SCHOOL OF SCIENCES

UTTARAKHAND OPEN UNIVERSITY, HALDWANI (NAINITAL)

उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी (नैनीताल)

M.Sc. Physics (MSCPHY13)

First Year Assignment

Last Date of Submission: 15 May 2016

Course Title: Semiconductor Devices Analog and Digital electronics — Course Code: PHY-504

Year : 2015-16 — Maximum Marks :40

Section A

Section 'A' contains 08 short answer type questions of 5 marks each. Students are required to answer 4 questions only. Answers of short answer type questions should be in 250 words approximately.

1- Describe the construction, working, characteristics and applications of LED.
2- Explain with the help of neat diagrams, the structure of N-channel FET and its volt ampere characteristics. It what way it is different from a bipolar junction transistor?
3- Explain the working of Zener regulated power supply. Explain with an example.
4- Explain the concept of feedback with the help of neat diagram. Give the advantage of negative feedback amplifier over positive feedback.
5- What are the characteristics of ideal operational amplifier? Explain its different terms.
6- By using op amp design a full wave precision rectifier. Explain its working also.
7- Draw the circuit diagram of half adder, full adders and subtractor. Explain its working.
8- What is a flip flop? Explain clocked RS flip flop and Master Slave JK flip flop.

Section B

Section ‘B’ contain 04 long answers type question of 10 marks each and students are required to answers 02 questions only.

1- Draw the circuit diagram of an operational amplifier as differentiator and integrator. Explain its working.
2- State and prove De Morgan’s theorems. What are universal building block gates?
3- What do you mean by Karnaugh map? How a Boolean function can be simplified with the help of K map. By using example explain it.
4- What is multiplexer and demultiplexer? Describe the working of 4 to 1 demultiplexer.