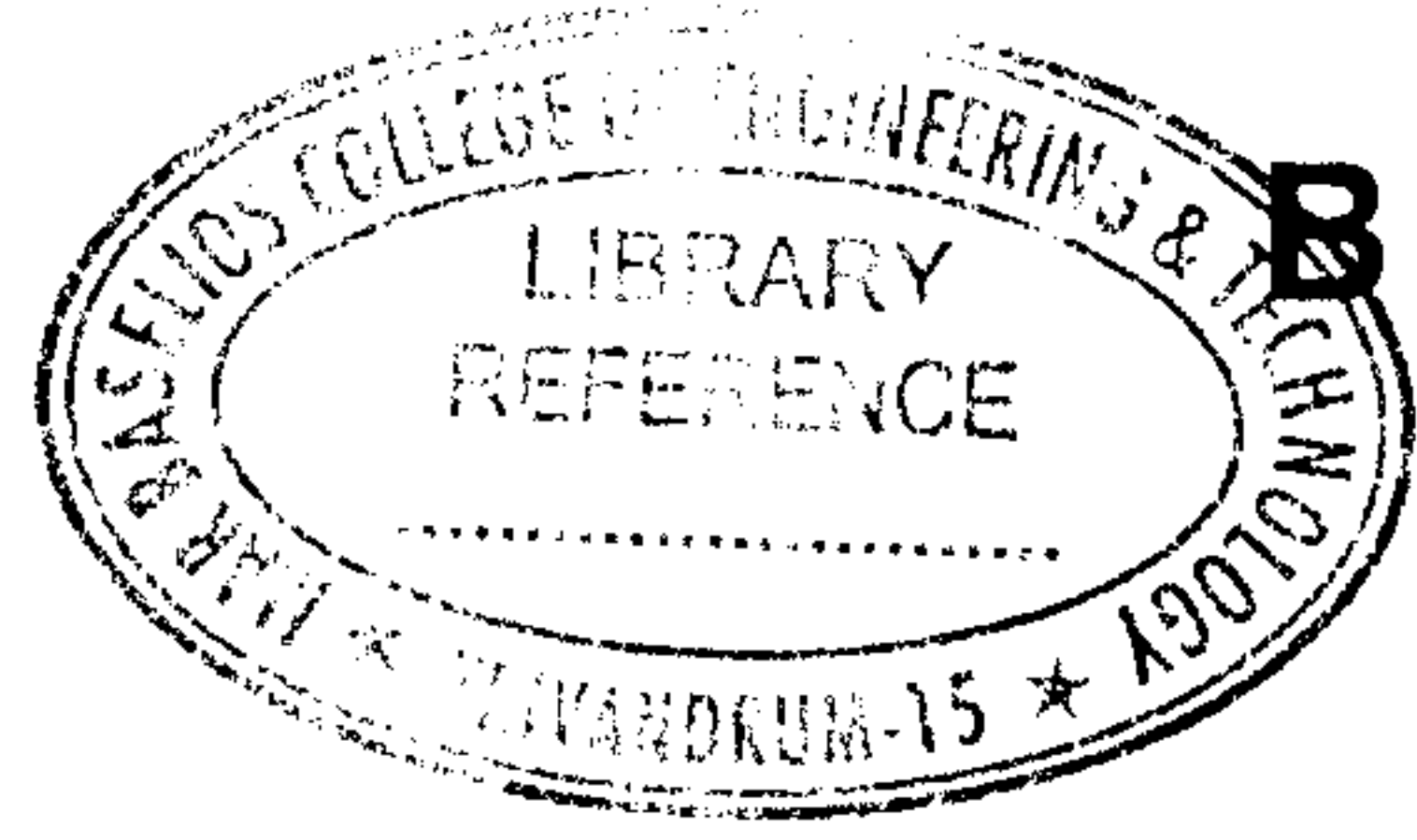




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B – 3291

Reg. No. :

Name :

**Fifth Semester B.Tech. Degree Examination, December 2016
(2013 Scheme)
13.503 : INDUSTRIAL ELECTRONICS (MP)**

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions :

1. How is signed numbers represented in a digital computer ?
2. Differentiate between a register and a counter.
3. Draw the schematic diagram of a IGBT.
4. List four applications of induction heating in industry.
5. Differentiate closed loop and open loop control systems.
6. List the different methods to analyse the stability of a system.
7. Draw and mark the block schematic of a sequence timer.
8. Explain the instructions CLR and CPL.
9. What are the functions of Interrupt Enable (IE) and Interrupt Priority (IP) registers ?
10. List four features of 8051. **(10×2=20 Marks)**

PART – B

Answer **any one** question from **each** Module. **Each one** carries **20** marks.

