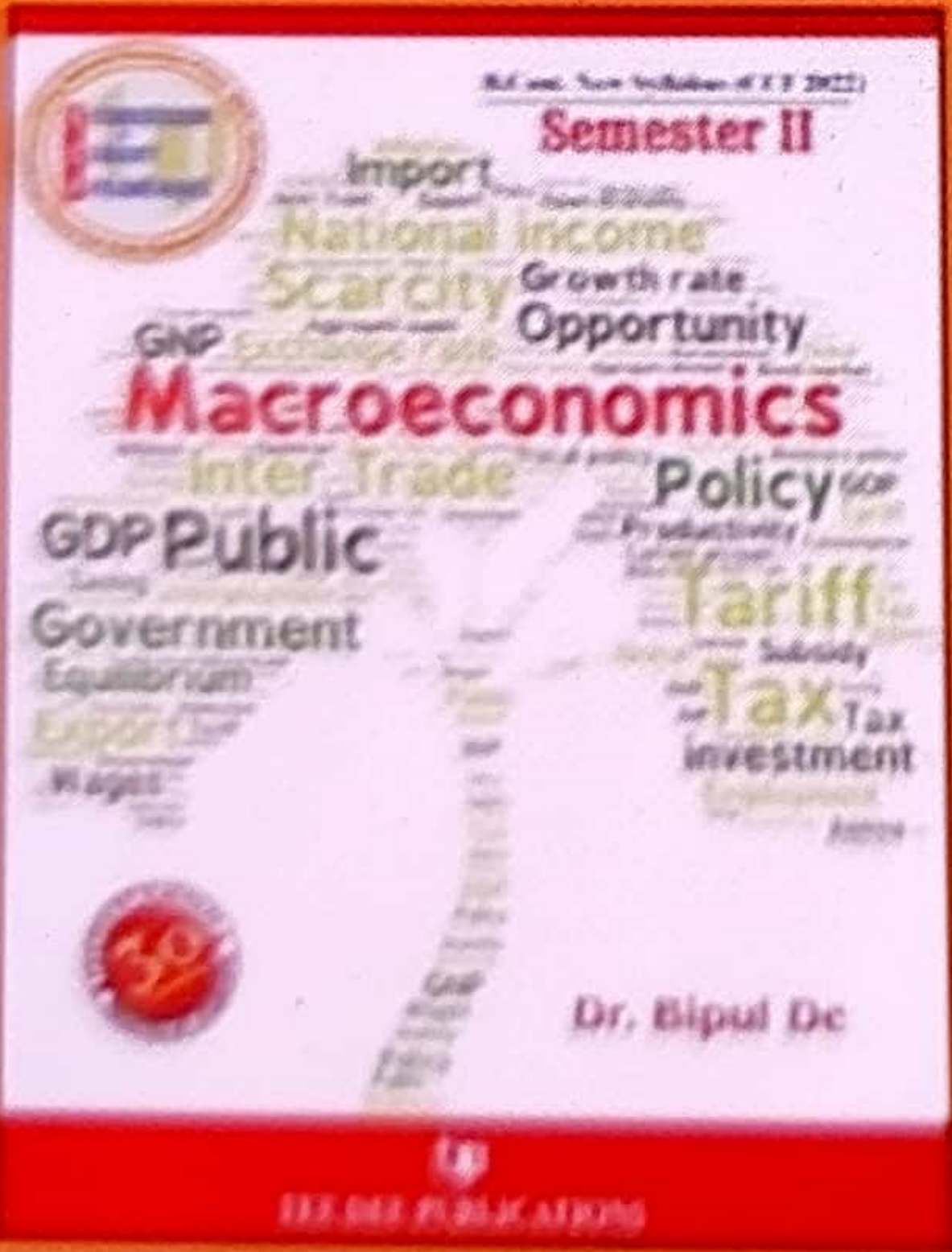


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Semester I

# ব্যষ্টিক অর্থনীতি

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# MICROECONOMICS

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# Contents

# Study of Fluorescence and Computational Analysis on Advanced Glycation of Bovine Serum Albumin with Glucose

Chanu Chand Hansda, SantuBhunia, Arindam Bankura, Kouthik Chandra*

Department of Chemistry(UGC & PG), Midnapore College (Autonomous), Midnapore, West Bengal, 721101

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## ABSTRACT

**The non-enzymatic protein glycation (NEG) of Bovine Serum Albumin (BSA) is a deleterious physiological and pathophysiological process between glucose as reducing sugar and ε-amino group of lysine of protein resulting the formation of Advanced Glycation End Products (AGEs). The processes are associated with aging, diabetes, neurodegenerative diseases, chronic renal failure etc.Glycation becomes complicated under chronic hyperglycemia and oxidative stress. Glucose mediated glycation is relatively slow even in increase in concentration of glucose concentration in reference to BSA. From the fluorescence data, a mechanism of AGEs formation using glucose as substrate is explained by Computational Study with all optimized reactants and transition states. Our study indicates that LYS 524 is more susceptible for AGE formation among other lysine residues. Molecular docking analysis also illustrates that the LYS524 residue is prone to adopt an energetically feasible conformation for binding.**

**Key words:** *Glycation, AGEs, diabetic complications, Computational Study, Molecular docking*

## Introduction

Protein non-enzymatic glycation (NEG) is an assorted complex cascade reactions involving incessant condensation followed by rearrangement and oxidative modification. It originates from non-enzymatic reaction between the carbonyl group of reducing sugar (glucose) and free amino group (lysine) of protein. Schiff base is the initial product which subsequently rearranges to ketoamine or Amadori, Hynes and Maillard products that evolves multiple reactive intermediates (V.L. Bodiga et al. 2013, A. Schmitt et al. 2005). These undergo further oxidation to form variety of organic and heterocycles compounds along with cross-linked macromolecules, commonly termed as advanced glycation end products or AGEs (S. Ashoor et al. 1984, Ulrich, P. 2001, **Figure 1**). The formation of AGEs is essentially augmented under prolonged hyperglycemia and oxidative stress.

