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Question Paper Code : 80526

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

Fourth Semester

Electronics and Communication Engineering

EC 8452 – ELECTRONIC CIRCUITS – II

(Common to: Electronics and Telecommunication Engineering)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate current amplifier from voltage amplifier.
2. What is the advantage of negative feedback in an amplifier?
3. Compare RC phase shift oscillator with Wien bridge oscillator.
4. Draw the AC equivalent circuit of a crystal oscillator.
5. List the disadvantages of tuned amplifier.
6. Brief on coil losses.
7. Draw the waveform of a positive clamper along with its input and output waveforms.
8. If an astable multivibrator has $C_1 = C_2 = 1000 \text{ pF}$ and $R_1 = R_2 = 20 \text{ K}\Omega$, calculate the frequency of oscillation.
9. How is power MOSFET different from an ordinary MOSFET?
10. Compare Class A amplifier with Class B amplifier.

PART B — (5 × 13 = 65 marks)

11. (a) Explain the effect of negative feedback on Gain-Bandwidth product of an amplifier, with necessary equations.

Or

- (b) Enumerate the impact of negative feedback on input and output impedance in a
- (i) Voltage series feedback amplifier circuit (6)
 - (ii) Current series feedback amplifier circuit (7)
12. (a) Describe the working of transistorized Hartley Oscillator and derive its frequency of oscillation.

Or

- (b) In the oscillator circuit given in Fig. 12 (b).

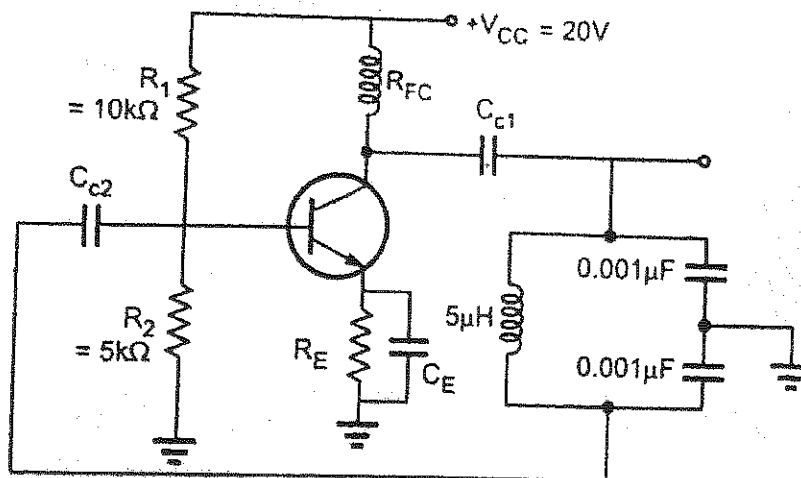


Fig. 12 (b)

- (i) What is the approximate frequency? (5)
- (ii) What will be the new frequency if the value of inductor is doubled? (4)
- (iii) What should be the inductance, to double the frequency? (4)

13. (a) Design a single tuned amplifier for the following specifications: Center frequency is 500 KHz and Bandwidth is 10 KHz. Assume transistor parameters as $Q_c = 100$, $g_m = 0.04$ S, $h_{fe} = 100$, $C_{b'e} = 1000$ pF and $C_{b'c} = 100$ pF. The bias network and the input resistance are adjusted so that $r_i = 4$ K Ω and $R_L = 510$ Ω .

Or

- (b) Explain any one technique by which the instability of tuned amplifier could be overcome.

14. (a) With neat schematic, explain the working of Schmitt trigger.

Or

- (b) Elaborate on the operation of UJT oscillator.

15. (a) Illustrate the working of a BUST BOOST amplifier with necessary diagrams.

Or

- (b) How does a Class AB amplifier work? Explain.

PART C — (1 × 15 = 15 marks)

16. (a) In the given Fig. 16 (a).

