Code No: 07A1EC06 **Set No. 1**

I B.Tech Regular Examinations, May/Jun 2008
ELECTRONIC DEVICES AND CIRCUITS
(Common to Electronics & Communication Engineering, Computer Science & Engineering, Electronics & Instrumentation Engineering, Bio-Medical Engineering, Information Technology, Electronics & Control Engineering, Computer Science & Systems Engineering, Electronics & Telematics, Electronics & Computer Engineering and Instrumentation & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. In a parallel place diode, the cathode and anode are spaced 5mm apart and the anode is kept at 200V d.c. with respect to cathode. Calculate the velocity and the distance travelled by an electron after a time of 0.5ns, when [16]
   (a) The initial velocity of an electron is zero and
   (b) The initial velocity is 2×10^6 m/s in the direction towards the anode.
2. (a) Explain the volt ampere characteristics of PN diode.
   (b) Explain the temperature dependence of VI characteristics. [8+8]
3. Determine:
   (a) DC output voltage,
   (b) PIV,
   (c) Rectification effeminacy of the given circuit figure3c. [16]

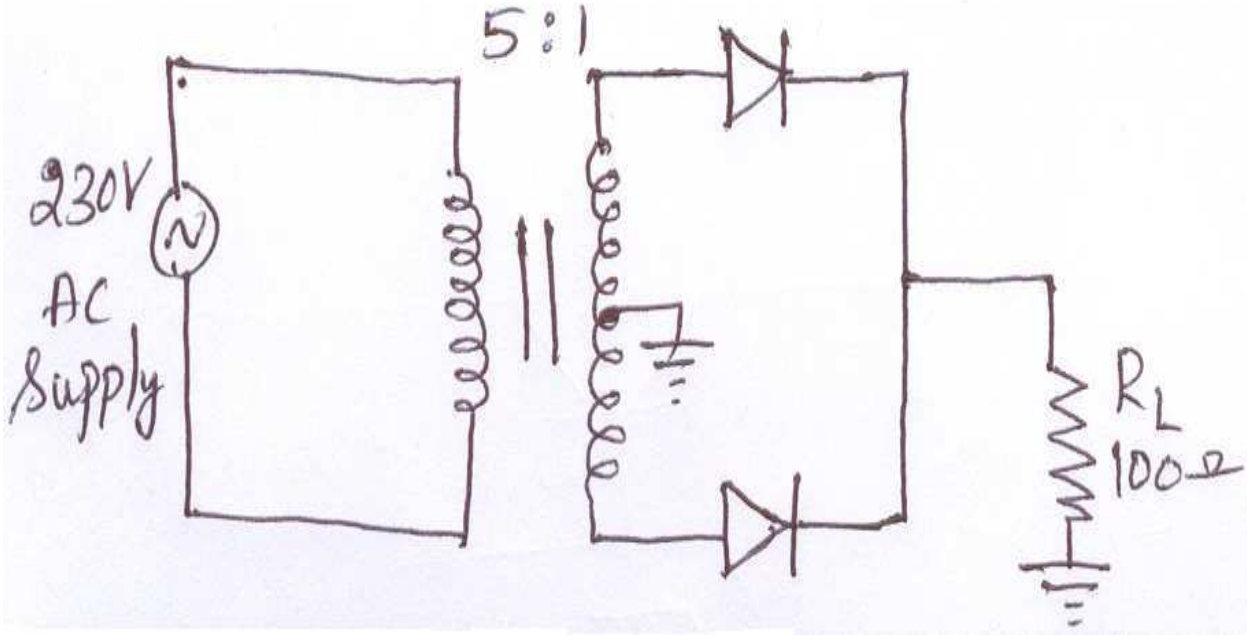


Figure 3c

4. Explain the input and output characteristics of common base transistor configuration. [16]

5. (a) Explain the criteria for fixing operating point.
   (b) List out the different types of biasing methods. [12+4]

6. (a) Write a short notes on millers theorem.
   (b) Analyse a single stage transistor amplifier using h - parameters. [8+8]

