B.Sc. (With Credits)-Regular-Semester 2012 Sem II

2SELE-T1 Electronics Paper - I

(Digital Electronics and Computer Fundamentals)

P. Pages : 4

Time : Three Hours Max. Marks : 50

Notes : 1. All questions are compulsory and carry equal marks.
2. Draw neat and labelled diagrams wherever necessary.
3. Use of log table / calculator is allowed.

1. Either :

a) What is number system? State any four types of number system with their bases. Convert the following as directed **5**

i) $(110101.101)_2 = (.....)_{10}$

ii) $(1001011.10)_2 = (.....)_8$

b) Explain double dabble method to convert decimal number into its equivalent binary with suitable example. **5**

OR

c) Perform following subtraction using 2's complement : **5**

i) $(101001)_2 - (11010)_2$

ii) $(23)_{10} - (18)_{10}$

d) What is 9's and 10's complement? Explain with examples. perform $(28)_{10} - (15)_{10}$ using 9's complement. **5**

2. Either :

a) What is 8421 code? Explain with examples. State its advantage. **5**

b) Explain Excess - 3 code with example. Why this code is called self complementary code? **5**

OR

c) Give symbol, Boolean equation and truth table for NAND and NOR gates. **5**

d) State and prove DeMorgan's theorem for two variables. Also draw its logic diagram. **5**

3. Either :

a) What are logic families? Give classification of logic families. **5**

b) Define the terms related to logic families : **5**

i) Propagation delay

ii) Noise immunity

iii) Power dissipation

iv) Figure of merit

v) Fan in and Fan out.

OR

c) Draw circuit of two input TTL NOR gate and explain its working. **5**

d) Draw circuit of two input CMOS NAND gate and explain its working. **5**

4. Either :

a) Explain various generations of a computer. **5**

b) Write short note on mouse and scanners. **5**

OR

c) What is printer? State and explain various types of printers on the basis of way of printing. **5**

d) Enlist any ten applications of computer. **5**

5. a) Explain sign magnitude numbers with suitable examples. **2½**

b) State Boolean laws for AND and OR operation. **2½**

c) State the advantages of CMOS over TTL logic families. **2½**

d) Explain digital, analog and hybrid types of computer. **2½**

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