# PG/IIS/ELC-206/13(Pr.)

## M.Sc. 2nd Semester Examination, 2013

## ELECTRONICS

(*Electronic Materials and Device Lab*)

( Practical )

PAPER – ELC - 206

*Full Marks* : 50

*Time* : 3 hours

Select any **one** question by lucky draw

1. Implement an adder/subtractor circuit on a bread board using 7483 IC chip. Record your data for two sets of addition of data. During subtraction, subtract one lower number from a higher number and one higher number from the lower number.

2. Draw a BCD adder circuit using 7483 IC chip, implement it on the bread board and perform three different BCD addition.

3. Implement the following functions using a 3 : 8 decoder circuits having active low outputs and record the truth table

$F_1 = \Sigma m\ (0, 1, 3, 6, 7)$
$F_2 = \Sigma m\ (2, 4, 5)$

4. Determine the barrier height of a schottky barrier diode, from the thermoionic measurement of the diode current use activation energy measurement method to determine the barrier-height.

5. Apply two different ac signals having frequency 5 kHz and 25 kHz on a diode circuit. Determine the junction capacitance of the device at different applied reverse biases. Plot-C-V characteristics of the device.

6. From the current voltage measurement of a P-N junction diode determine the reverse saturation current and material constant of the device.

7. Design— a 3 bit R-2R ladder circuit for digital to analog-conversion and verify your result from the recorded data. Plot Analog O/P vs digital input in a mm graph paper.

8. Implement the function $F = \Sigma m\,(0, 2, 5, 6, 8, 9)$ on a bread board using 8 : 1 multiplexer and necessary logic gates. Verify your result from the recorded data.

9. Design a 4 bit shift resister using J/K F/F on a bread board. Show your result for four sets of data. Draw the corresponding timing diagram.

10. Design a 16 : 1 multiplexer circuit using two 8 : 1 multiplexer and necessary logic gates. Implement this on a bread board and verify the result.

Marks distribution

| | | |
|---|---|---|
| Theory | : | 10 |
| Circuit | : | 05 |
| Experiment | : | 15 |
| Discussion | : | 05 |
| Viva | : | 10 |
| LNB | : | 05 |
| Total | : | 50 Marks. |