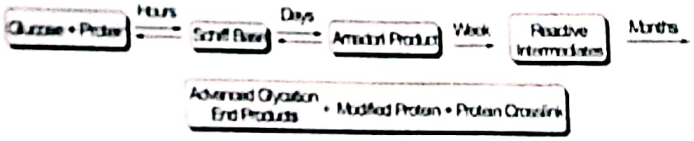


**Figure 1:** Steps of non-enzymatic glycation

Though glucose, among reducing monosaccharide, is the least reactive, the emergence of glucose can limit the potentially deleterious NEG. Apart from direct NEG between protein and sugar, glucose can enolize and reduces molecular oxygen ($O_2$) under physiological conditions, yielding $H_2O_2$ and free radicals and dicarbonyl such as α-ketoaldehyde through 'glycoxidation.The parallel and sequential degradation cascade of glucose to dicarbonyls leads to intermolecular as well as intramolecular crosslinks following a large number of reactive oxygen species. In this study, we focus on glucose mediated glycation of serum protein especially in steady state fluorescence and correlate the results with computational outcome.

## Materials and methods

### Chemicals

D-(+) glucose, crystallised and fatty acid free bovine serum albumin (BSA),sodium dihydrogen phosphate ($NaH_2PO_4$), disodiumhydrogen phosphate($Na_2HPO_4$), trichloroacetic acid (TCA) were purchased from SRL India. All chemicals and reagents were used in analytical grade. Double distilled water was used throughout the study.

# KAZI NAZRUL ISLAM:

# UNLOCKING THE WORKS

## AND THOUGHTS OF THE REBEL POET


**Editors**

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Associate Professor,
Department of Education,
Kazi Nazrul University,
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*Edited by:* Dr. Santosh Kumar Behera & Prof. Gouri Sankar Nag

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# CHAPTER-3

# HELD IN HIGH ESTEEM: INFLUENCE OF RABINDRANATH TAGORE ON POET KAZI NAZRUL ISLAM

**DEBARATI MAITY**

*Assistant Professor in English,*
*Netaji Nagar College for Women, Kolkata, West Bengal, India.*

## ❖ ABSTRACT:

***Kazi Nazrul Islam's stormy arrival into Bengali literary scene with iron will determination to blow away fritters of hackneyed and decaying past, heralded a new chapter in the history of Bengali poetry. His poetry condemned human oppression, degradation, religious bigotry and politics of discrimination. He reached the pinnacle of popularity and fame with his rebellious poem, 'Bidrohi' in 1922. Nazrul's poems are highly stimulant, fiery and anti-colonial in spirit. His poetry defied language prejudice and cultural chauvinism by incorporating common people's language into poetic paradigm. Nazrul and Rabindranath Tagore shared a cordial relationship, rarest of rare within literary circles. Nazrul venerated and adored Tagore as his God and his mentor. Tagore on the other hand, was fond of his junior compatriot in whom he discovered infinite potential and seeds of great poet. He blessed the young poet and supported him through thick and thin. The relationship between the two literary icons was beyond caste, class and religious boundaries, and exemplified ideal relationship between litterateurs. The present paper will gauze into the relationship between the predecessor and the younger litterateur to make sense of its impact on society and literature.***

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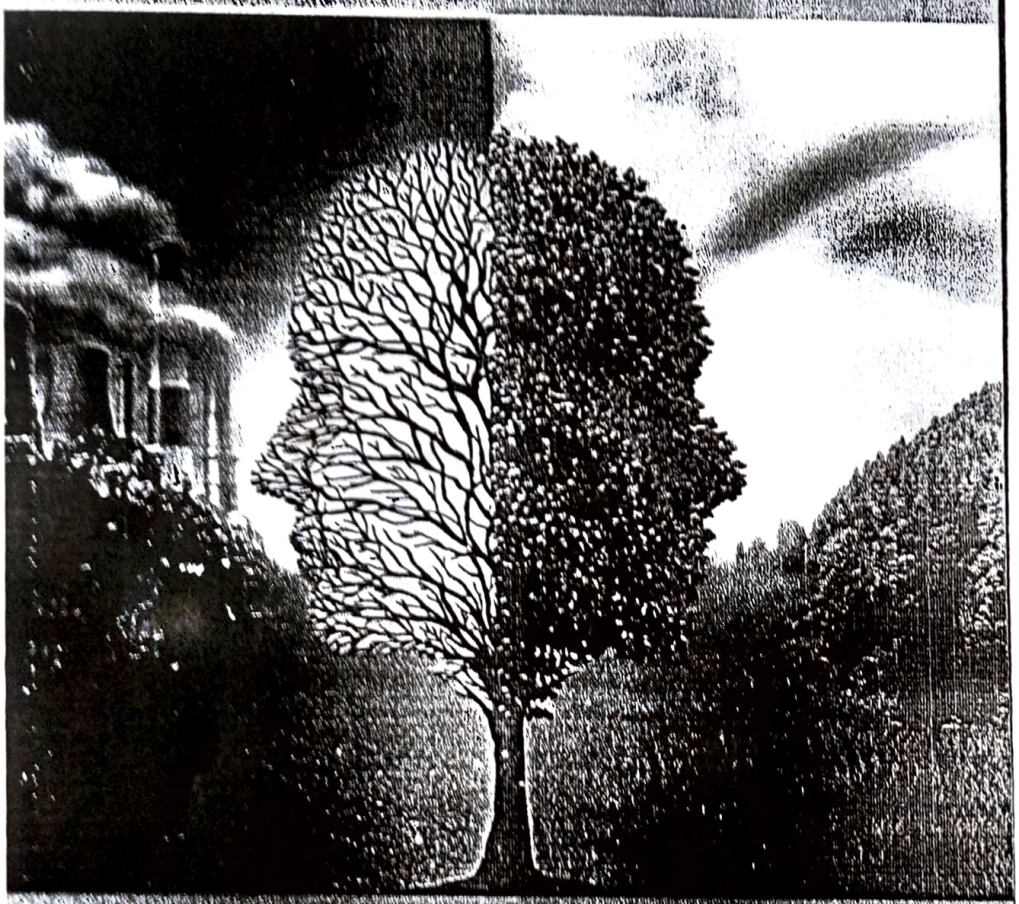
# Environment and Beyond



