PET ENGINEERING COLLEGE

An ISO 9001:2015 Certified Institution, Approved by AICTE,
Recognized by Government of Tamil Nadu and Affiliated to Anna University
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Academic Year 2022 – 2023 (Odd Semester)
Date:28/11/2022
Degree, Semester & Branch: B.E., V & CSE
Course Code & Title: EC8691 & Microprocessor and Microcontroller
Name of the Faculty member (s): Mrs. Sujitha S

Innovative Practice Description

- **Unit / Topic: V** – Waveform Generation using 8051
- **Course Outcome:** CO5: The students will be able demonstrate hardware interfacing peripherals
- **Activity Chosen: Jigsaw**
- **Justification:**
  Jigsaw is a collaborative group activity with a twist: students effectively teach each other (with the teacher's guidance). Students learn through the process of communicating with one another about a given skill or procedure, topic or problem. This topic and its related to waveform generation using 8051 microcontrollers are more suitable for a Jig-Saw cooperative learning activity in which students get exposure to write programs using 8051 assembly languages. Students should be able to enhance their communication, programming knowledge and teamwork, and self-learning by this activity
- **Time Allotted for the Activity:** 50 minutes
- **Details of the Implementation:**
  Each groups with 7 members were formed. Each group formed by bright students, average students, and slow learners, consists of 7 members. One group contains 6 members. Classification of students such as a bright student, average students, and slow learners is based on their academic performance. The total class strength is 62 (Boys and Girls). 9 heterogeneous groups were formed based on academic performances such as the CGPA of end semester examination. The table1 shows the name of the groups.

Sl.No	Group Name	Number of members
1	Mercury	7
2	Venus	7
3	Mars	7
4	Earth	7
5	Jupiter	7
6	Saturn	7
7	Uranus	7
8	Neptune	7
9	Pluto	6

Sub Topics:

- Square Wave form Generations
- Triangle Wave form Generations
- Sawtooth Wave form Generations
- Non Uniform Pulse Wave form Generations
- Sine Wave form Generations

- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO3	PSO1
CO5	2	3	3	2

- **PO / PSO mapped:**

Innovative practice	PO2	PSO2
	3	2
Justification for correlation	It helps the students to provide solution for complex problems such as generating sine, triangular waves from digital input signals using 8051 microcontrollers. Hence it is mapped to level 3.	It helps the students to identify and interface the suitable peripheral components for real time interface based applications.

- **Reflective Critique:**

❖ ***Feedback of practice from students and other stakeholders:***

It piqued the curiosity of the students. They learn how to work as a team and communicate with one another.

❖ **Benefit of the practice:**

Every student had an equal opportunity to participate in this activity. The success of the exercise was assessed by asking the same question in Internal Assessment Test III, which was answered correctly most of the students.

❖ **Challenges faced in implementation:**

The main challenge faced is group conflict. Few Students are not ready to work together. To avoid that conflict I started to praise others, taking turns for equal participation, and shared decision making.

References:

❖ Yu-Cheng Liu, Glenn A.Gibson, “Microcomputer Systems: The 8086/ 8088 Family – Architecture, Programming and Design”, Second Edition, Prentice Hallof India 2007.

❖ Mohamed Ali Mazidi, Janice Gillispie Mazidi, Rolin Mckindlay, “The 8051 Microcontroller and Embedded systems: Using Assembly and C”, Second Edition Pearson Education, 2011.

PET ENGINEERING COLLEGE

An ISO 9001:2015 Certified Institution, Approved by AICTE,
Recognized by Government of Tamil Nadu and Affiliated to Anna University
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING