Task 03

Smart Defibrillator

(24th of October, 2024)

Statement: You are required to design a **smart defibrillator** that integrates advanced sensors to monitor heart rhythms and deliver shocks when necessary. The device should focus on **early detection** and **timely intervention** in cardiac emergencies.

Overview:

1. **Design the Defibrillator Circuit:**
    - Your task is to design the **circuitry** of the defibrillator, including the components required for **ECG signal acquisition**, and **shock delivery**.
    - The circuit should detect abnormal heart rhythms (such as **ventricular fibrillation,** …etc) and deliver an electric shock in response.
2. **Integration of Sensors and Display System**
    - **ECG Sensor:** For real-time heart rhythm monitoring.
    - **Temperature Sensor:** To monitor the patient's body temperature.
    - **Real-Time Data Display**: Show the patient's heart rhythm, and temperature before and after the shock.
    - **Status Updates**: Display the patient's status (e.g., "Normal", "Arrhythmia Detected", "Shock Delivered", ..etc) before and after the defibrillator shock.
    - **Alarm System**: Provide visual alarms when abnormal rhythms are detected.
3. **Smart Features and Connectivity (Based on Your Idea)**

Deadline: Thursday, 7th of November, 2024

Policy: Group Task

Submission: In Class Submission

Evaluation Criteria:

Item	Grade
Full functionality of the HW	40%
Creativity and Innovation	30%
Questions	20%
Attendance	10%