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# Environmental Influences on Insulin-like Growth Factor (IGF) Signalling Pathway

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West Bengal, India

**Abstract :** The insulin-like growth factor (IGF) signaling pathway functions in mediating cell proliferation, differentiation,apoptosis, survival, metabolism, migrationthereby regulating different cardiovascular and developmental processes in muscle, bone, brain etc. Abnormalities and impaired IGFsignalingpathways contribute to the pathogenesis of several human diseases including cancers. Several clinical and preclinical studies have evaluated the efficacy of IGF based treatment modalities for different pathological conditions. However limited information is available on the link between environmental influences on IGF system. Here we will review those investigations where researchers have examined the effect of environmental exposures on IGF pathway genes. Such information on relationship of gene–environment interactions will be important from public health perspective in future.

## Introduction

In the recent years we gained much insight into the genetic influences on many human diseases. At the same time research also indicates that subtle differences in genetic factors cause people





to respond differently when exposed to the same environmental stimuli. As a result, some possess a low risk of developing a disease through an environmental exposure while others are much more susceptible. Currently new studies have emerged to describe relations betweengenotypes and environmental exposures, in terms of their effects on disease risk.[1, 2]

The insulin-like growth factor (IGF) is a complex system of peptide hormones- [insulin-like growth factors of type 1 and 2:- IGF-I and IGF-II], cell surface receptors [insulin receptor: - InsR; insulin-like growth factor receptors of type 1 and 2:- IGF-IR and IGF-IIR] and circulating binding proteins [insulin like growth factor binding proteins: - IGF-BP (1-6)]. IGF family of peptides play an important role in the normal control of many metabolic and growth related processes. However, IGF-I-mediated paracrine/autocrine effects are essential in the modulation of cellular growth, proliferation, differentiation and survival against apoptosis. [3, 4]

Increasing epidemiological findingssuggests, many identified environmental risk factors acts via insulin-like growth factor pathway and contribute to the development of disease. Hence better knowledge of the factorsthat influence IGFpathway genes may help in devising strategies toprevent disease risk at the population level. [5]

**Interaction between environment and genes in the IGF-system**

An increasing number of studies have documented varianceof gene activity induced by environmentalchanges often known as gene expression plasticity. [6]The impact of environmenton expression level of GH/IGF-I pathway geneshas been studiedin fishes like rainbowtrout (*Oncorhynchusmykiss*), coho salmon (*O. kisutch*) and brookcharr (*Salvelinusfontinalis*).[6, 7, 8, 9, 10] For

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# Metal Oxides for Biomedical and Biosensor Applications

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# Metal oxide/graphene nanocomposites and their biomedical applications

22

Souravi Bardhan[1], Shubham Roy[1], Mousumi Mitra[2] and Sukhen Das[1]
[1]Department of Physics, Jadavpur University, Kolkata, India, [2]Department of Physics, University of Virginia, Charlottesville, VA, United States

