

3E1462-RB

Roll No. : _____

Total Printed Pages : 4

3E1462-RB

B. Tech. (Sem. III) (Reback) Examination, February - 2013

Computer Engineering

3CP/CS2(O) Electronic Devices & Circuits (Common for CP & IT)

Time : 3 Hours]

[Total Marks : 80

[Min. Passing Marks : 24

Attempt any five questions, selecting one question from each unit.
All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

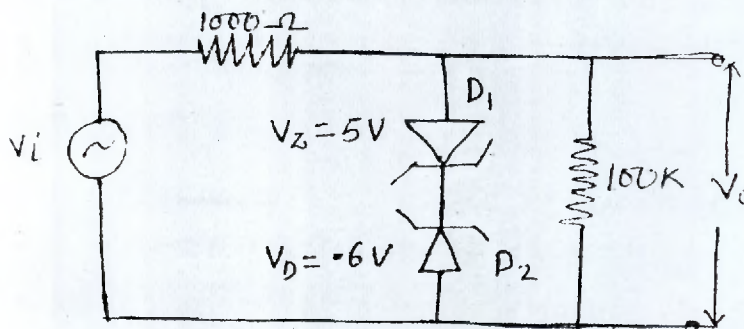
Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. NIL2. NIL

UNIT - I

- I (a) What is clamper circuit ? Explain the working of positive clamper circuit with input 10V peak-peak triangular wave draw its output voltage waveform. 8

- (b) Draw output voltage waveform for following diode circuit. Here forward drop for zener zero volts $V_i = 10 \sin \omega t$.



8

OR



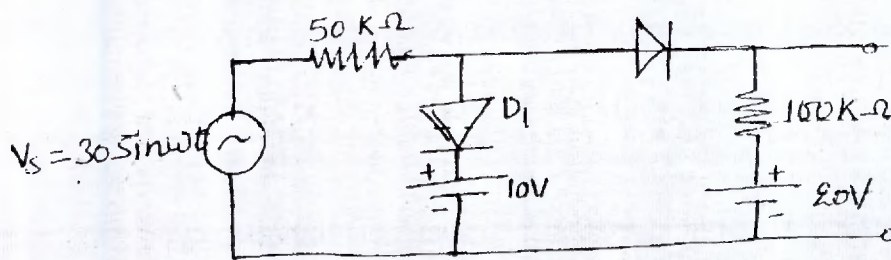
- 1 (a) For given circuit prove

$$e^{qV_1/kt} + e^{-qV_2/kt} = 2 \text{ here } \eta = 1$$

Also find current through and voltage across each diode when $V = 5V$ and $V_T = 26 \text{ mV}$.

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- (b) Plot the transfer characteristic of the figure shown below indicating all intercepts, slopes and voltage levels. Assume the diode are ideal.



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UNIT - II

- 2 (a) Explain construction, characteristic and working of phototransistor.

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- (b) Why we use photo diode in reverse bias mode ?

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OR

- 2 (a) Draw the UJT static emitter characteristic curve and UJT equivalent circuit.

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- (b) (i) Why do we get negative resistance region in UJT ?

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- (ii) Briefly explain construction characteristic and application of Light Emitting diode.

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UNIT - III

- 3 (a) What does thermal stability mean ? Derive the expression for the thermal stability.

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- (b) The transistor in the given circuit has $\beta=100$ and exhibits a V_{BE} of 0.7 at $i_c = 1\text{mA}$. Design the circuit so that a current of 2ma flows through the collector of a voltage of +5V appears at a collector.

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OR

- 3 (a) Draw and explain the working of n-p-n transistor operating in different modes using band diagram theory.

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- (b) Prove $V_{CE} < \frac{1}{2}V_{CC}$ to avoid thermal runaway.

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UNIT - IV

- 4 (a) Write an explanatory note on Miller theorem and its dual.

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- (b) Give the ac analysis of a dual input balanced output differential amplifier.

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OR

- 4 (a) Draw and explain the working of two stage RC coupled amplifier.

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- b) Draw a darlington emitter follower and explain why the input impedance is higher than that of a single stage emitter follower.

8

UNIT - V

5 Write short note on : (any two)

- (i) Bistable Multivibrator
- (ii) Crystal oscillator
- (iii) Schmitt trigger
- (iv) Blocking oscillator.

8+8

