



**J-0842**  
**Second Year B. Sc. Examination**  
**March / April – 2013**  
**Electronics : Paper - IV**  
*(Digital Electronics & Microprocessor)*

Time : 3 Hours]

[Total Marks : 70

**Instructions :**

(1)

<p>નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fillup strictly the details of signs on your answer book.</p> <p>Name of the Examination : ☛ <b>Second Year B. Sc.</b></p> <p>Name of the Subject : ☛ <b>Electronics : Paper - IV</b></p> <p>☛ Subject Code No. : <b>0 8 4 2</b> ☛ Section No. (1, 2,.....) : <b>Nil</b></p>	<p>Seat No. : <input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/></p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center; width: 100%;">Student's Signature</div>
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- (2) Figures to the right indicate full marks.
- (3) All symbols and abbreviations have their usual meaning.
- (4) Non-programmable calculators are allowed.
- (5) Q.1 is compulsory.
- (6) Assume data if necessary.

1 Answer in short :

14

- (a) What is an octal number system ?
- (b) State De Morgan's theorem.
- (c) Define logic gate.
- (d) What is meant by power dissipation ?
- (e) Explain pin ALE of 8085  $\mu$ p.
- (f) What is a multiplexer ?
- (g) What are the applications of shift register ?

2 (a) Perform the following subtraction using 1's complement 8 method :

- (i)  $1011 - 1001$
- (ii)  $1001 - 1110$ .

- (b) Convert binary code 10110, 11111 and 1110010 into gray code. 6

**OR**

- 2 (a) Explain the X-OR gate and its applications. 8  
(b) Prove that NAND as universal logic gates. 6

- 3 (a) Simplify the following expression using the K-map. 8

$$Y = m_1 + m_3 + m_5 + m_7 + m_9 + m_{12} + m_{13}.$$

- (b) Explain the working of RS flip-flop. 6

**OR**

- 3 (a) Explain the operation of universal shift register. 8

- (b) Draw and explain the logic diagram of 4-bit binary ripple counter. 6

- 4 (a) Explain the different instructions of data transfer group of 8085  $\mu$ P. 8

- (b) Write an assembly language program to add the two 16 bits numbers stored in consecutive memory locations. Place the result at suitable memory location. 6

**OR**

- 4 (a) Explain all the registers of 8085  $\mu$ P. 8

- (b) Explain the function of the following pins of 8085  $\mu$ P. 6

(i)  $AD_0 - AD_7$  (ii) SID (iii) Ready

- 5 Write short notes : (any two) 14

- (a) Half subtractor  
(b) J-K master - slave flip-flop  
(c) Error detecting and correcting code  
(d) Semiconductor memories.