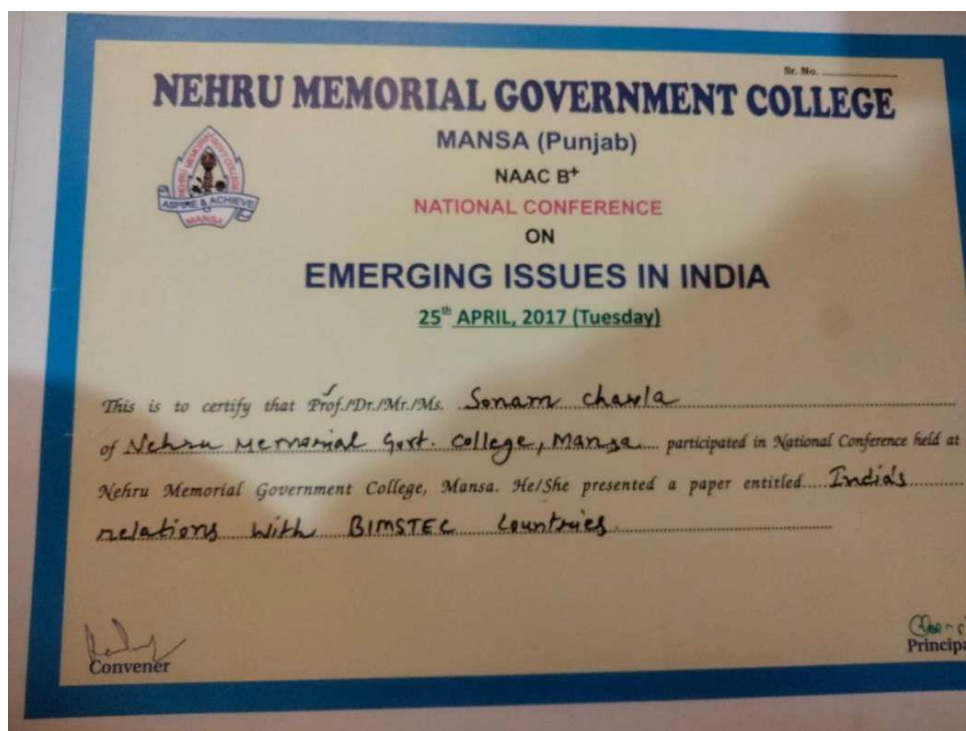


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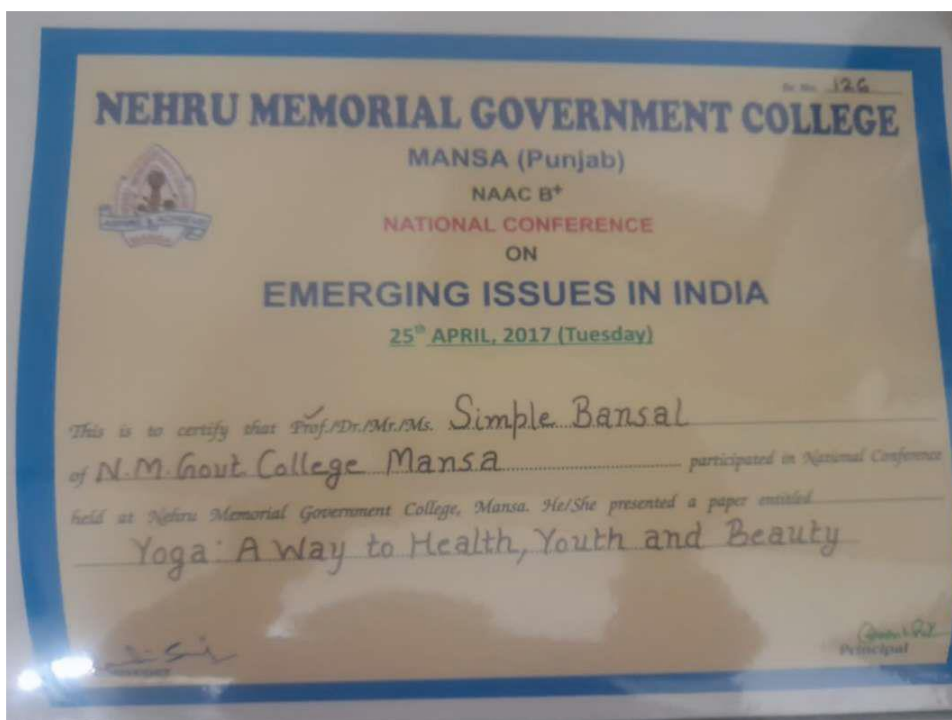
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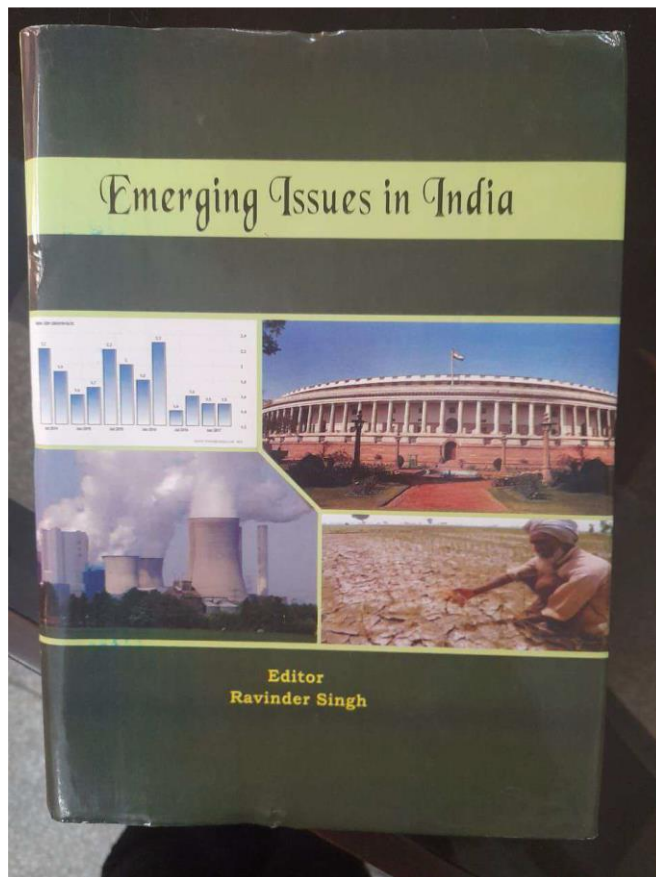