## 22.1 Introduction

Graphene, a monolayer two-dimensional (2D) allotrope of carbon has emerged as a rising star since its discovery by Novoselov and his team (Novoselov et al., 2004). Novoselov and Geim received Noble Prize in Physics after discovery since during 2004 graphene was found to be the thinnest known material with tremendous scope for application in various fields. Graphene consists of benzene rings of $sp^2$-hybridized carbon atoms arranged in honeycomb network structure (Li & Kaner, 2008), which exhibit unique physicochemical properties (Brumfiel, 2009). The structural features of graphene impart high specific surface area (Dimiev & Eigler, 2016) and magnificent strength (breaking strength is ~ 42 N/m and the tensile strength or Young modules is 1.0 TPa) (Huang et al., 2011). Since it is stronger than various other metals and has high flexibility, it is used as a substitute for metals in various sectors (Hu, Kulkarni, Choi, & Tsukruk, 2014). The mechanical, chemical, and thermal stability of graphene and its nanocomposites make them suitable for a wide range of applications. Graphene exhibits large theoretical surface area (~2630 $m^2/g$) which is nearly 260 times higher than graphite. Such high surface area provides greater efficiency for various catalytic activities (Chen, Wu, Jiang, Wang, & Chen, 2011). By virtue of the antibacterial nature, amphiphilicity, outstanding electrical conductivity, and easy surface functionalization capability (Balandin et al., 2008; Geim, 2009; Ranjbartoreh, Wang, Shen, & Wang, 2011; Wang, Zhang, Wu, & Wei, 2017), graphene is considered as a potential candidate in biological applications. Moreover biocompatible nature, surface-enhanced Raman scattering (SERS), fluorescence quenching ability, and low-energy requirement for electron movement due to $\pi-\pi^*$ transitions (Abbott's, 2007; Geim & Novoselov, 2010; Novoselov et al., 2005) are quite significant for bioimaging, biosensing, drug/gene delivery, photothermal and photodynamic therapies, and other biomedical studies. Based on the application purpose, several forms of graphene are used in biological applications, such as graphene oxide (GO), graphene quantum dots (GQDs), and reduced graphene oxide (rGO) (Muthurasu, Dhandapani, & Ganesh, 2016). In certain cases, graphene nanosheets (Chong et al., 2015), graphene nanocubes (Govindasamy et al., 2019), graphene nanocrystals (Zhang, Yuan, Zhang, Wang, & Liu, 2011), graphene nanotubes (Wu, Pei, & Zeng, 2009) are also used. Extensive studies regarding surface modification of addition of other

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Materials Horizons: From Nature to Nanomaterials

Sreerag Gopi
Preetha Balakrishnan
Nabisab Mujawar Mubarak *Editors*

# Nanotechnology for Biomedical Applications

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# Chapter 5
# Carbon Dots: Fundamental Concepts and Biomedical Applications

Souravi Bardhan, Shubham Roy, and Sukhen Das



## 1 Introduction

Development of nanoscience and nanotechnology in recent times has paved the path for emergence of various new materials and prospects for betterment of the society. Nanoparticles have attracted tremendous attention compared to their bulk counterparts due to dramatic increment of various properties, mainly by virtue of increase of surface-to-volume ratio [1–3]. Although various new nano-engineered materials for targeted applications were synthesized, most of them suffered various issues like cost-effectiveness, lacking versatility in applications, requirement of high energy consumption, and use of toxic reagents or may cause secondary pollution or toxicity in environment [4, 5]. Hence, the search for alternative suitable eco-friendly nanomaterials with multiple advantages and application triggered extensive studies worldwide and led to the discovery of various new classes of carbon. Earlier, mainly three forms of carbon were well known, namely amorphous carbon, graphite, and diamond [6], but over the last decades, various carbonaceous nanoparticles such as carbon dots (CDs), carbon nanotubes (CNTs), graphene oxide, and quantum dots (GQDs) have gained immense popularity due to their unique and exceptional optoelectronic and physicochemical properties [7]. Among them, carbon dots, also known as "carbon quantum dots" or "carbon nanodots" [8], have attracted tremendous attention since discovery in 2004, due to their nontoxic, biocompatible nature, facile synthesis procedure, excellent photoluminescence, inherent ability for electron transfer, and magnificent fluorescence emission, having 0-dimensional, quasi-spherical appearance with

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সূচি

# সুন্দরবনে বসতি স্থাপনে নারীসমাজ: প্রসঙ্গ নিম্নবর্গীয় নারী

নিরঞ্জন জলদাস

সারসংক্ষেপ: স্বাধীনোত্তর ভারতীয় সুন্দরবনের দক্ষিণ-পশ্চিমাংশ জঙ্গল হাসিলের যুগে আবাদ বা বসতি অঞ্চল নামে পরিচিত ছিল। আনুমানিক সপ্তদশ শতকের মধ্যভাগ নাগাদ সাধারণ মানুষ জঙ্গল পরিস্কার করে মূলত ধান চাষের মধ্যদিয়ে এই আবাদি জমির ব্যবহার শুরু করেছিল, সুন্দরবনে জঙ্গল হাসিলের এই বিশাল কর্মযজ্ঞে সমাজের উপরতলার জমিদার লাটদের, তালুকদারদের ভূমিকা বিষয়ে অনেক সমাজবিজ্ঞনী, গবেষক, আলোকপাত করেছেন। আবার এর পাশাপাশি অনেক সরকারী প্রশাসক, অধিকর্তাদের প্রতিবেদনে, রিপোর্টে সুন্দরবনে জঙ্গল হাসিলের ক্ষেত্রে সমাজের তথাকথিত নিম্নবর্গীয় সম্প্রদায়, বিভিন্ন উপজাতি শ্রেণীর উল্লেখ পাওয়া যায়।[১] আদিসুন্দরবনের নারী সমাজ নিয়ে আলোচনা সুন্দরবনেরই ভূমিপুত্র সন্তোষ কুমার বর্মণ মহাশয়ের গবেষণায় পাওয়া যায়।[২] বর্তমান প্রবন্ধে সুন্দরবনের জঙ্গল হাসিলের ক্ষেত্রে নারী সমাজের বিশেষত তথাকথিত নিম্নবর্গীয় নারীদের ভূমিকা কীরূপ ছিল সেই বিষয়ে অনুসন্ধান তথা আলোকপাত করার উপর জোর দেওয়া হয়েছে।

