



Reg. No. : .....

Name : .....

**Fifth Semester B.Tech. Degree Examination, December 2015**  
**(2008 Scheme)**  
**08.504 : INDUSTRIAL ELECTRONICS**  
**(MP)**

Time : 3 Hours

Max. Marks : 100

**PART – A**

Answer **all** questions. **Each** question carries **4** marks :

1. Draw the structure and equivalent circuit of UJT.
2. Mention few applications of dielectric heating.
3. What is the purpose of a converter in dc drives ?
4. Explain the principle of thermistors.
5. Write any 4 instructions from data transfer group of 8051 and explain their meaning.
6. Draw the register bank organisation of 8051.
7. Define transfer function. Obtain transfer function of an RC network.
8. Define rise time, delay time and peak overshoot.
9. Discuss any two frequency domain specifications of a control system.
10. How do you analyse the stability of a control system using Bode Plot ?

**(10×4=40 Marks)**



P.T.O.



## PART – B

Answer **any one full** question from **each** Module.

**Module – I**

11. a) Discuss the principle of AC resistance welding process.  
b) With the help of structure and characteristics, explain the working of phototransistor.
12. a) Draw the structure of a triac. Explain its V-I characteristics.  
b) Write notes on :  
i) Power BJT.  
ii) Water level control in a tank using any photoelectric device.

**Module – II**

13. a) Draw the organisation of 8051 microcontroller and explain briefly.  
b) Write an assembly language program for 8051 to add two 8-bit numbers. Assume that the numbers are stored in external memory locations and the sum exceed 8-bits.
14. a) Draw the block diagram for temperature control in a furnace using microcontroller and explain.  
b) Draw the block diagram for a data acquisition system and explain clearly.

**Module – III**

15. a) Analyse the system using Routh's criterion and determine the range of K for which the system is stable.  $2s^3 + 6s^2 + 6s + k + 1 = 0$ .  
b) Explain the principle of PD and PID controllers. Compare their performance.

16. A unity feedback system has an openloop transfer function  $G(s) = \frac{10}{s(s+2)}$ . Find the rise time and peak time for a unit step input. Derive the relevant equations.

(3×20=60 Marks)