7. With neat sketch explalin about all types of feedback systems. [16]

8. (a) Define:
      i. Damped Oscillation
      ii. Un Damped oscillation.
   (b) Why an LC tank circuit, once excited, does not produce sustained oscillation? Explain it briefly?
   (c) Give the two Bark Hansen condition required for sinusoidal oscillations to be sustained.
   (d) What are the factors which affect the frequency stability of an oscillator? [4+6+2+4]

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Code No: 07A1EC06 **Set No. 2**

I B.Tech Regular Examinations, May/Jun 2008
ELECTRONIC DEVICES AND CIRCUITS
(Common to Electronics & Communication Engineering, Computer Science & Engineering, Electronics & Instrumentation Engineering, Bio-Medical Engineering, Information Technology, Electronics & Control Engineering, Computer Science & Systems Engineering, Electronics & Telematics, Electronics & Computer Engineering and Instrumentation & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Derive the expression for the deflection in an electrostatic deflection system. Hence obtain the expression for electro static deflection sensitivity. [16]

2. (a) Define law of junction.
   (b) Explain the Fermi's level in intrinsic semiconductor. [6+10]

3. (a) Draw the circuit diagram of HWR. Explain its working. What is the frequency of ripple in its output
   (b) A HWR circuit supplies 100mA d.c to a 250 Ω load. Find the d.c output voltage, PIV rating of a diode and the r.m.s. voltage for the transformer supplying the rectifier. [8+8]

4. (a) How the UJT differs from ordinary PN diode.
   (b) Explain the construction of UJT.
   (c) Draw and explain the equivalent circuit of UJT. [4+6+6]

5. (a) Explain the criteria for fixing operating point.
   (b) List out the different types of biasing methods. [12+4]

6. (a) Draw the low frequency hybrid equivalent. Circuit for CE & CB amplifier.
   (b) Give the approximate h-parameter conversion formulae for CB and CC configuration in terms of CE.
   (c) Give the advantages of h-parameter analysis.
   (d) Give the procedure to form the approximate h - model from exact h - model of amplifier. [4+6+3+3]

7. Compare the impedance levels of a voltage series feedback amplifier before and after feedback. [16]

8. Explain briefly about frequency and amplitude stability of oscillators. [16]

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Code No: 07A1EC06 **Set No. 3**

I B.Tech Regular Examinations, May/Jun 2008
ELECTRONIC DEVICES AND CIRCUITS
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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. What are the front panel controls of CRO? Explalin. [16]
2. (a) Short notes on LED voltage drop and current.
   (b) Write short notes on Multi colour LED. [10+6]
3. Draw the circuit diagram of a FWR:
   (a) With centre tap connection and
   (b) Bridge connection and explain its operation. [16]
4. (a) Write short notes on Emitter efficiency.
   (b) Write short notes on Transport factor.
   (c) Large signal current gain. [5+5+6]
5. If the various parameters of a CE amplifier which uses the self bias ethod are V_{CC} = 12 V, R_1 = 10 kΩ, R_2 = 5k?, RC 1 kΩ, R_e =2 K and β = 100, find
   (a) The coordinates of the operating point, and
   (b) The stability factor, assuming the transistor to be of silicon. [16]
6. (a) Compare $A_V, A_i, R_i \& R_0$ of CE, CB and CC configuration.
   (b) The h-parameters of a transistor used in a CE circuit are h_{ie} = 1.0 K Ω, h_{re} = 10×10^{-4}, h_{fe} = 50, h_{oe} = 100 K. The load resistance for the transistor is 1 K Ω in the collector circuit. Determine R_i, R_o, A_V, A_i in the amplifier stage (Assume R_s = 1000 Ω). [4+12]
7. With neat sketch explalin about all types of feedback systems. [16]
8. Explain briefly about frequency and amplitude stability of oscillators. [16]

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Code No: 07A1EC06 **Set No. 4**