ভারতীয় সুন্দরবনের একেবারে দক্ষিণ-পশ্চিমভাগে অবস্থিত সমুদ্র উপকূলীয় অঞ্চলে আনুমানিক সপ্তদশ শতক নাগাদ জঙ্গল হাসিলের কাজ শুরু হয়েছিল। এখনকার কাকদ্বীপ, নামখানা, পাথরপ্রতিমা, সাগর প্রভৃতি সমুদ্র উপকূলীয় অঞ্চলসমূহ লোকমুখে 'আবাদ' বা 'বসতি' অঞ্চল নামে পরিচিতি পেয়েছিল। জঙ্গল হাসিলের গোড়াতে মূলত ধান উৎপাদন ছিল সাধারণ শ্রমজীবী মানুষের মূল লক্ষ্য। দিণ্ডা, জানা, শাসমল প্রভৃতি পদবিধারী জমিদার, লাটদাররা

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## CHALLENGES AND OPPORTUNITIES AMIDST COVID-19


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# CHAPTER - 15

# CAN THE VIRTUAL BE THE NEW REAL? A STUDY ON THE EFFECT OF THE COVID-19 PANDEMIC ON THE INTANGIBLE CULTURAL HERITAGE OF INDIA

***Mr. Ayush Mazumdar[1], Mazhar Shamsi Ansary[2], Dr. Santosh Kumar Behera[3]***

**Abstract**

The pandemic has diversified the human way of livelihood and sustainability by pushing human society away from large gatherings and crowd into following social distancing and restricting outdoor movement as far as possible. This is due to the fact that the zoonotic disease COVID-19 spreading through SARS-COV-2 virus has a higher transmission rate from human-to-human and it is due to this fact that the relative death figure has been high. This paper seeks to highlight how the new normal created by the pandemic creates a stress upon the intangible cultural heritage of India by forcing the performing artists to remodify their way of livelihood and even making it unviable in the current context. The paper also seeks to understand how far the virtual platform can compensate or replace the real-world live performance in terms of sustainability and viability both economic as well as in terms of artistic sensibility. The paper also seeks to understand the effect of the pandemic upon different classes of the artist both rural as well as urban. The

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# Criminal Activities During COVID-19: Evidence from India


**Shabnam Parween, Mazhar Shamsi Ansary, and Santosh Kumar Behera**

## 1 Introduction

After the creation of the earth, nature has organized itself with various animals, plants, objects, etc. It is true that "Homo sapiens" is considered to be the greatest animal on earth compared to other animals for its unique features of the brain. But since he is an animal, there is a tendency for humans to become vicious, just like any other animal. That is, no matter how much a person tries to be good, violence is present in him as a genetic trait and he cannot evade it no matter how hard he tries. So it can be said that Human Beings are organizational beings. They started to systematize themselves in order to survive. People began to form themselves to prove themselves stronger than the other creatures. The idea of this organizing has made men the greatest creature on earth.

Gradually society was formed, Jati, Varna, Dharma were started to demonstrate the finest of a class of society. This idea of being the best is what people have been carrying everlastingly. If we look at the earliest times of India, we will also see this castes, gender, religion, and caste disparities. The social order system was started mainly on the basis of livelihood—Brahmin, Kshatriya, Vaishya, and Shudra. The Brahmins have always been a kind of leader to the other three castes. We notice the deprivation of the three other castes in all kinds of social work. The idea of snatching

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# Handbook of Research on Asian Perspectives of the Educational Impact of COVID-19

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*University of Dhaka, Bangladesh & Universiti Sains Malaysia, Malaysia & University of Johannesburg, South Africa*

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# CHAPTER 11

# DEPRESSION, ANXIETY AND STRESS AMONG THE POST GRADUATE STUDENTS

**Manuara Khatun[15], Dr. Santosh Kumar Behera[16], Mazhar Shamsi Ansary[17]**

## ABSTRACT

In the present study the investigators made an attempt to know the level of Depression, Anxiety and Stress among the P.G level students in Purulia district of West Bengal, India. Descriptive Survey method was followed. A total of 300 PG Students (Arts-203, Science-82, Commerce-15) of Sidho-Kanho-Birsha University in Purulia district of West Bengal were taken as representative sample of the whole population. For selecting PG students Stratified random sampling technique was followed. DASS 42 scale was used for measuring the Depression, Anxietyand Stress of PG Students constructed and standardized by Lovibond and Lovibond (1995). Mean, S.D, ANOVA & t test were used to analyse the data and verify the hypotheses. The study revealed that the level of Depression and Stress among PG level students in Purulia district of West Bengal is normal and moderate. It is also found that the level of Anxiety among PG level students in Purulia district of West Bengal is normal, moderate and severe. The study also revealed that the level of Depression among PG level students with respect to their Gender (Male and Female), Location (Rural and Urban),

