F. Y. B.Sc.(Part-I) (With Credits)-Regular-Semester 2012 Sem II

2SELE-T1-Electronics-I

(Digital Electronics and Computer Fundamentals) Paper-I

P. Pages : 2 **GUG/S/16/5573**

Time : Three Hours * 0 8 2 8 * Max. Marks : 50

Notes : 1. All questions are compulsory.
2. All questions carry equal marks.
3. Draw neat and well labelled diagram wherever necessary.

1. Either

a) Explain binary number system. State its advantages. Explain the conversion of **4+**
a) Decimal number to binary number **3+**
b) Binary number to decimal number with the help of suitable examples. **3**

OR

b) Define 2's complement of binary number. Give at least two examples. Give steps to perform binary subtraction using 2's complement method perform the following subtraction by 2's complement method **3+ 3+ 4**
i) $(11101)_2 - (1011)_2$
ii) $(1001)_2 - (10001)_2$

2. Either

a) What is logic gate? What do you mean by basic and derived gates? Explain why NAND and NOR gates are called universal gates. **1+ 3+ 3+ 3**

OR

b) What is EXOR gate? Explain its use as a controlled inverter. State and prove Demorgan's theorem. **1+ 3+ 6**

3. Either

a) Explain the following characteristics of logic families. **4+**
i) Noise immunity **6**
ii) Propagation Delay
iii) Fan out
Explain the construction and working of two input TTL NOR gate with the help of suitable circuit diagram.

OR

b) Give the classification of logic families. State the advantages of CMOS logic family. **3+**
Explain the construction and working of two input CMOS NAND gate with the help of suitable circuit diagram. Write the truth table for the circuit. **2+ 5**

4. Either

a) Draw and explain the block diagram of computer. List and explain the various generation of computer. **5+ 5**

OR

Explain any two input and two output devices. Explain the use of pen drive as an I/O device. **8+ 2**

5. a) What is gray code? Convert the following binary numbers into grey code. **2½**
   i) $(10101)_2$
   ii) $(110011)_2$
   iii) $(11101)_2$

   b) Explain the 1's complement representation of signed numbers with examples. **2½**

   c) Explain the concept of Tristate logic. **2½**

   d) Write short note on hard disk. **2½**

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