

F 3152

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Reg. No.....

Name.....



B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Third Semester

Branch : Electrical and Electronics Engineering

EE 010 305—ELECTRONIC CIRCUITS (EE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

*Answer all questions briefly.
Each question carries 3 marks.*

1. Draw the Drain characteristics of a JFET and indicate the pinch-off points.
2. Calculate the lower cut-off frequency of two-stage RC coupled amplifier if each stage has the lower cut-off of 50 Hz.
3. List the different types of distortions in Power amplifiers.
4. List the different types of negative feedback amplifiers.
5. List one application each of the three types of multivibrators.

(5 × 3 = 15 marks)

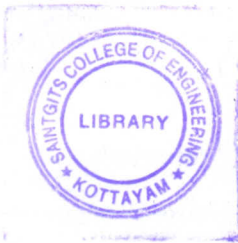
Part B

*Answer all questions.
Each question carries 5 marks.*

6. Draw the emitter characteristics of UJT and explain how negative resistance is obtained ?
7. With sketches, indicate how h_{ie} and h_{re} can be determined from the characteristics ?
8. Sketch the current transfer characteristics of BJT and show how the Q-point varies in the case of class A, B, AB and C power amplifiers.
9. State and explain how Barkhausen criteria and satisfied in the case of Hartley oscillator ?
10. With circuit diagram and waveforms, explain how sweep can be generated in a UJT relaxation oscillator circuit ?

(5 × 5 = 25 marks)

Turn over



Part C

Answer all questions.
Each full question carries 12 marks.

11. (a) Draw the diode clipping circuit, which passes voltages between + 3V to +8 Volt only. Design your circuit.
(b) With a circuit diagram, explain the self biased FET amplifier ?

Or

12. Draw the circuit diagram of : (a) Base bias. (b) Collector-to-base feedback bias ; and (c) Potential divider bias circuits and comment on the current stability factors of the three circuits.
13. The h -parameters of the transistor in the following circuit (fig. 1), are $h_{ie} = 2K$, $h_{re} = 5 \times 10^{-4}$, $h_{fe} = 100$, $h_{oe} = 80 \mu s$. If I_o is $1mA_{rms}$, estimate the voltage and current gains of the amplifier.

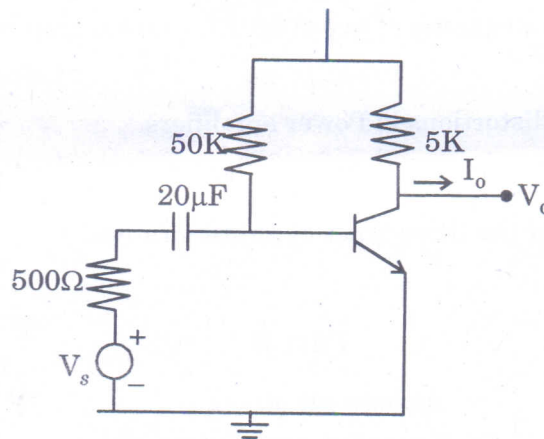


Fig. 1

Or

- 14 (a) Draw the circuit of a 2-stage RC-coupled amplifier and explain its working and advantages. (9 marks)
(b) Explain the effect of a coupling capacitor in a two-stage RC-coupled amplifier ? (3 marks)

15. For the circuit shown in fig. 2 find the input power, output power and efficiency, if the input voltage, causes a base current 5 mA r.m.s.

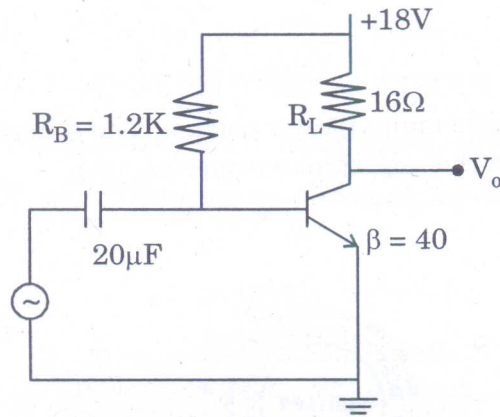


Fig. 2

Or

16. Draw the circuit of a single tuned transformer coupled amplifier and explain its working with the help of frequency response? How the Q of the circuit is determined?
17. For the feedback amplifier circuit shown in fig. 3, calculate A_{vf} and R_{if}

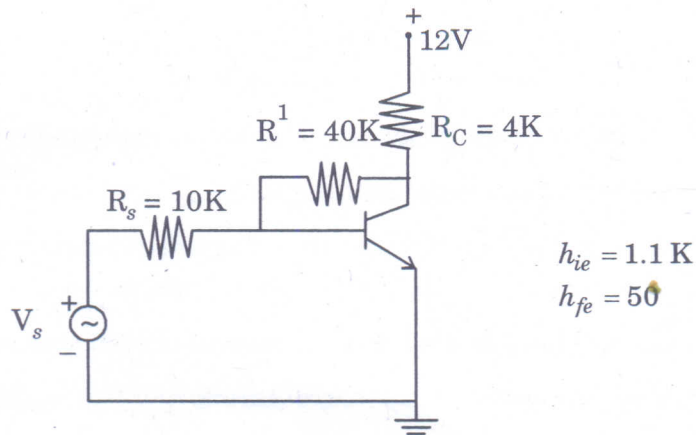


Fig. 3

Or

Turn over

18. With neat circuit diagram, explain how a BJT-crystal oscillator can produce highly stabilised frequency of oscillations ? Design your circuit for generating 3 MHz sine waves.
19. Compare Miller and Bootstrap sweep oscillators using BJT with the description of their circuit diagrams and operation.

Or

20. Design the circuit of an Astable multivibrator using BJT to generate 100 Hz square wave of 0 to 8 volt, 85 % duty cycle. Sketch the important waveforms.

(5 × 12 = 60 marks)

