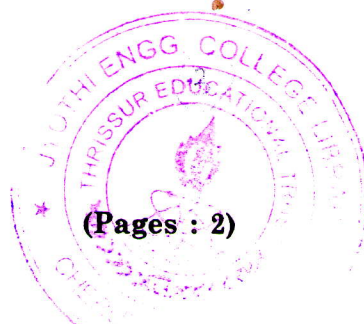


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Name.....

Reg. No.....

**THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2009**

Computer Science Engineering

CS/IT 2K 304/PTCS 2K 107—BASICS ELECTRONICS ENGINEERING

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

1. (a) What is the difference between energy level and energy band ? Explain.
(b) Why are diodes not operated in break-down region in rectifier service ? Discuss.
(c) Why is the collector current slightly less than emitter current in the transistor ? Give its importance.
(d) Mention the essentials of a biasing circuit. Write its significance.
(e) Define the terms distortion and power dissipation capability in power amplifiers.
(f) What is an oscillator ? What is its need ? Give its applications.
(g) Draw the ideal voltage transfer characteristics of an Op-Amp and explain.
(h) How an Op-Amp can be used as a comparator ? Explain.

(8 × 5 = 40 marks)

2. (a) Explain the formation of potential barrier in a $p-n$ junction, also discuss the behaviour of a $p-n$ junction under forward and reverse biasing.

Or

- (b) Draw and explain the input and output characteristics of CE connection and derive the expression $\beta = \frac{\alpha}{1 - \alpha}$.

3. (a) Describe the potential divider method in detail. Explain how stabilization of operating point is achieved by this method.

Or

- (b) Show that the output voltage of a single-stage common emitter transistor amplifier 180° out of phase with the input voltage.
4. (a) (i) Show that maximum collector efficiency of class A transformer coupled power amplifier is 50 %.
(ii) A power transistor dissipates 4 W. If $T_{jmax} = 90^\circ \text{C}$., find the maximum ambient temperature at which it can be operated. Given $\theta = 10^\circ \text{C/W}$.

Or

- (b) Explain with neat diagram the tuned collector oscillator.

5. (a) Draw and explain the working of Op-Amp circuit as integrator and differentiator.

Or

- (b) Write short notes on :

(i) Precision diode.

(8 marks)

(ii) Active filters.

(7 marks)

[4 × 15 = 60 marks]
