

F.Y.B.Sc. (With Credits)-Regular-Semester 2012 Sem II  
**2SELE-T1-Electronics-I (Digital Electronics and Computer Fundamentals)**

**Paper - I**

P. Pages : 2

**GUG/W/16/5573**

Time : Three Hours



Max. Marks : 50

- Notes :
1. All questions are compulsory.
  2. Each questions carry equal marks.
  3. Draw neat diagram wherever necessary.
  4. Use of log table/ calculator is allowed.

**Either :**

1. a) Explain the concept of various number system with respect to base or radix. **6+4**  
Do as directed :-  
 $(92)_{10} = (?)_2$   
 $(173)_{10} = (?)_{16}$   
(Show calculations)

**OR**

- b) Explain 1's complement and 2's complement methods for subtraction of two binary numbers with suitable examples. **6+4**  
Perform the following using 9's complement method.  
i)  $(35)_{10} - (25)_{10}$   
ii)  $(82)_{10} - (95)_{10}$

**Either :**

2. a) What is Gray code? **5+5**  
Give comparison between BCD code and Gray code.  
State and prove Demorgan's theorem using truth table.

**OR**

- b) Draw the logic symbol of NAND gate. **5**  
Write its truth table, logic equation and explain its operation. **5**  
Why NAND gate is called as universal gate?  
Construct all basic gates using NAND gate.

**Either :**

3. a) Give the important characteristics of logic families and explain. **5+5**  
Draw the circuit diagram of two input TTL NAND gate and explain its working.

**OR**

- b) Explain with circuit diagram the operation of two input CMOS NOR gate. **5+5**  
Write short note on  
i) Tristate logic.  
ii) Precautions for CMOS IC's.

**Either :**

4. a) Explain various generations of a computer. 5+5  
Explain in brief functions of following devices with reference to computer.  
i) mouse  
ii) optical disk

**OR**

- b) What is printer? List its various types and explain any one. 5+5  
State and explain any two applications of a digital computer.
5. a) Write a note on signed binary numbers. 2½
- b) Explain use of Ex-OR gate as controlled inverter. 2½
- c) Compare between TTL and CMOS logic families. 2½
- d) Differentiate between primary and secondary memory of a computer. 2½

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