

January 2017
M. Sc. IIIrd Semester Examination

PHYSICS
Third Paper : Digital Electronics

Time 3 Hours]

[Max. Marks : Regular 85 / Private 100

Note : This question paper is meant for all Regular and Private students. Answer all five questions. All questions carry equal marks. The blind candidates will be given 60 minutes extra time.

1. (a) Find the binary equivalent for the decimal number 48.36.
(b) Convert $(125)_{10}$ to Hexadecimal.
(c) What is 2's complement ?

OR

- (a) What do you mean by binary number system ? Explain.
(b) Convert the hexadecimal 3c to its decimal equivalent.
(c) What is 1's complement ?
2. (a) Explain the meaning of ASCII Code. How many bits are there in this code ? Explain.
(b) What is meant by BCD ? Explain. Write BCD number of 2945 decimal number.
(c) Draw all basic gates using any universal gate.
- OR
- (a) What is Gray Code of Number System ? Write down the advantages of this code.
(b) Explain the working of an Adder-Subtractor Circuit in 2's complement scheme with a relevant block diagram.
(c) Write down the difference between Combinational and Sequential Logic Circuit.
3. (a) Explain the concept of multiplexing and demultiplexing with their block diagram.
(b) Discuss the working of decoder with diagram. <http://www.davvonline.com>
(c) Draw the R-S flip flop and discuss it.

OR

- (a) Draw the JK Master Slave flip flop and explain why it is known as Master Slave flip flop?
(b) Discuss the working of encoder with diagram.
(c) What do you mean by Race-around condition ?
4. (a) Draw the circuit diagram of 4-bit ripple counter and explain it.
(b) Discuss the working of a MOD-10 Counter.

OR

- (a) Discuss the working of Ring Counter.
(b) Differentiate between Asynchronous and Synchronous Counter. Explain circuit as well as timing diagram of a 3-bit synchronous counter.
5. What do you mean by Digital to Analog Conversion ? Explain Binary Weighted Register Method.
OR
What do you mean by Analog to Digital Conversion ? Explain Counter Method.