



VIT[®]

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF ELECTRICAL ENGINEERING CONTINUOUS ASSESSMENT TEST - I WINTER SEMESTER 2024-2025

REG.NO.: 25 BEE0125

SLOT: A1

Programme Name & Branch
Course Code and Course Name
Faculty Name(s)
Class Number(s)
Date of Examination
Exam Duration

: B.Tech. EEE & EIE
: BEEE208L - Analog Electronics
: Dr. G. Arunkumar
: VL2024250500971
: 27-01-2025, Monday
: 90 minutes

Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)
CO1 - Interpret the concepts of power amplifiers
CO2 - Compare and analyze the design aspects of differential amplifiers
CO3 - Design the frequency of oscillation for different oscillators

Q. No	Question	M	CO	BL
1.	Calculate the I_{CQ} , V_{CEQ} , $P_{In(DC)}$, $P_{OUT(AC)}$ and efficiency for the Class-A power amplifier with the following specifications; $V_{CC} = 16\text{ V}$, $R_1 = 1\text{ k}\Omega$, $R_2 = 330\text{ }\Omega$, $R_C = 100\text{ }\Omega$, $R_{E1} = 8.2\text{ }\Omega$, $R_{E2} = 36\text{ }\Omega$, $\beta = 100$, $V_{BE} = 0.7\text{ V}$, $V_{ORMS} = 2.07\text{ V}$. Note: $R_E = R_{E1} + R_{E2}$	10	1	3
2.	What is a push-pull Class-B amplifier? Sketch the circuit diagram, waveforms and explain the operation with modes. Also, derive its efficiency and maximum efficiency conditions.	10	1	2
3.	Calculate the I_{E1} , I_{E2} , I_T , r_e , A_v , V_{OUT} and $Z_{in(base)}$ for the Single Input (Non-Inverting) Differential Output amplifier configuration with the following specifications; $V_{CC} = 16\text{ V}$, $R_C = 5\text{ k}\Omega$, $R_E = 7.5\text{ k}\Omega$, $V_{BE} = 0.7\text{ V}$, Non-Inverting input $V_1 = 1\text{ mV}$. Note: Inverting input $V_2 = 0\text{ V}$	10	2	3
4.	What is a differential amplifier? List its types. Derive the voltage gain for the Non-Inverting input and Single-ended output differential amplifier with a neat sketch. Also, AC equivalent circuits should be provided at all stages.	10	2	2
5.	Why positive feedback is used in the oscillators? List the Barkhausen criteria for oscillations. Sketch the RC phase shift oscillator and explain the operation, Also give an example for the output frequency as 500 Hz.	10	3	2
