

FIFTH SEMESTER B.TECH. DEGREE EXAMINATION

2013 Scheme- Model Question Paper

13.503 INDUSTRIAL ELECTRONICS (MP)

Time: 3 hours

Max. Marks: 100

PART-A

Answer **all** questions. **Each** question carries **2** marks.

1. Convert the following
 - a. $(3287.5100098)_{10}$ into octal
 - b. $(2F9A)_{16}$ into decimal
2. What is IGBT? What are its advantages over BJT and FET?
3. Explain the principle of operation of Photo transistor?
4. Draw the block diagram of Data acquisition system?
5. Explain PSW register of 8051?
6. State and explain the addressing mode used in each of the following instructions of 8051.
 - a. `MOVX @dptr,A`
 - b. `MOV r0, #07H`
7. Describe the structure of internal RAM in 8051.
8. Define Stability of the system. List two methods for stability analysis
9. Define rise time and peak time of a system.
10. Explain the principles of PID controllers. (2 x 10=20 Marks)

PART – B

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

Module – I

11. With neat diagram explain the working and V-I characteristics of SCR 20
12. Draw the transition table of T flip flop and explain a 3 bit up counter using T flip flop 20

Module – II

13. Explain the principle of induction heating and dielectric heating. Explain their important applications. 20
14. Discuss the methods for the measurement of pressure, displacement, thickness, viscosity and PH. 20

Module – III

15. With the help of neat diagram explain the internal architecture of 8051. 20
- 16.
- a. Write an assembly language program in 8051 to add two 16 bit numbers 10
 - b. Explain ADC interfacing with 8051 10

Module – IV

- 17.
- a. Write the differential equations governing the mechanical system shown below Figure 1 and determine transfer function 14

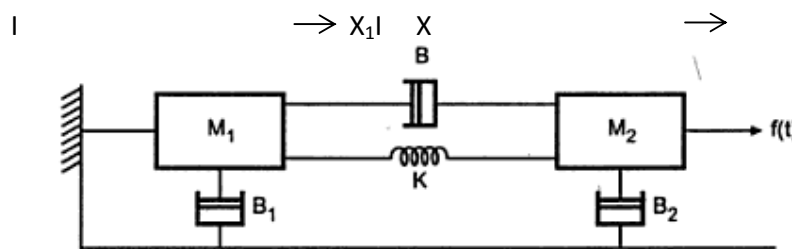


Figure 1

- b. Using Routh criterion determine the stability of the system represented by the characteristic equation $s^4 + 8s^3 + 18s^2 + 16s + 5 = 0$ 6
18. Sketch the bode plot for the following transfer function and determine the gain margin and phase margin 20

$$G(s) = \frac{10(s+3)}{s(s+2)(s^2+4s+100)}$$

(4 x 20 = 80 marks)