Name of the Event: **E-champ**	Date: **09 Sept 2018**
Candidate's Code:	Time : 4. 30 Hours

Instructions

- **Question** is compulsory.
- Use of calculators is allowed.
- Use of mobile is strictly prohibited

Q.1

Part A) Design 8051 microcontroller based real time monitoring using optical communication system using ordinary LED and LDR for wireless communication between two locations that is user remote to perform the following operations.

1. Turn on pump motor and display PON on 7 segment multiplexed display at remote location when water falls below 50% in the reservoir.

2. Start bird shooting operation and display SON on 7 segment multiplexed display at remote location when any bird comes in range of the range detector module/sensor.

3. If both 1 and 2 operations are going on then display BUSY on 7 segment multiplexed display at remote location.

4. Display OCS on 7 segment multiplexed display at remote location if pump motor or bird shooting is off for more than two minutes.

NOTE: The bird shooting operation consist performing following two operations three times rotating 12 volt DC 1.8 degree unipolar stepper motor with 0.25 RPS in clockwise direction for 4 second and wait for 30 second.

Part B)

1. Design water level indicator using OP-AM P(741), LED and resisters, Potentiometers.

2. Also design range detector module using same above mentioned components.

- ➢ Draw neat labelled circuit diagram of 8051 microcontroller based system at remote location.
- ➢ Draw circuit diagram of system at user location with proper components values and labelling.