D 30338 (2 pages)

Name.....

Reg. No.....

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]