

**THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE  
EXAMINATION, DECEMBER 2003**

CS. 2K/IT SK 304. BASIC ELECTRONIC ENGINEERING

Time : Three Hours

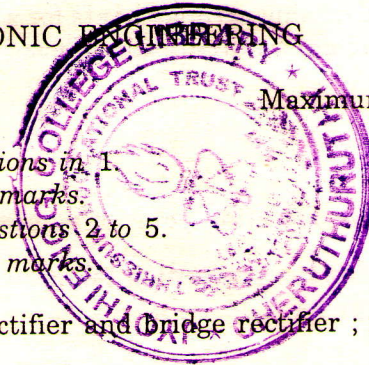
Maximum : 100 Marks

*Answer all the eight questions in 1.*

*Each question carries 5 marks.*

*Answer either (a) or (b) of questions 2 to 5.*

*Each question carries 15 marks.*



1. (a) Compare the ripple factor of center tap type rectifier and Bridge rectifier ; reason out for the differences, if any.
  - (b) Explain the construction of power diode.
  - (c) Draw a single stage amplifier with RC coupling and emphasize the need for all components used.
  - (d) Derive the low frequency small signal equivalent circuit of a common emitter amplifier from the V-I equations.
  - (e) What is Harmonic distortion ? How is it eliminated in power amplifiers ?
  - (f) Draw the circuit diagram of a Clapp oscillator and explain its operation. How is it different from other LC oscillators ?
  - (g) Draw the circuit diagram of a differential amplifier using op-amp. Derive the expression for its voltage gain. What modification is done to make it a non-inverting amplifier ?
  - (h) Why is second order differential equation solved using only integrator and not using the differentiator ?
- (8 × 5 = 40 marks)
2. (a) (i) What are the different types of LED available commercially ? (3 marks)
  - (ii) How is an LED fabricated ? (3 marks)
  - (iii) What are its specifications ? (3 marks)
  - (iv) Draw its volt-ampere characteristics. (3 marks)
  - (v) What are its applications ? (3 marks)

Or

Turn over

- (b) (i) Explain the constructional details and also operation of a UJT. (7 marks)
- (ii) Why is negative resistance region appearing in its characteristics? What for is this region used?

(8 marks)

3. (a) Show the biasing arrangements for a PNP transistor in CB, CE and CC configurations. How is a particular configuration arrived at, for a.c. signals?

(6 + 9 = 15 marks)

Or

- (b) (i) How is operating point of amplifier selected? (3 marks)
- (ii) What is the precaution taken to stabilize the operating point? Draw circuit diagrams to explain.

(12 marks)

4. (a) Prove that the efficiency of the class B power amplifier is 78.5 % theoretically. Why does this reduce practically?

(15 marks)

Or

- (b) (i) What are the four types of negative feedback? (4 marks)
- (ii) Tabulate the input and output impedances of each one of them. (4 marks)
- (iii) Give a practical circuit of each one of them. (4 marks)
- (iv) What are the merits of negative feedback in amplifiers? (2 marks)
- (v) At what cost these merits are obtained? (1 mark)
5. (a) (i) Why is an operational amplifier called so? (3 marks)
- (ii) List atleast seven applications of op-amp. (7 marks)
- (iii) Draw the circuit diagrams of any *five* of them. (5 marks)

Or

- (b) Using two op-amps explain how can you generate both square and triangular waveforms, with one as the input to the other.

(15 marks)

[4 × 15 = 60 marks]