Reg. No. :

Question Paper Code : 20471

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

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. Define sensitivity and de-sensitivity of gain in feedback amplifiers.

2. Write the expression for input and output resistance of voltage series feedback amplifier.

3. If L1=2 mH, L2=4 mH and C=0.1 nF, Observe the frequency of oscillation for Hartley oscillator.

4. In an RC phase shift oscillator, if R1 = R2 = R3 = 200kΩ and C1 = C2 = C3 = 100 pF. Detect the frequency of oscillations.

5. Illustrate the applications of tuned amplifiers.

6. Define unloaded and loaded Q of tank circuits.

7. Identify how the high pass RC circuit acts as a differentiator.

8. Compare Astable, Monostable and Bistable multivibrators.

9. Give the principle of operation of step-down DC-DC converter.

10. Compare Buck and Boost converter.

PART B — (5 × 13 = 65 marks)

11. (a) Draw the block diagram of Voltage series feedback amplifiers and derive the expressions of input impedance R_{if}, output impedance R_{of} and gain.

Or

(b) Build the circuit diagram of current shunt feedback amplifier and develop the expressions for R_{if} and R_{of}.

12. (a) Demonstrate the working principle of RC phase shift oscillator circuit diagram also derive the expression for frequency of oscillation and condition for sustained oscillation.

Or

(b) Estimate the frequency of oscillation and the condition for sustained oscillation of Colpitts oscillator with neat circuit diagram.

13. (a) Demonstrate a capacitance coupled single tuned amplifier circuit and derive the expressions for its important parameters.

Or

(b) Conclude the following with neat circuit diagram:

    (i) Hazeltine neutralization

    (ii) Neutrodyne neutralization

14. (a) (i) Classify the various types of diode clampers   (5)

    (ii) Demonstrate the diode clippers with appropriate diagrams and waveforms.   (8)

Or

(b) Illustrate the operation of collector coupled Astable multivibrator with neat diagrams and waveforms.   (13)

15. (a) Summarize the transfer characteristic, signal waveforms, power dissipation, power conversion efficiency of Class A amplifier.

Or

(b) Illustrate the Buck converter with necessary diagrams and derive the expressions for voltage and current.
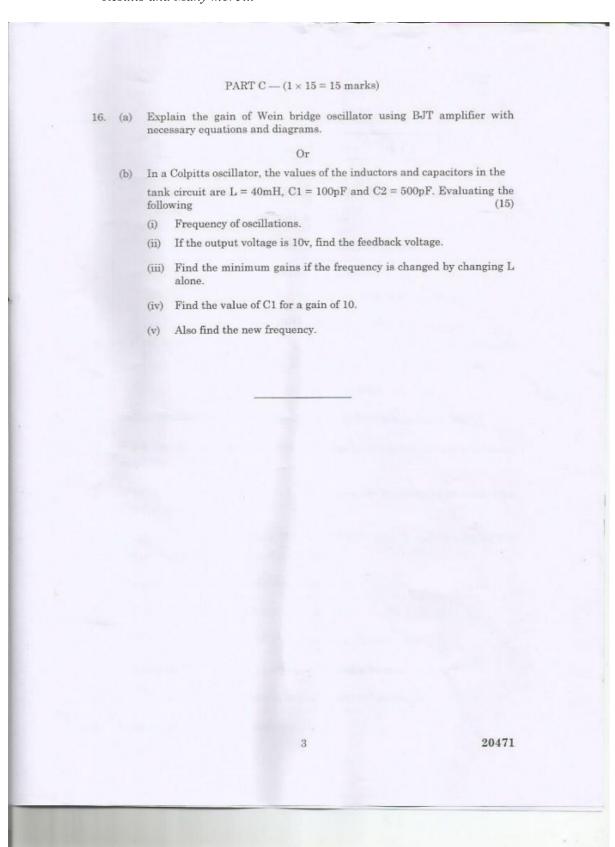
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PART C — (1 × 15 = 15 marks)

16. (a) Explain the gain of Wein bridge oscillator using BJT amplifier with necessary equations and diagrams.

Or

(b) In a Colpitts oscillator, the values of the inductors and capacitors in the tank circuit are L = 40mH, C1 = 100pF and C2 = 500pF. Evaluating the following   (15)

   (i)   Frequency of oscillations.

   (ii) If the output voltage is 10v, find the feedback voltage.

   (iii) Find the minimum gains if the frequency is changed by changing L alone.

   (iv) Find the value of C1 for a gain of 10.

   (v)   Also find the new frequency.

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