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COVID 19: Impact and Response Volume VII

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OMICRON VARIANT: A NEW CHAPTER IN THE COVID-19

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Introduction:

A virus SARS-CoV-2, causing COVID-19 is more prone to the mutation like all RNA viruses (WHO, 2020). Due to numerous mutations in the spike protein of the SARS-CoV-2 variant the new variant of concern is Omicron (B.1.1.529) which raises serious concerns in all over world. It may significantly limit the antibody-mediated neutralization and increase the risk of reinfections (Wilhelm *et al.*, 2021). While a rapid increase in the number of cases of Omicron SARS-COV-2 is being reported worldwide, until now there has been uncertainty about the efficacy of vaccinations and monoclonal antibodies. A new variant like Omicron is the reminder that, the COVID-19 pandemic is far from over. It is a new variant of SARS-CoV-2 that has recently reported from South Africa on 24th November 2021 called as B.1.1.529 or Omicron (a Greek alphabet). This variant has shown a very large number of mutations, especially more than 30 mutations occur on the viral spike protein, which is the key target of the immune response (WHO and MoHFW, GoI). Due to numerous mutations in the spike protein (S), which is the antigenic target of vaccine-elicited antibodies, Omicron raises serious concerns of significant reduction in vaccine efficacy and an increased risk of reinfection. Compared to the parental variant (B.1), Omicron S has 30 non-synonymous substitutions, three small deletions, and an insertion. Fifteen of these mutations are in the receptor binding domain (RBD), a major target of neutralizing antibodies (NAbs). Several of the S mutations observed in Omicron were reported in preceding variants of concern like Alpha, Beta, Gamma, and Delta as well as variants of interest such as Kappa, Zeta, Lambda, and Mu that were