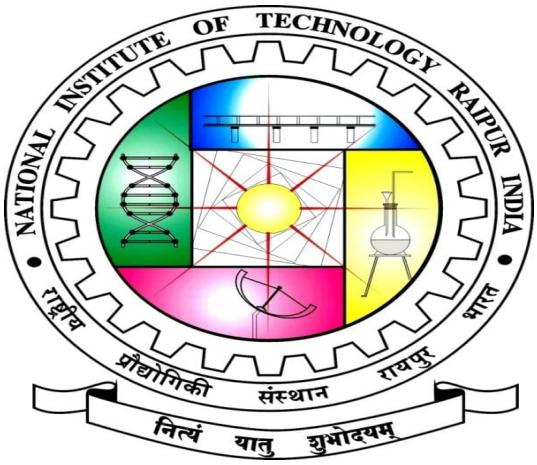
ASSIGNMENT-4

BIO MEDICAL ENGINEERING

National Institute of Technology Raipur(C.G)



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Section :-"A"(BME)

Topic :- 5 Solutions To COVID19 provided By Biomedical Engineers

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COVID-19 is one of the most severe global health crises that humanity has ever faced.Researchers have restlessly focused on developing solutions for monitoring and tracking the viral culprit, SARS-CoV-2,as vital steps to break the chain of infection.Biomedical engineering (BME) is considered a rising field of medical sciences,Within a very short period BME research applied to COVID-19 diagnosis has advanced with ever-increasing knowledge and inventions especially in adapting available virus detection technologies into clinical practice and exploiting the power of interdisciplinary research to design novel diagnostic tools or improve the detection efficiency.

1 Diagnostics

1.1 Fluxergy Analyzer system

The Fluxergy Analyzer system,which uses state-of-the-art PCR and microfluidics technology,has been shown to accurately identify the SARS-CoV-2 virus in 1 hour,and no RNA extraction steps are required.It has the potential to consolidate a majority of crucial lab tests to a single platform.Measuring many health and physiological parameters at once could enable more beneficial health testing,and enable better clinical outcomes.

2 Tracing And Tracking

2.1 Wearable devices

The Scripps Research Translational Institute has launched an app-based research program (MY DATA HELPS) that evaluates participants' wearable health data including heart rates,sleep,and activity levels—to shortly detect the coronavirus,and other fast-spreading viral illnesses.It identifies outbreaks from new COVID-19 variants,helps to track the length of vaccine protection,and identifies viral activity from other viruses,such as the flu.

2.2 Private Automated Contact Tracing (PACT)

MIT Campus, Massachusetts General Hospital, and Lincoln Laboratory founded a new way to track covid 19 patients called PACT that enhances the manual tracing efforts of public health officials.The framework depends on short-range,anonymized bluetooth signals emitted by and picked up by smartphones.People who tested positive can upload the signals of their phone emitted in the past 14 days to a database, and other people can scan the database to see if any of those signals match the ones picked up by their phones.

3 Treatment

3.1 Monoclonal Antibodies

HiFiBiO Therapeutics,a multinational biotherapeutics company focused on the development of novel antibodies to intensify the immune, HFB30132A is an anti-SARS-CoV-2 recombinant antibody engineered with certain sequences identified from the B cells of a COVID-19 patient.The antibody binds the viral spike protein with high affinity and has demonstrated potent neutralization of live virus infections in vitro and in vivo.It is expected that HFB30132A can function as a monotherapy, both to provide immediate defense against an active infection and to proactively prevent one.

4 Mental Health

4.1 Covid Coach

The epidemic of COVID-19 has had a severe influence on mental health and well-being.In large-scale catastrophe responses, mobile mental health apps can be scalable and valuable tools.COVID Coach is a free, evidence-based smartphone app that provides skills and resources to help people cope with COVID-19-related stress.