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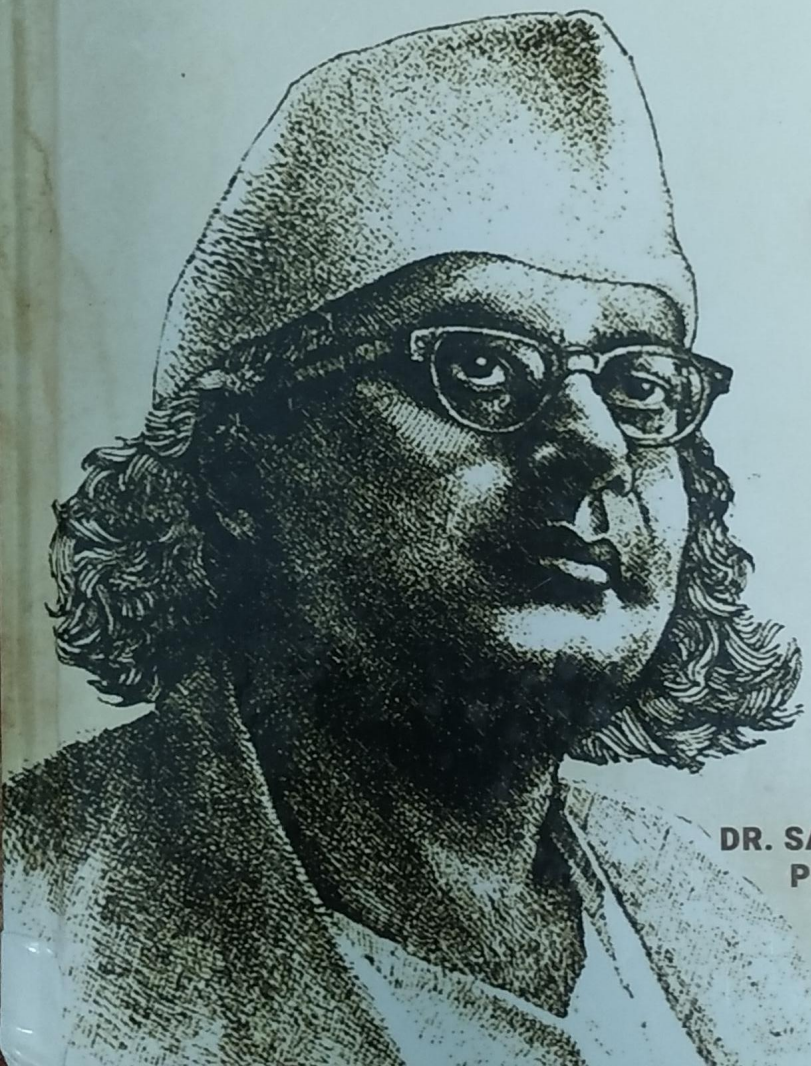

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# CALL FOR YOUTH IN THE LIGHT OF REBEL POET KAZI NAZRUL ISLAM

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**MAZHAR SHAMSI ANSARY**

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*Kolkata, West Bengal, India.*

## ❖ ABSTRACT:

***Kazi Nazrul Islam was one of the poets, philosophers, writers and social reformers born in India as well as Bengal before independence. The initiatives which he took for the betterment of the society at that time were such as womens' liberation, people awareness, awakening of youth power etc. This article discusses in detail the place of youth in Kazi Nazrul Islam's thoughts, what messages he wanted to convey through his poems for their upliftment. From the primitive history of the world to the modern twentieth century, the role of youth society is invaluable. However, Nazrul has a touch somewhere in the role of the youth in this role. This study is based entirely on***

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# ATTITUDE OF POST GRADUATE STUDENTS TOWARDS MASSIVE OPEN ONLINE COURSE (MOOC)

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**Dr. Santosh Kumar Behera**
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## INTRODUCTION:

Despite being the world's largest democratic country and the world's second-largest population (1-25 billion people), the literacy rate is below 80%, which is not good enough to compare our education with the other developed countries across the globe. It is the homeland of various kinds of people belonging to different religions, community, culture, caste or sub-caste. Nevertheless, it is unfortunate that still India is considered a developing country, not a developed one. However, science and technology are the two spectacles of this modern age through which we now look at our future of the educational field. The students especially the postgraduate who is attached to mobile devices such as mobile phones, laptops, PDAs, etc. They use the internet for various purposes up to the Introduction of Massive Open Online Course and now they utilize their internet for educational purposes. It helps the students to study through online mode. It is very much effective and it has fine capabilities to teach students properly. If we keenly look into the full form of MOOC, we can easily understand that the learners can easily comprehend this method from anywhere at any time. It is an alternative for those students who do not understand the lectures of the teachers in the classroom. The most interesting thing about this is the flexibility and personalization in the process of learning which more or less satisfies the inner urges of the students. In this method neither there is any time limit nor particular class a degree on any interesting topic.

Apart from this, the learners who were drop out or left his education can again restart his education through this method. **Massive:** This means in one time over 20000 learners can avail the learning. **Open:** means not only regular but also drop out or poor learners can complete their education because of its free of cost facility. **Online:** means

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# Chapter - 8

## Rethinking of Education System in the Period of COVID-19: Special Reference to Higher Education

**Shabnam Parween and Mazhar Shamsi Ansary**

**Abstract**

At the end of 2019, the whole World was waiting to welcome the New Year, 2020. But nobody knows that the biggest menace of this century has been waiting for us. The COVID-19, a pestilent virus had been germinated at Wuhan State of China in the December of 2019. Gradually it's spread like a bullet towards whole world. At present whole World is affected from this pandemic. This destructive pandemic affected every aspects of our daily life. Education system is also hampered very shabbily. It is almost going to be collapsed. Due to lockdown and order of the Govt. is nobody can go to outside the room that is why especially the formal education system is stuck totally. Although this lockdown is mainly implemented for public's safety purpose. But daily teaching-learning, examination system, admission system, everything of our formal education has been immovable. In India, as we know that higher education stage is very crucial stage. Anyhow we have to take necessary step to make education system dynamic. In this regard UGC have also recommended some valuable suggestions to confront this situation. We need to think some alternative methods which will make our higher education system more fruitful and effective. We cannot leave our education system in this unwanted condition. Though we are not habituated to any other mode of teaching-learning, but to overcome from this peril we should think about better alternatives. In a simple word we have to rethink about our education system, especially the higher education level. The paper is qualitative in nature. Secondary data was collected through various research articles, writings, newspaper articles, books, etc. In this paper the authors want to focus on some problems faced by students in higher education and rethinking of education system in the period of COVID-19 in Higher Education.

