EE

D 51481 **(Pages 2)** **Name**.....

Reg. No.....

THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2008

EE 04 305—ELECTRONICS—I

(2004 admissions.)

Time : Three Hours **Maximum : 100 Marks**

Part A

I. (a) Write short note on breakdown diode.

(b) Explain the characteristics of CB-BJT.

(c) Explain the concept of load line of diodes.

(d) Define and explain (i) Ripple factor (ii) TUF related with diode rectifier.

(e) Write short note on operating point instability.

(f) Compare small signal and large signal operation of amplifiers.

(g) Define α-cut off frequency and β-cut off frequency of amplifier.

(h) Explain the concept of current source biasing.

(8 × 5 = 40 marks)

Part B

II. (a) Explain the charge density in extrinsic Semi-conductor. (7 marks)

(b) Define diffusion capacitance of a diode. How does the diffusion capacitance vary with dc diode current.

(8 marks)

Or

(c) Derive the relationship among the current components of CE-BJT. (7 marks)

(d) Explain the construction and characteristics of JFET. (8 marks)

III. (a) Explain with relevant diagrams, the operation of bridge rectifier. Derive the expressions for (i) d.c. Current (ii) d.c load voltage (iii) a.c. r.m.s. current.

(10 marks)

(b) What are the merits and demerits of bridge rectifier ? (5 marks)

Or

Turn over

IV. (a) Draw and explain the working of the following circuits and derive the expressions for stability factor : (i) Fixed-bias circuit ; (ii) Self-bias circuit.

(8 + 7 = 15 marks)

Or

(b) Derive the equations for voltage gain, current gain, input impedance and output admittance for a BJT using low frequency *h*-parameter model for CE configuration.

(15 marks)

V. (a) (i) Derive the equations for α and β cut-off frequencies in terms of transistor parameters.

(ii) Explain about 'Gain bandwidth product'.

(10 + 5 = 15 marks)

Or

(b) Explain the following terms in brief :

(i) Miller effect.

(ii) Differential amplifiers.

(iii) Selection of emitter by-pass capacitors in BJT amplifiers.

(15 marks)

[4 × 15 = 60 marks]