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RR-0610

First Year B. Sc. Examination

March / April – 2010

Electronics : Paper - I

(Computer Science) (Basic Electronics)

Time : **3** Hours] [Total Marks : **70**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ F. Y. B. Sc.

Name of the Subject :

☛ Electronics - 1

☛ Subject Code No. : 0 6 1 0 ☛ Section No. (1, 2,.....) : Nil

Seat No. :

Student's Signature

(2) All questions are **compulsory**.

(3) Assume data if necessary.

(4) Symbols and abbreviations have their usual meaning.

(5) Figures to the right indicate full marks.

1 Answer in brief : **7×2=14**

(a) Write full form of

(i) JFET

(ii) MOSFET

(iii) LED

(iv) LDR

(b) Enlist the types of memory

(c) Define tolerance of resistor

(d) What is the basic difference between P-type and N-type semiconductor ?

(e) Enlist the types of number system.

(f) What do you mean by break down in diode?

(g) Draw the symbol of NAND and XOR gate.

2 (a) What is resistor? Explain various types of resistor in detail. 8

(b) Give the colour codes of following resistor : 6

(i) 3.9 kΩ (ii) 4.7 kΩ

(iii) 1 MΩ.

OR

2 (a) Distinguish between metal, semiconductor and insulator. 8

(b) Convert the following binary numbers to decimal : 6

(i) 1011 (ii) 1101101

(iii) 1110111

3 (a) Explain construction, working and characteristics of diode. 8

(b) Write the truth table of 6

(i) AND gate (ii) OR gate

(iii) NOR gate.

OR

3 (a) Explain construction and working of transistor in detail. 8

(b) Design the logic circuit representing boolean expression : 6

(i) $X = A + \overline{B} \bullet C$ (ii) $X = (A+B)\,(\overline{A}+C)\,(B+D)$.

4 (a) Why NAND and NOR gate are called universal gates? Explain NAND and NOR gate in detail. 8

(b) Prove the following boolean identity : 6

$A+(B \bullet C) = (A+B) \bullet (A+C)$.

OR

4 (a) Explain half adder and full adder in detail. 8

(b) State and prove De-Morgan's first and second theorem. 6

5 Write short notes : (any **two**) **7×2=14**

(i) R-S Flip-Flop (ii) Binary Counter

(iii) ROM (iv) Types of capacitor.