**Keywords:** COVID-19, Pestilent Virus, Pandemic, Formal Education Higher Education.

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# Contemporary context of Biodiversity : From Bioprospecting to Rights

**Moumit Roy Goswami**
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***Abstract :*** The word 'biological diversity' has been defined by 1992 Convention on Biological Diversity as 'the variability among living organisms from all sources, including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. The "usefulness" of biodiversity is expressed through the concept of different *ecosystem services*. Major threats to biodiversity include habitat alteration and loss, over-harvesting, chemical pollution, invasive species and increasing population pressure. Climate change poses a potential threat to the Earth's biodiversity. The loss of biodiversity threatens ecosystem integrity, and may ultimately threaten human existence itself. Bioprospecting describes the discovery of new and useful bioactive compounds emerging either from research or from already available existing traditional knowledge where as biopiracy is a situation where indigenous knowledge of nature is exploited for commercial gain with no compensation to the indigenous people. Bioprospecting is not inherently


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*The book is dedicated to Ms. Anika A. Rathoure.*

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and have led to legislation, regulations, and management plans creating wetlands for conservation, protection, and restoration. Unfortunately, the destruction of wetlands is a concern since they are among the planet's most productive areas.



Pollution has become a matter of grave concern at present with all the components of the environment laden with pollutants largely from anthropogenic sources and unplanned urbanization. Inland wetlands are very delicate ecosystems and encompass a variety of water bodies, namely ponds, rivers, swamps, etc. They house some unique floristic patterns that are crucial in the primary productivity and maintaining a balance of the wetland ecosystem. In addition to it, the inland water bodies are also productive and are of immense importance to humans. The inland wetlands are also an integral part of boosting the economy of the region as they support a number of industries including fishing and recreation. Thus pollution of water bodies has impacted the human race in a deleterious manner. This chapter is an attempt to overview the inland water bodies, their biodiversity pattern, pollution, and their effect on flora at large.

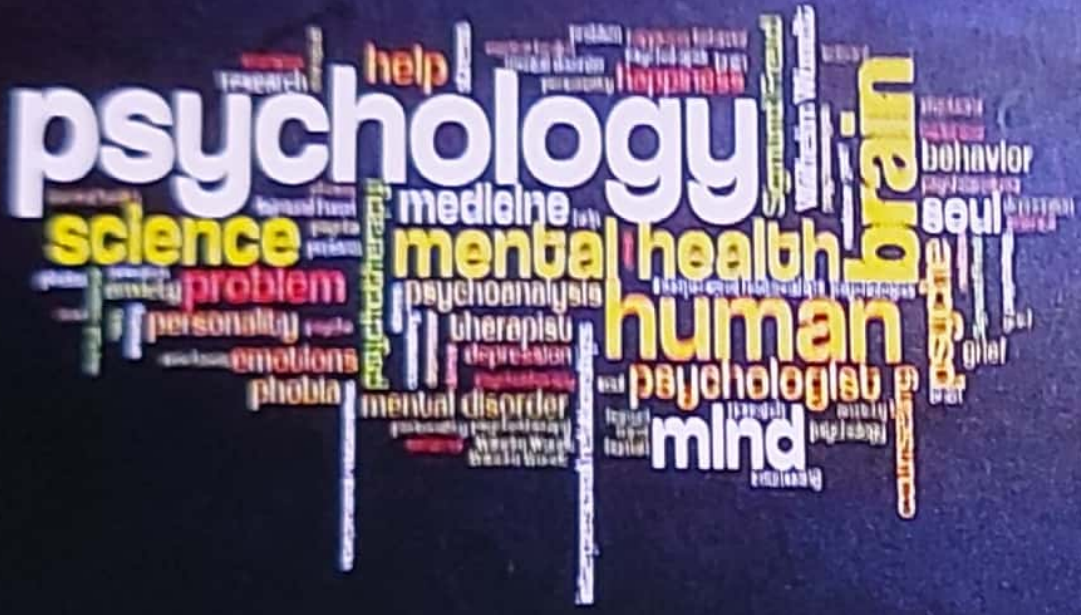


Water quality monitoring is an important tool in determining the safety and suitability of water for various desired and intended uses. The procedures involved in the evaluation of water quality are numerous and multifaceted. Therefore, taking into consideration the specific objectives of water quality monitoring, sampling design is of vital importance. Most of the physical parameters of water quality are determined via in-situ measurements using modern testing equipment/field testing kits. Although there are some good field-based sensors that are being used for evaluation of water quality, the chemical parameters traditionally are mostly analyzed through laboratory-based experiments. This chapter is aimed to offer an inclusive knowledge and insights on the importance and assessment of physico-chemical parameters that are of high priority for monitoring the water quality of wetlands.



