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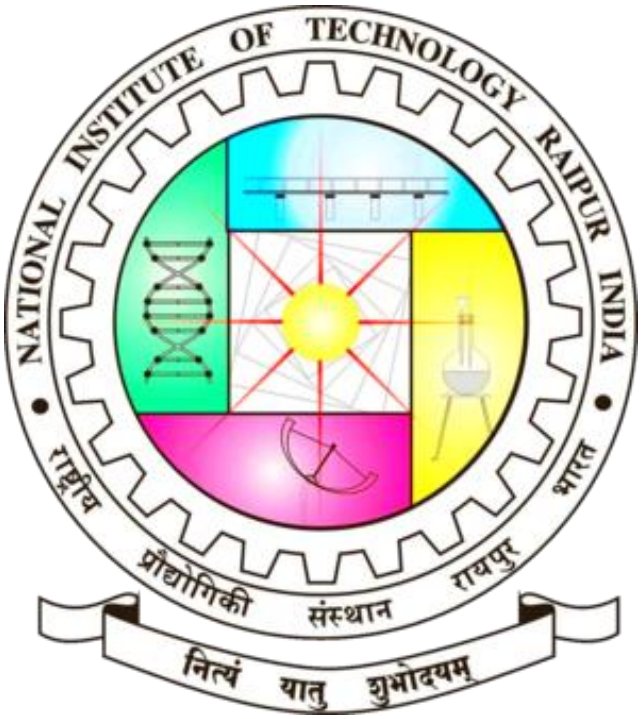

TERM PAPER PROJECT ON:

COVID-19 TACKLED BY BIOMEDICAL ENGINEERS

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Acknowledgement

I am grateful to Dr. Saurabh Gupta Sir for his proficient supervision of the term project on **Covid-19 Tackled by Biomedical Engineers**. I am also Very Thankful to his approach of teachings and explanation in this subject.

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INTRODUCTION

The pandemic of Covid-19 faced by the world, is one of the greatest pandemics ever in history. During these times, the innovation in the field of medical and health care was one of the most required developments to tackle this pandemic. Biomedical Engineers, all over the world, took this challenge and put up a various number of developments required in time being a constraint. These developments made by them helped the medical sector to tackle the pandemic, and will also be of help in the future.

PROBLEMS FACED BY HEALTH SECTOR DURIND COVID-19.

Various problems were faced by the medical sector during covid-19. Some are listed below.

- Lack of Hospital Beds
- Shortage of Oxygen Cylinders and supply
- Shortage of medicines
- Lack of medical devices such as Ventilators and Oxygen concentrators
- Lack of Medical Staff
- Lack of PPE and Masks
- Improper Management of hospitals

SOLUTION BY BIOMEDICAL ENGINEERS:

1. Oxygen Requirements: The biggest problem during Covid-19 was the requirement of Oxygen by Patients, as respiratory disease causes the requirement of oxygen at a large level. The innovation of Oxygen Concentrators is the contribution of Biomedical Engineers all over the world and Oxygen concentrators were required in a large number due to more severe cases. Oxygen concentrators extract oxygen from the air on demand and supply it directly to the patient. Concentrators come in a variety of sizes from a portable shoulder bag form factor, to higher capacity stationary machines for patients who need oxygen 24/7. And all these devices developed by Biomedical Engineers.

2. Ventilators: During Covid-19 Crisis, the most important devices is the Ventilator. Patients who cannot breathe spontaneously need to be put on a ventilator. Ventilators are capable of replacing the breath function and patients in an advanced state of respiratory distress are usually intubated and sedated at the beginning of the treatment. Ventilators are capable of replacing the breath function and patients in an advanced state of respiratory distress are usually intubated and sedated at the beginning of the treatment. They are complex systems providing the healthcare professionals with a lot of flexibility to adapt the assisted breathing settings and to be able to wean recovering patients off the ventilator gradually.

3. Medications: The variety of medications which came to use in treating Covid-19 was being developed by Biomedical Engineers along with pharmaceutical sector.

4. PPE KITS AND MASKS: The innovation of PPE kits used during Covid-19 is done by the Biomedical Engineers. Further development is also being made in this field such as to develop better kits for health care workers to suit the environment and is comfortable to wear for longer time. Masks such as N-95 is also developed in this period in a large scale in all parts of the world by engineers and workers.

5. Hospital Management: Management of hospitals during Covid-19 was the most difficult task of the time. Biomedical engineers developed several portals and software for the Hospitals.

6. Diagnosis: The diagnosis kits used to detect Covid-19 Virus, is developed by biomedical engineers. Also, many developed CT scans which came to be used to detect Chest Infections and their treatments are developed.

7. Bio-Waste Management: The crisis of Covid-19 lead to generation of a large amount of Bio-waste from hospitals and other treatment areas. The proper disposal of Bio-wastes in a proper way was managed by several Biomedical engineers specialized in this field.

8. Sterilization and Autoclave: All the equipment and tools used in the hospitals needs to be sterilized before using again. The Autoclave machines was required in a large number by hospitals due to increasing number of patients.

9. Developing Vaccine: The most important role of Biomedical and Biotechnology Engineers is developing the vaccine for this disease. The BME engineers, Biotech engineers and Pharmaceutical specialized in cells and viruses worked together to develop vac cines for Covid-19 used all over the world.

CONCLUSION:

The solution provided by Biomedical Engineers during the time of covid-19 is a remarkable achievement and helped the world to overcome this pandemic. Further developments is being continuously made in the health care sector by biomedical engineers all over the world. The health sector is emerging to be one of the finest developed unit, as it is the most crucial part of life.

I, hereby conclude this project, hoping it could be informative, in any extent.

Thank You.