



Reg. No. : .....

Name : .....

**Fifth Semester B.Tech. Degree Examination, January 2018  
(2008 Scheme)**

**08.504 : INDUSTRIAL ELECTRONICS (MP)**

Time : 3 Hours

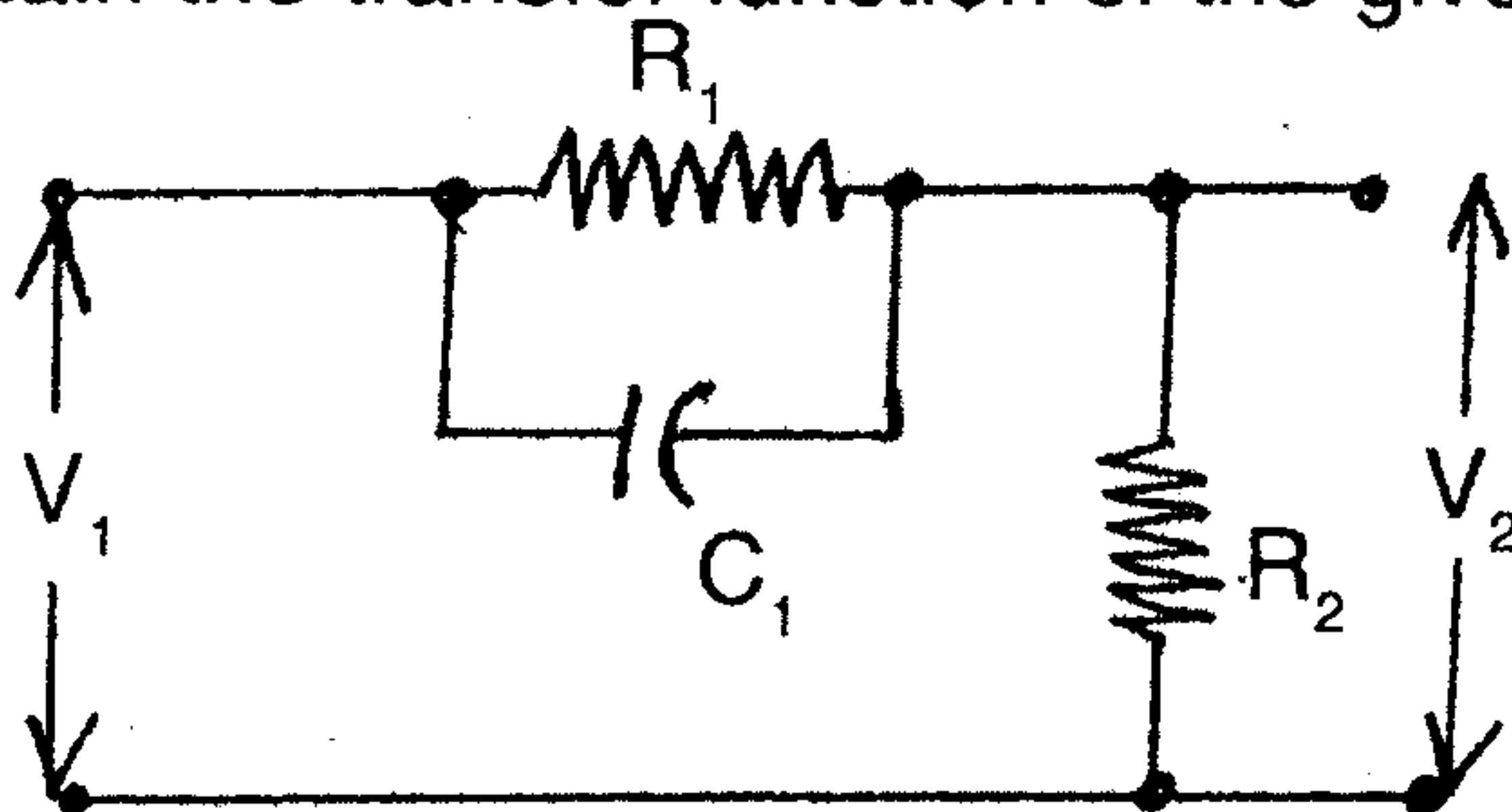
Max. Marks : 100

**PART – A**

Answer **all** questions.

**(10×4=40 Marks)**

1. With neat schematics explain the construction of power BJT. Discuss the need for heat sinks for power BJTs.
2. With the help of circuit diagram and waveforms explain the operation of UJT relaxation Oscillator.
3. Explain the principle of dielectric heating.
4. Explain the principle of operation of APD. Discuss its applications.
5. Explain the difference between XCH and XCHD instruction of 8051 micro controller.
6. Briefly explain the construction of laser diode and explain its operation.
7. Explain the working of DAC and ADC with relevant diagrams and waveforms.
8. Briefly explain rise time and delay time of a typical second order system.
9. Obtain the transfer function of the given electrical circuit.



10. Briefly explain the principle of a PID controller.



## PART – B

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

(20×3=60 Marks)

**Module – I**

11. a) With neat sketches explain the construction of SCR. 5
- b) Draw the V – I characteristics of SCR and explain different regions of operation. Explain the concept of holding current and latching current. 15
12. a) With the help of neat circuit diagram and waveforms explain the working of a single phase bridge converter. 15
- b) List the advantages of bridge converter over half wave converter. 5

**Module – II**

13. What do you mean by addressing mode ? Explain different addressing modes of 8051 micro controller with example illustrations. 20
14. Draw the internal architecture of 8051 micro controller and explain each block. 20

**Module – III**

15. Draw the block schematic of a standard second order system. Deduce closed loop transfer function of the system. Draw a typical unit step response of an underdamped second order system and explain. 20
16. Consider a unity feedback system with open loop transfer function
- $$G(s) = \frac{100}{s(1 + 0.1s)(1 + 0.2s)}$$

Sketch the bode plots. Find gain margin, phase margin, gain crossover frequency and phase crossover frequency. 20

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