associated with higher transmissibility and immune escape. Out of all these variants, Beta and Mu have the most severe immune evading capacities. Due to the high accumulation of these mutations in spike protein, Omicron synergistic



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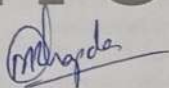


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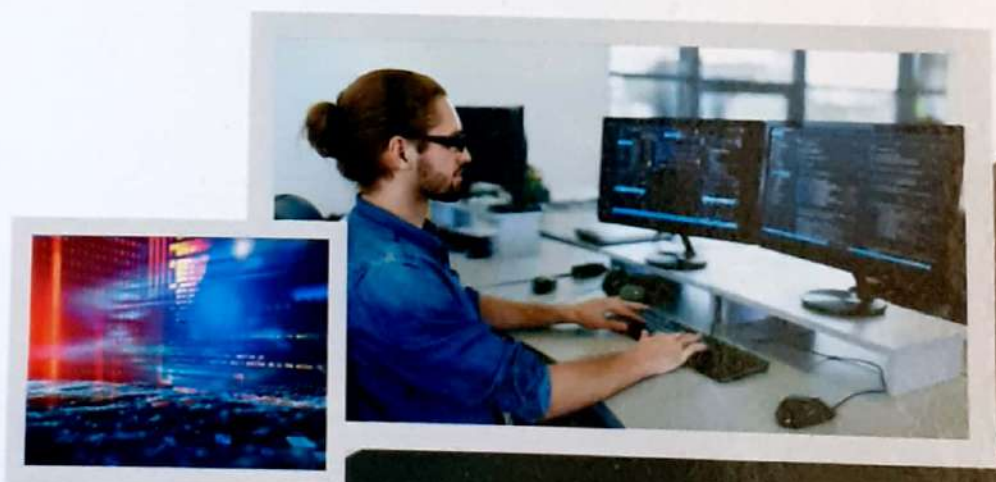
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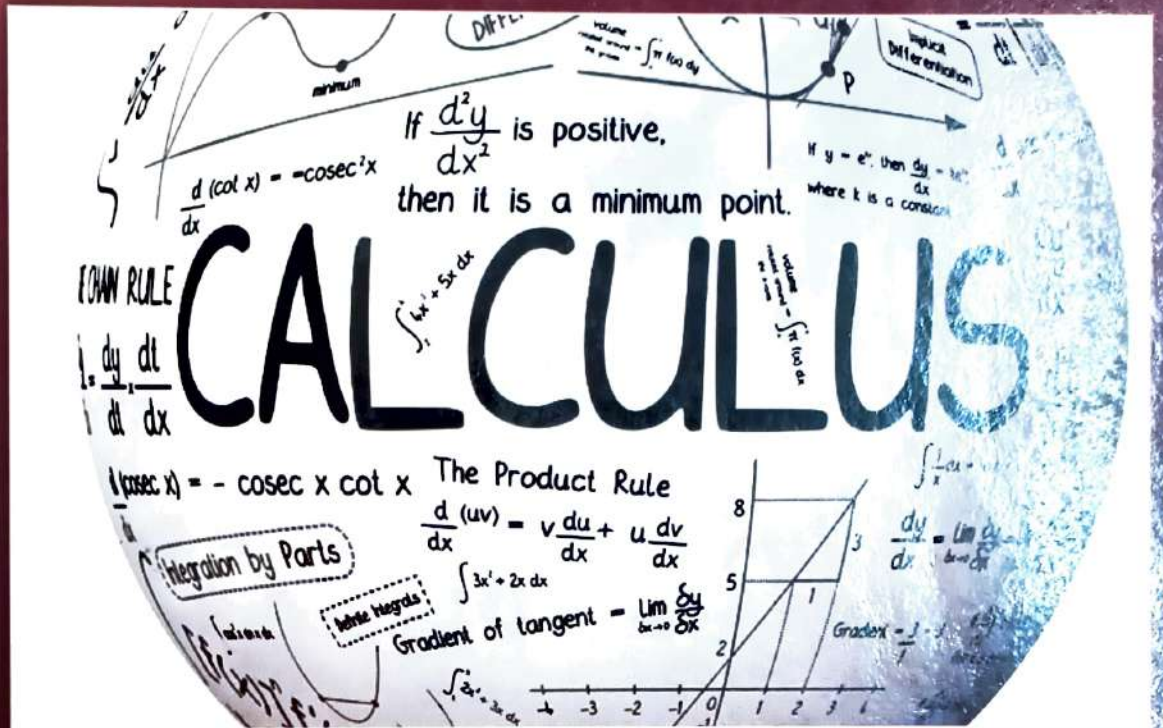


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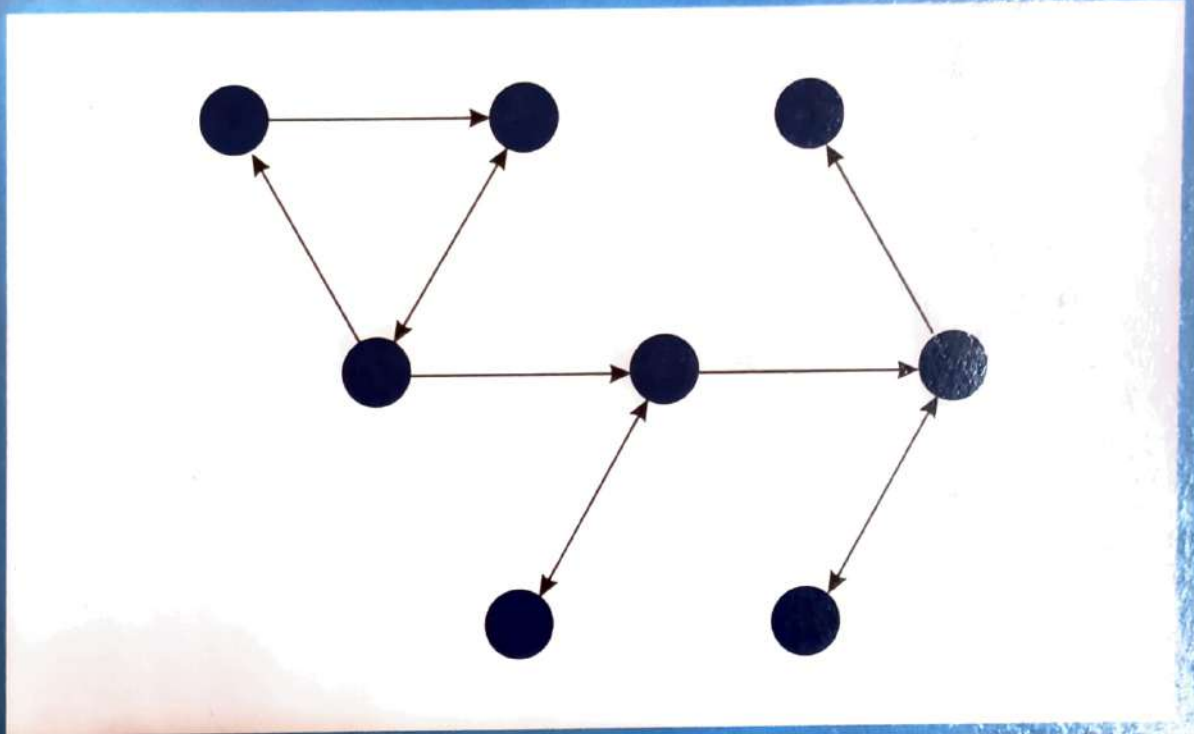