Antibiotic-resistant bacteria (ARB) are becoming more prevalent in the environment and are efficiently disseminating through contaminated wastewater resulting in resistome cycling. This chapter compares the bacterial profile of hospital effluents collected from rural, urban, and delta regions of West Bengal,

# Psychological Foundation of Education

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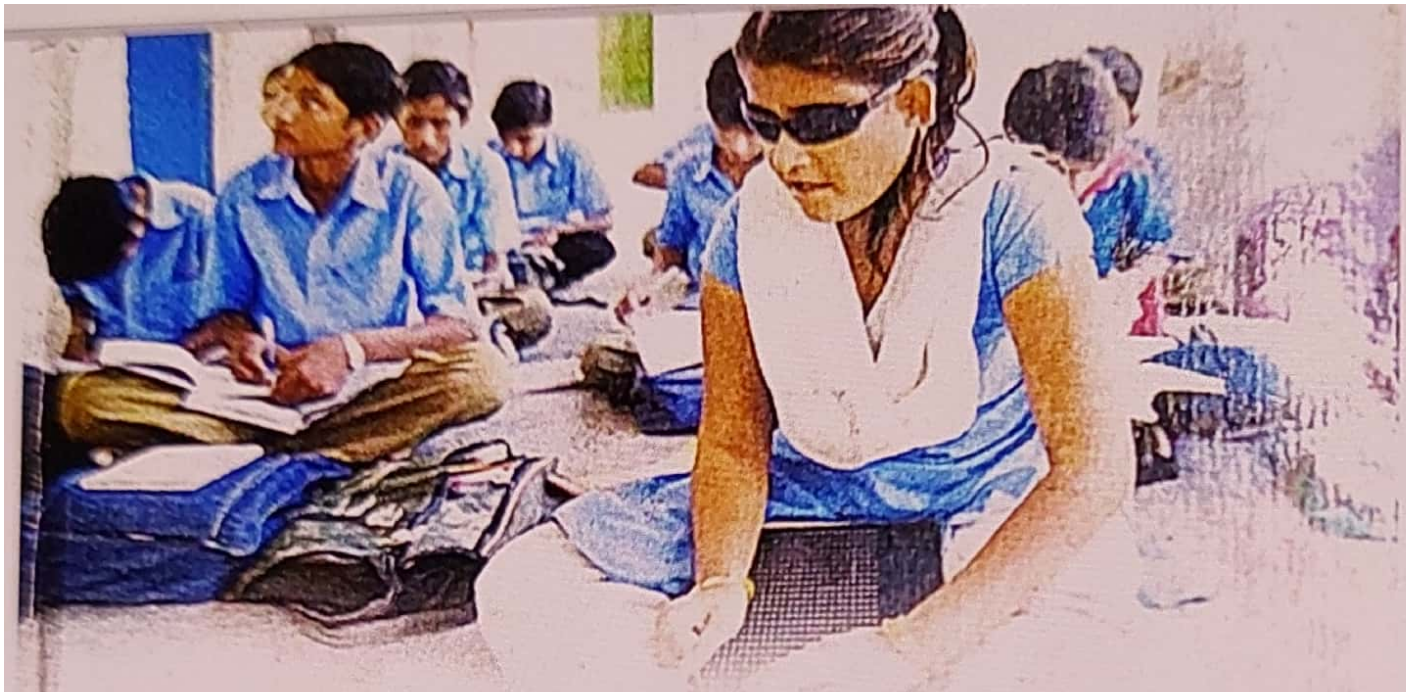

# INCLUSIVE EDUCATION

Dr. Shabana Haydar
Prof. (Dr.) Mita Banerjee

## ABOUT THE BOOK

The book is divided into four units. Unit 1 provides an understanding of the concept of Inclusion, meaning and objectives of Inclusive Education, and importance of Inclusive society. Unit 2 deals with the concept of Impairment, Disability and Handicap, the types of Impairment such as Orthopedic Impairment Visual Impairment Hearing Impairment, Cerebral Palsy, and Autism. It gives a brief description about the causes and the impact of disability and the role of society in creating a barrier free environment for the disabled.

The Unit 3 of the book deals with social exclusion and the importance of providing equal educational opportunity for different sections of the society, the scheduled castes and scheduled tribes and other backward classes and women as a social category. It also gives a brief description about the concept of Gender and Sexuality, Patriarchy, Masculinity and Feminism. The Unit 4 of the book deals with inclusive society and inclusive school, teaching learning materials TLM and Lesson plans to provide teachers with some basic skills and aptitude to act as catalyst in the process of helping individuals to fully participate as responsible members of the society. It involves application of the principles and the techniques of psychological principles of individual differences to solution of the problems confronting teachers in an Inclusive classroom. It also gives a brief description about Multicultural Society, Multicultural Education and Peace Education.

Inclusive Education employs scientific approaches and methods in understanding children's behaviour and equips teachers with specific knowledge about effective teaching methodologies. Inclusion has positive effect on children with disabilities in improving communication and social skills, increasing positive peer interactions, and learning skills. An inclusive setup helps in learning social skills, developing of positive attitude, and encouraging better social interaction among children with or without disabilities.

The book will be useful to students, particularly undergraduates and post graduates in education, psychology and allied fields. It will be useful to teacher educators. Teachers and educators have an important role to play in nurturing individuals, in helping them acquire knowledge, values and proficiency. Knowledge of Inclusive Education will equip teachers to bring about desirable changes in attitudes, behaviour and skills in students in the classrooms, and help them to modify their approach towards teaching learning process.

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