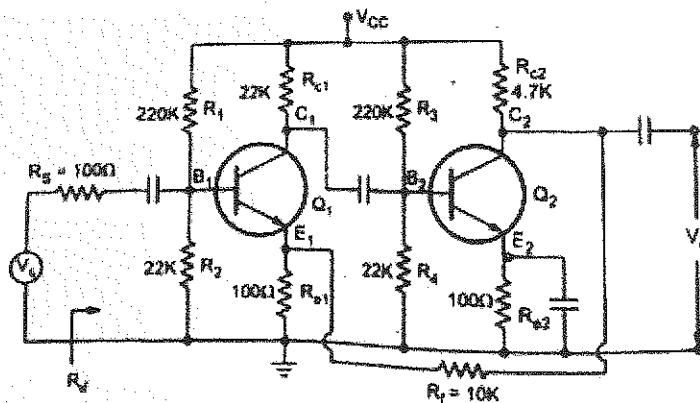


Fig. 16 (a)

- (i) State the topology of the circuit given. (3)
- (ii) Assume the transistors used are identical and calculate β , A_v , A_{vf} , R_{if} , R_{of} if the h parameters are $h_{ie} = 1100$ Ω , $h_{fe} = 100$, $h_{re} = h_{oe} = 0$. Neglect the capacitance of all capacitors. (12)

Or

- (b) Draw the output waveforms of the given circuits (Fig. 16 (b)) if $V_i = V_m \sin \omega t$ where $V_m = 5V$ and $V = 2V$, $V_1 = 1.5V$ and $V_2 = 1V$.

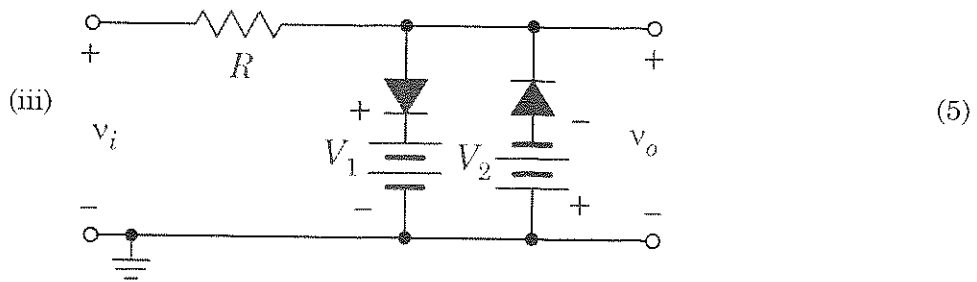
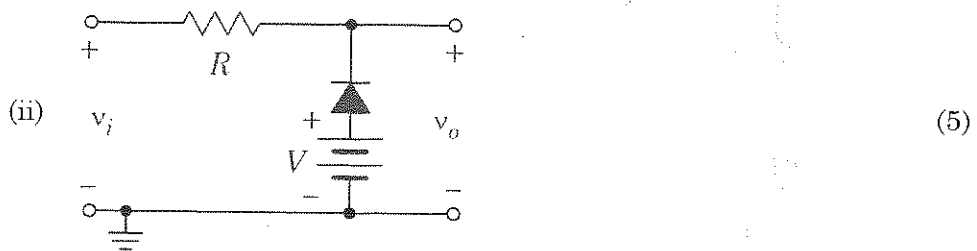
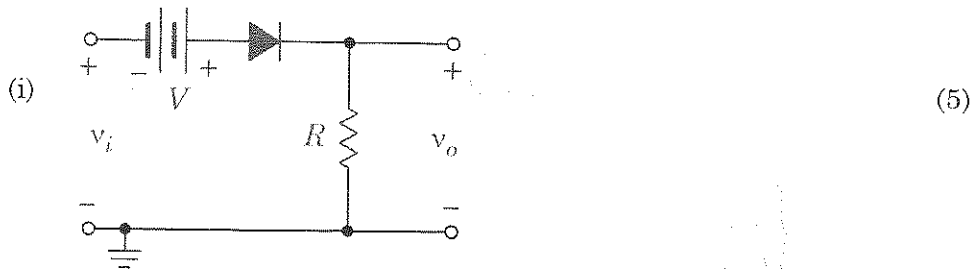


Fig. 16 (b)