Roll No.
Total No. of Questions : 09]
[Total No. of Pages: 02

## B. Tech (ECE/Electronics \& Computer Engineering/ETE) (Sem. - 3 ${ }^{\text {rd }}$ ) DIGITALCIRCUIT AND LOGIC DESIGN SUB,JECT CODE : BTEC - 302 (2011 \& 2012 Batch) <br> Paper ID : [A1131]

Time : 03 Hours
Instruction to Candidates:
Maximum Marks : 60

1) 

Section - A is Compulsory consisting of ten questions carrying two marks each.
2) Section - B contains five questions carrying five inarks each and students has to attempt any four questions.
3) Section-C contains three questions carrying ten marks each and students has to attempt any two questions.


Q1)
a) Convert Gray Code 11000 to Excess- 3 Code.
b) Convert (100.55) $)_{8}$ into Binary and Hexadecimal numbers.
c) How Overflow condition is detected in 2's complement arithmetic?
d) Justify with example, the Self-Complementing property of Excess-3 Code.
e) Convert $(A+B)(\bar{B}+C)$ into canonical SOP form.
f) Realize three input NOR gate using three input NAND gates only.
g) What do you mean by positive and negative logic?
h) Why Look Ahead Carry Adder are faster than Ripple Carry Adders?
i) Give the advantages of Totem Pole Output in TTL ICs.
j) Why Gray code is used in labeling the rows and columns in K-Map?

## Section - B

Q2) Compare asynchronous and Synchronous Sequential circuits.
Q3) Design the Logic Circuit of two bit magnitude comparator using NAND gates only.

Q4) Draw and explain the ECL circuit for 2 input OR gate.
Q5) Design a combinational circuit that converts three bit Gray Code to Binary number.

Q6) Realize Full-Subtractor using 1:8 Demultiplexer.

## Section - C

Q7) a) Compare DTL, TTL and ECL IC logic families in terms of Propagation delay, Power dissipation, Noise Margin and Fan-out.
b) Describe the operation of Dual-Slope analog to Digital converter using suitable diagram.

Q8) Design mod-8 UP and Downasynchronous Counter and illustrate its operation using timing waveforms. Describe the limitations of this counter.

Q9) Write short notes on followings :
a) Programmable Logic Devices.
b) Non-Weighted Binary Codes.