Module – I

11. a) Describe the working of four types of shift registers with the help of diagrams. **15**
b) Write note on TFT display. **5**
12. Explain the principle of operation of
 - 1) Photo transistor
 - 2) LDR
 - 3) SCR
 - 4) IGBT**(4×5=20)**

P.T.O.



Module – II

13. a) Illustrate the application of optoelectronic devices in counting of moving objects. 10
 b) Explain one method of thickness measurement in industry. 10
14. a) Explain the principle of dielectric heating. What are the applications of dielectric heating in industry? 10
 b) Explain the functioning of a data acquisition system using a block diagram. 10

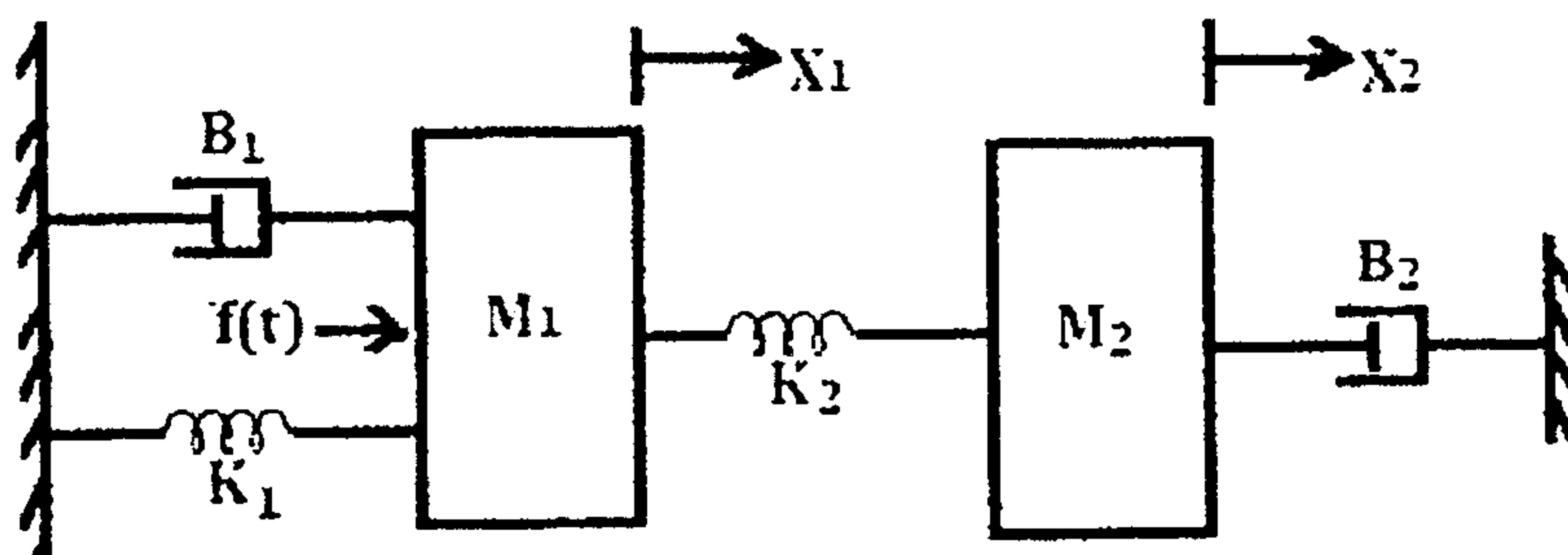
Module – III

15. a) Describe the Register and Memory Organisation of 8051. 10
 b) Categorize the instruction set of 8051 giving examples for each group. 10
16. a) Explain Rotate Instructions in 8051. 5
 b) Explain PUSH and POP operations in 8051. 5
 c) Write a program to multiply two 8 bit numbers stored in the external memory. 10

Module – IV

17. a) Determine the stability of the system using Routh-Hurwitz criterion whose characteristic equation is given by

$$S^4 + 2S^3 + 3S^2 + 4S + 5 = 0$$
 8
 b) Write the differential equation governing the mechanical system shown in figure and determine the transfer function $X_1(s)/F(s)$ and $X_2(s)/F(s)$. 12



18. Sketch the Bode plot for the transfer function $G(s) = \frac{50(1 + 0.1s)}{s(1 + 0.01s)(1 + s)}$.
 Determine :
 i) Gain cross over frequency ii) Phase cross over frequency
 iii) Gain margin and phase margin.