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ISBN No. 978-81-924493-5-3

8th International Conference on Advancements in Engineering and Technology, (ICAET-2020)

Importance of Biomathematics in Social and Biological Sciences

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ABSTRACT

In this paper, we investigate on development of mathematical education and research especially in medical as well as biological sciences. Also, why is essential the study of biomathematics. The purpose of this research is to spread the knowledge of new mathematical techniques for medication and improvement in health care policies.

Keywords

Infectious Disease, Treatment, SIR Model, Biomathematics, Mathematical Model, Stability

Nomenclature:

Variable and Parameters	Definition of Variable and Parameters
S	Susceptible compartment
I	Infected compartment
R	Recovered compartment
E	Exposed compartment
D	Death compartment
β	Transmission rate
γ	Infection rate
μ	recovery rate

1. INTRODUCTION

Epidemiology and microbiology interrelated which is the branch of biology, in which epidemiology plays an important role in the spread and evaluation of an epidemic disease. The term epidemic, explain as a sudden outbreak of infectious disease spreading rapidly through population affecting a large number of peoples in the society. The impact of infectious disease on human beings has been calculated by the mathematical measures like number of affected cases and number of death cases attributable to a specific infection. This mathematical measure provides the actual information regarding overall medical system in the society as well as the real burden of diseases on agriculture and human healthcare system [1]. Mathematical modelling is known as advanced tool to solve any complex situation or explore the different stages of the specific biological problem. Mathematical and computational model approaches new technologies and identifies the new challenges in biological

There are many mathematical models which has been used by many scientists, researchers and mathematicians as SIR epidemic model, Logistic growth model, delay mathematical model, Predator-prey model, Lotka-Volterra model, Stochastic model, Virus Dynamics and so on. The purpose of this research is to spread the knowledge of new mathematical techniques for medication and improvement in health care policies.

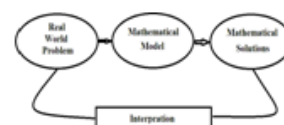


Figure 1: Mathematical Modelling

Mathematical modelling has explained each stage compartmentally in any real world problem like Biology, Microbiology, Physics, Mathematics, Fuzzy Logic, Medical, Engineering and so on. In this process mathematical modelling convert real world situation into mathematical model and this model provide a mathematical solution of the existing problem and thereupon we interpret this mathematical solution in the language of real world [4,5].

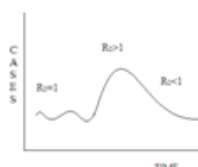


Figure 2: The Basic Reproduction Number

The basic reproduction number R_0 is the difference of contact rate and duration of infection. Mathematically,

$$R_0 = \text{Contact Rate} - \text{Duration of Infection}$$

9. Book Inj Vi HoSakde by Prof.Seema Jindal