I B.Tech Regular Examinations, May/Jun 2008
ELECTRONIC DEVICES AND CIRCUITS
(Common to Electronics & Communication Engineering, Computer Science & Engineering, Electronics & Instrumentation Engineering, Bio-Medical Engineering, Information Technology, Electronics & Control Engineering, Computer Science & Systems Engineering, Electronics & Telematics, Electronics & Computer Engineering and Instrumentation & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Analyse the motion of an electron under perpendicular electric and magnetic fields. [16]

2. (a) Explain about semiconductor, Insulator & Conductor with neat sketch.
   (b) State the Einstein relationship for semiconductor.
   (c) State paulis exclusion principle. [6+5+5]

3. A voltage of 200 cos wt is applied to HWR with load resistance of 5 KΩ. find the maximum d.c current component, r.m.s. current, ripple ractor, TUF and rectifier efficiency. [16]

4. (a) Define a Transistor.
   (b) What are the differences between Bipolar Junction transistor & Field effect Transistor?
   (c) Write any two applications of transistor. [5+7+4]

5. (a) Explain the simpler way of drawing dc load line.
   (b) Calculate the de bias voltage and currents in the circuit shown in figure 5b (Neglect V_{BE} Of Transistor). [8+8]

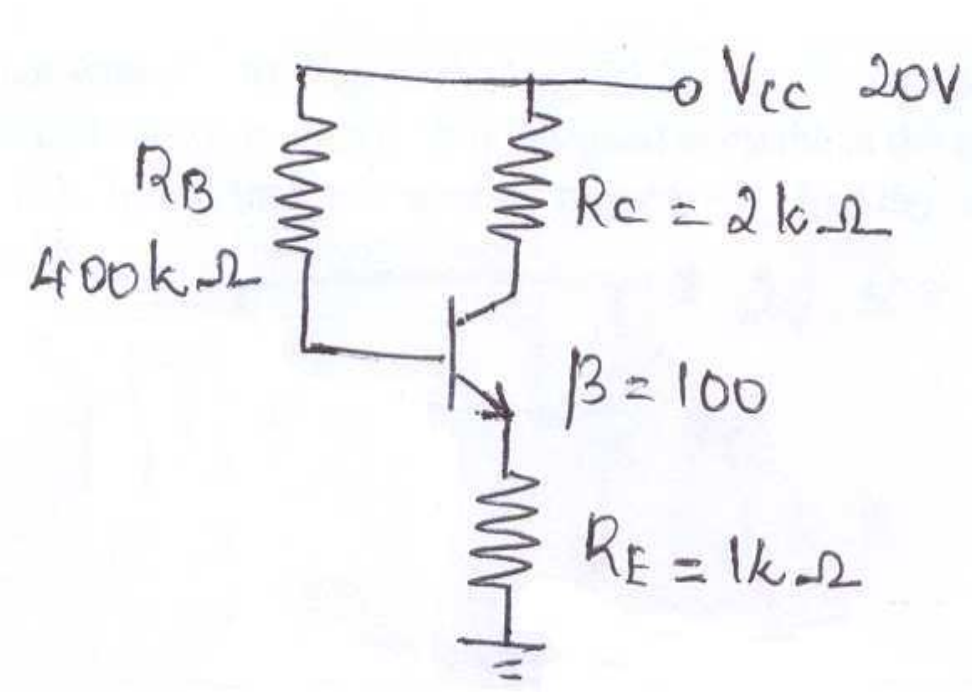


Figure 5b

6. (a) Draw the low frequency hybrid equivalent. Circuit for CE & CB amplifier.
   (b) Give the approximate h-parameter conversion formulae for CB and CC configuration in terms of CE.
   (c) Give the advantages of h-parameter analysis.
   (d) Give the procedure to form the approximate h - model from exact h - model of amplifier. [4+6+3+3]

7. Draw the practical circuit for Current series feedback and find the voltage gain, input impedance & output impedance. [16]

8. (a) A wein bridge oscillator has a frequency of 500Hz, if the value of C is 100Pf, determine the value of R.
   (b) List the advantages of wein-bridge oscillator. [10+6]

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