PG/IIS/ELC-206/11(Pr.)

M.Sc. 2nd Semester Examination, 2011

ELECTRONICS

(*Electronic Materials and Device Lab.*)

PAPER—ELC-206

(Practical)

Full Marks : 50

Time : 3 hours

Answer **one** question

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

1. Determine the band gap of a semiconductor using a *P-N* junction and taking the variation of junction voltage with temperation for a fixed current value. Repeat this process for at least 2 different currents.

2. Determine cut in voltage, reverse saturation current and ideality factor for a *P-N* junction diode (fN4007) from current voltage measurement.

3. Implement the function $F = \Sigma m(0, 1, 2, 5, 7)$ on a bread board using a 8 : 1 multiplexer and necessary logic gates. Draw the truth table to verify your circuit with the given function.

4. Design a 4 bit shift register using JK F/F on a bread board. Verify your circuit for 4 sets of data.

5. Design a binary adder and subtractor circuit using IC 7483. Implement the circuit on a bread board and perform two addition and two subtraction operation.

6. Design a R-2R ladder circuit for digital to analog conversion. Verify the operation of this circuit for each combination of three bits as digital input. Draw the staircase graph showing digital to analog conversion.

7. Implement the function $F = \Sigma m\,(0, 1, 2, 5, 7)$ using a 3 to 8 decoder and verify its truth table.

Theory	: 05
Exp.	: 30
Viva	: 05
LNB	: 05
Discussion	: 05