

D 252

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2003.

Fourth Semester

Electrical and Electronics Engineering

EC 254 — ELECTRONIC CIRCUITS

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Name the various types of biasing circuits for transistors.
2. What do you understand by class A and class B operations of a transistor?
3. What is the advantage of using FET input stages in differential amplifier?
4. What are the applications of tuned amplifiers and classify tuned amplifiers?
5. What are the advantages of using negative feedback amplifiers?
6. What are the conditions for the sustained oscillations?
7. Draw the integrator circuit and explain its operation.
8. List the types of multivibrators and the function of each type.
9. Define ripple factor and what is its importance in filter circuits.
10. What are polyphase rectifiers?

PART B — (5 × 16 = 80 marks)

11. (i) Draw the circuit of Wienbridge oscillator and explain how oscillations are generated. (10)

- (ii) What are the advantages of using crystal oscillators? (4)
- (iii) Mention its applications. (2)
12. (a) For the voltage divider bias circuit in fig. 12 a, calculate the base voltage ( $V_B$ ), base current ( $I_B$ ), emitter voltage ( $V_E$ ), emitter current ( $I_E$ ), collector voltage ( $V_C$ ) and collector to emitter voltage ( $V_{CE}$ ). The current gain can vary from 30 to 300. Calculate the worst case base current.

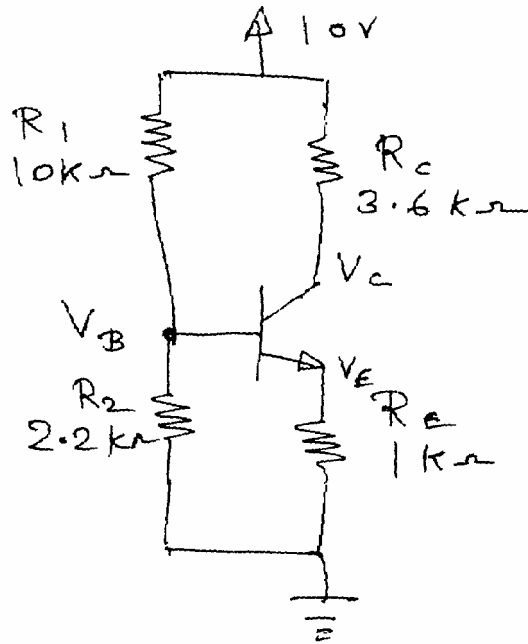


fig. 12 a

Or

- (b) (i) In a Darlington amplifier  $R_E = 100 \Omega$ . If  $\beta_1 = 100$ ,  $\beta_2 = 75$ , calculate the overall input impedance. (4)
- (ii) Draw the class B push pull emitter follower circuit and explain its operation. (12)
13. (a) (i) Explain the following terms of a differential amplifier :
- Output offset voltage, Input offset current, Common mode voltage gain, Differential mode voltage gain and Common mode rejection ratio. (12)
- (ii) If  $I_{B_1}$  and  $I_{B_2}$  through the base resistors of differential amplifier are  $I_{B_1} = 85 \mu A$ ,  $I_{B_2} = 750 \mu A$ . Calculate the input offset current and Input bias current of the differential amplifier. (4)

Or

- (b) What are the types of voltage feedback amplifiers? Explain any one with an example. (16)
14. (a) With a neat circuit explain the working principle of collector coupled astable multivibrator and draw the necessary waveforms. (16)

Or

- (b) (i) Differentiate between clippers and clampers. (2)
- (ii) Explain the various types of clippers and clampers with examples. (14)
15. (a) (i) What do you understand by switched mode power supply? (2)
- (ii) Explain in detail. (10)
- (iii) What are the advantages of it? (4)

Or

- (b) Explain the procedure for designing a series type voltage regulator. (16)
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