



16-12-16

DOON UNIVERSITY, DEHRADUN
Mid Semester Examination, Second Semester, 2016-17
School of Physical Sciences
Core test paper of 5 Year (Integrated) MSc Program
Course: PHC-203: Digital Applications

Time Allowed: 3 Hours

Maximum Marks: 30

Note: Attempt All Questions from Sections A and B.

Attempt any two parts from section C.

SECTION: A

(Marks: 10)

1. What is the full form of ASCII?
2. Convert directly binary number 10111011011 into hexadecimal number.
3. Write 5 next numbers starting from hexadecimal number 9FE.
4. What are values of input and output logic levels of TTL.
5. Draw block diagram of a digital system.
6. What do you understand by thermionic emission?
7. Distinguish between (i) SSI (ii) MSI (iii) LSI
8. List different types of ROM's.
9. Draw symbols of negative edge triggered JK flipflop and give its truth table.
10. Write power supply used for TTL (a) 7400 (b) 5400 gate families.

SECTION: B

(Marks: 10)

6. Draw block diagram of a three bit up/down ripple counter.
7. Draw diagram of architecture of 8085 microprocessor.
8. Write truth table of rows for decimal number 6 and 7 of BCD to 7-segment decoder.
9. Prove that $x \oplus 1 = \bar{x}$

10. Draw the logic circuit for $\overline{\overline{A(A+B)}(C+D)\overline{D}} + \overline{\overline{A(A+B)}(C+D)\overline{D}}$

SECTION: C

(Marks: 10)

11. Draw truth table for 3 input full adder. Write Boolean expression using SOP for sum and carry outputs. Simplify the Boolean expression and draw block diagram to implement the same.
12. (i) Simplify using Karnaugh map $F(w,x,y,z) = \sum m(2,3,12,13,14,15)$
(ii) Draw block diagram of a 3-bit shift counter and give its states.
13. Draw a labelled diagram of a cathode ray tube. Derive expression for its deflection sensitivity.