Embedded and Power Lab (304195)

Teaching Scheme:
Practicals: 4 Hrs/week

Examination Scheme:
 PR: 50Marks
 TW:50Marks

Embedded Processors

List of Experiments:
Group A: LPC2148 Based Experiments
1. Interfacing LPC2148 to LCD/GLCD
2. UART Interfacing LPC2148 in embedded system (GSM/GPS)
3. Interfacing LPC2148 for internal ADC on interrupt basis
4. Interfacing SD card to LPC2148
5. Interfacing EEPROM to LPC2148 using I2C protocol

Group B: LPC1768 Based Experiments
6. Interfacing LPC1768 to Seven Segment / RGB LED
7. Generation of PWM signal for motor control using LPC1768
8. Interfacing TFT display to LPC1768
9. Implementing CAN protocol using LPC1768
10. Implementing ETHERNET protocol using LPC1768

Power Electronics

List of Experiments (Any 8)
1) Characteristics of SCR
   i) Plot V-I characteristics
   ii) Observe the effect of gate current
   ii) Measure I_H & I_L
2) V-I Characteristics of MOSFET / IGBT
   i) Plot output characteristics
   ii) Plot transfer characteristics
3) Triggering circuit for SCR (Using UJT or IC-785)
   i) Verify the range of firing angle
   ii) Turn on the SCR, observe waveforms across load & SCR
4) Single phase Semi / Full Converter with R & R-L load
   i) Observe load voltage waveform,
   ii) Measurement of firing angle, average o/p voltage across loads,
   iii) verification of theoretical values with practically measured values.

5) Single-Phase PWM bridge inverter for R load

    i) Observe output rms voltage waveforms,

6) Step down dc chopper using power MOSFET / IGBT

    i) Measure duty cycle and observer effect on average load voltage for DC chopper

7) Find load & line regulation of given SMPS

8) Single phase AC voltage controller using SCRs for R load

    i) Observe output rms voltage waveforms,

    ii) Measurement of firing angle, o/p voltage across load,

    iii) verification of theoretical values with practically measured values.

9) Speed control of DC motor / stepper motor / ac motor

    i) Speed control of DC motor using armature voltage control / field control method.
     Measure RPM and plot graph of speed versus armature voltage and field current

        OR

    ii) Study drive circuit for stepper motor- phase sequencing and microstepping

        OR

    iii) Plot speed-torque characteristic of three phase induction motor.

10) To study over voltage / over current protection circuit.