# END TERM EXAMINATION

FOURTH SEMESTER [B.TECH] JUNE 2025

Paper Code: ECC-218    Subject: Electronics-II

Time: 3 Hours    Maximum Marks: 60

Note: Attempt all questions as directed. Internal Choice is indicated.

(4x5=20)

Q1  Attempt **any four** of the following questions:
   (a) Explain the concept of Heat Sink in detail required for Power Amplifiers.
   (b) Sketch Symbol of n-channel and p-channel Depletion MOSFET. State giving reasons, why it is known as depletion MOSFET?
   (c) Explain the working of operational amplifier as summer.
   (d) Draw the block diagram of current series and current shunt feedback amplifier.
   (e) Explain the effect of feedback on gain, bandwidth and noise.
   (f) Define efficiency for a Power Amplifier and write the expression for the same. State the efficiency of Class A, Class B and Class C Amplifiers respectively.
   (g) State and explain Barkhausen's Criteria .
   (h) Write a short notes on Darlington pair amplifier.

## UNIT-I

Q2  Design a two stage RC coupled CS – CE Amplifier to meet following specifications: Av ≥750, S ≤10, Ri ≥ 1 MΩ, Vcc =10 V. Assume the following data: βtyp = 290, hie = 4.5kΩ, gmo = 5000µ℧, IDSS = 7mA, rd = 50kΩ, VP =−4V.    **(10)**

### OR

Q3  Sketch Circuit Diagram, AC equivalent Model and Derive expressions for Input impedance, Output Impedance, Voltage Gain and Current Gain of a two stage CE Amplifier.    **(10)**

## UNIT-II

Q4  For a 'n' stage cascaded amplifier, show that overall lower 3 dB cut – off frequency is $f_{LT} = \dfrac{f_L}{\sqrt{(2)^{\frac{1}{n}}-1}}$ and overall higher frequency is

$$f_H' = f_H\left(\sqrt{(2)^{\frac{1}{n}} - 1}\right).$$

**(10)**

### OR

Q5  Draw a neat diagram of Class AB power Amplifier and explain its working.    **(10)**

## UNIT-III

Q6  Draw RC phase shift oscillator using BJT and derive the frequency of oscillation for same.    **(10)**
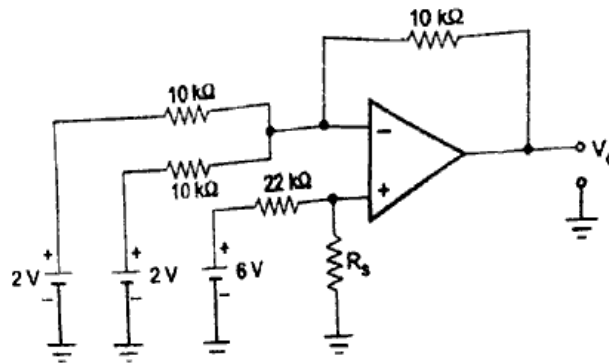
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**OR**

**(10)**

Q7    Determine the output of the circuit given in the figure:



**UNIT-IV**

Q8    (a) Compare Small Signal and Large Signal amplifier.          **(5)**
      (b) Calculate frequency of Oscillation for Hartley Oscillator if L1 =5mH,
          L2 = 2mH and C = 0.5 µF.                                   **(5)**

**OR**

Q9    Explain the working of astable multivibrator using 555 IC.    **(10)**

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