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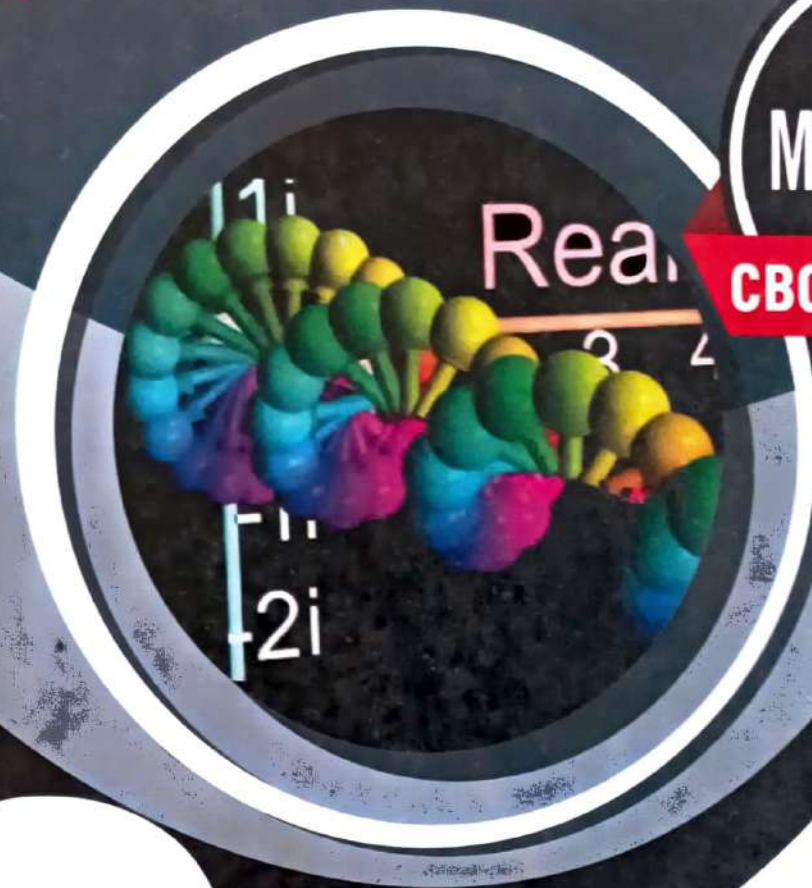
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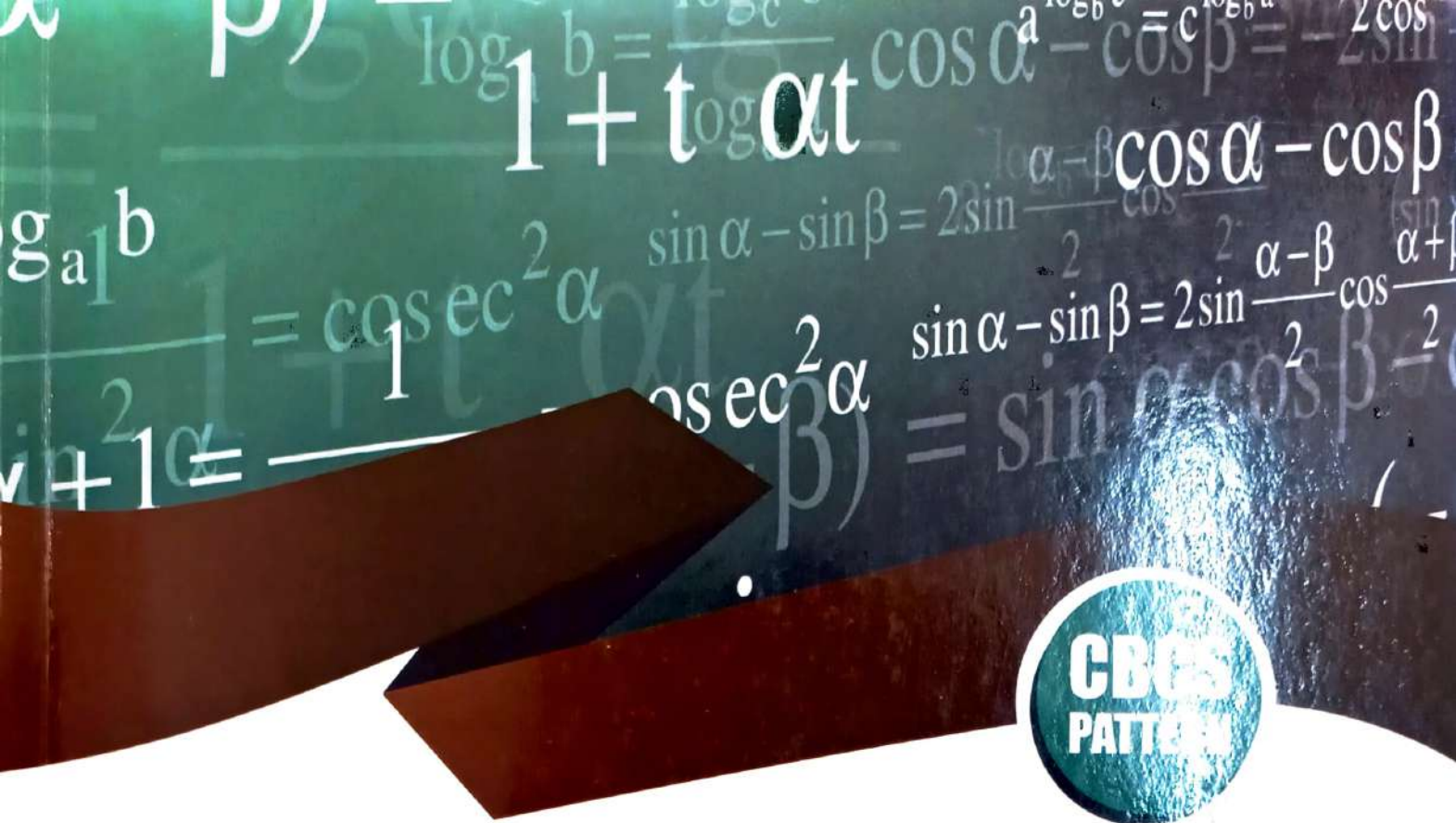
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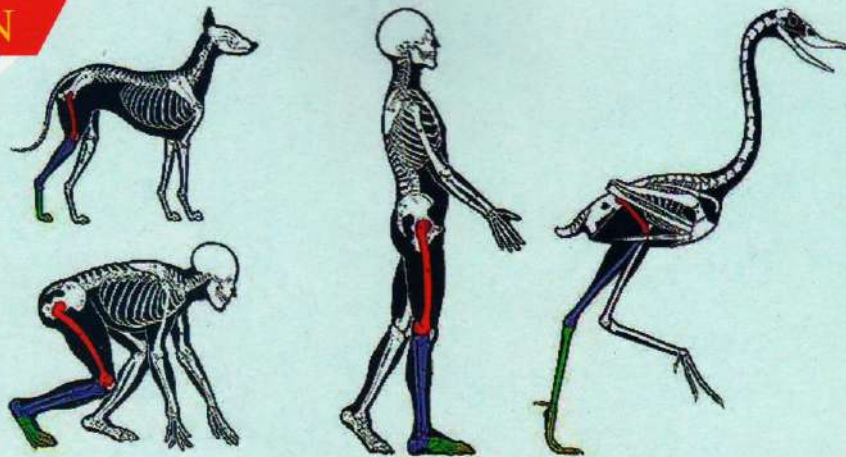
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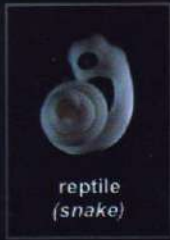
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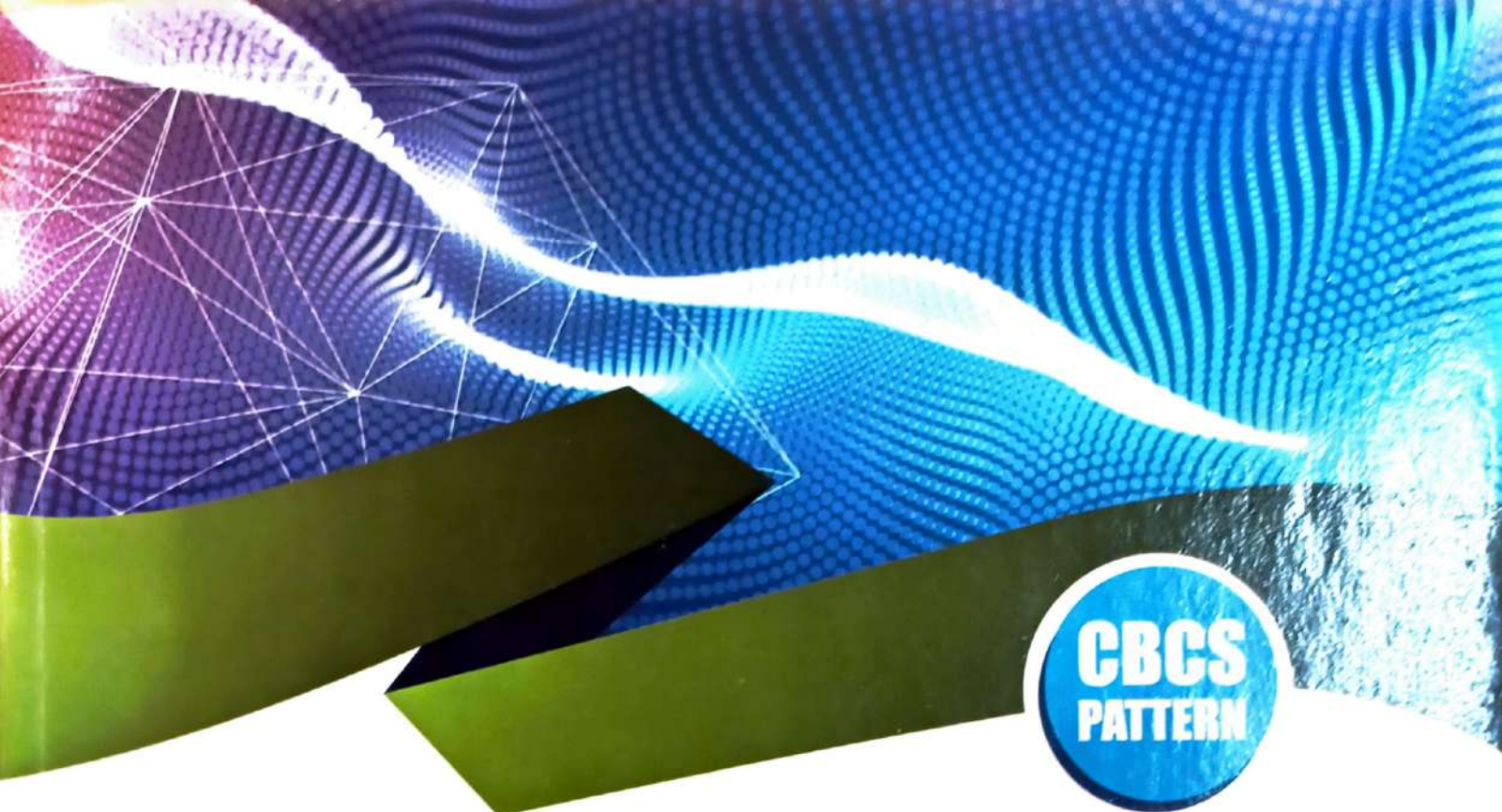
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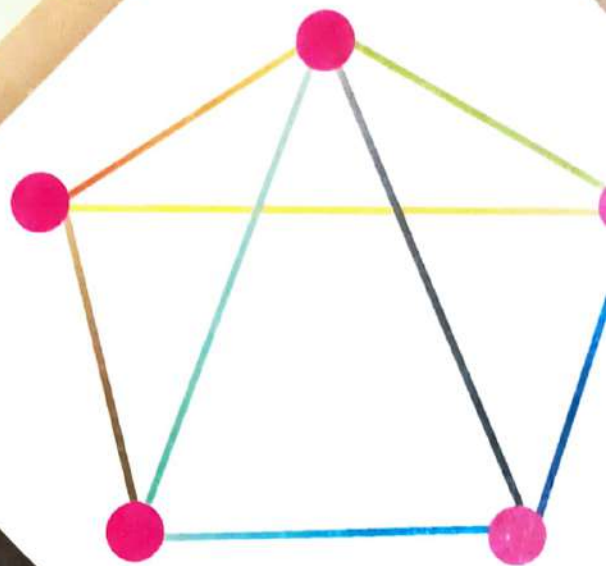


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Environment : The Global Scenario

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