



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

SLOT: C2

Programme Name & Branch : B.Tech. Electrical and Computer Science Engineering
Course Code and Course Name : BECS201L - Semiconductor Devices and Circuit
Faculty Name(s) : Dr. G. Arunkumar
Class Number(s) : VL2024250500970
Date of Examination : 18-03-2025, Tuesday, 9.30 AM to 11.00 AM
Exam Duration : 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)
CO2 - Understand the behavior of semiconductor devices and their applications
CO3 - Comprehend design aspects of amplifier circuits

Q. No	Question	M	CO	BL
1.	Sketch the DC load curve for the transistor circuit with the following specifications; $V_{CC} = 22\text{ V}$, $R_1 = 39\text{ k}\Omega$, $R_2 = 3.9\text{ k}\Omega$, $R_C = 10\text{ k}\Omega$, $R_E = 1.5\text{ k}\Omega$, $V_{BE} = 0.7\text{ V}$, $\beta = 100$.	10	2	2
2.	Find all the DC and AC parameters for the transistor circuit with the following specifications; $V_{CC} = 18\text{ V}$, $R_1 = 82\text{ k}\Omega$, $R_2 = 22\text{ k}\Omega$, $R_C = 5.6\text{ k}\Omega$, $R_E = 1.2\text{ k}\Omega$, $V_{BE} = 0.7\text{ V}$, $\beta = 50$ and $V_S = 10\text{ mV}$.	10	3	3
3.	Determine Q-Point for the E-MOSFET circuit with the following specifications; $I_{D(on)} = 200\text{ mA}$ at $V_{GS(on)} = 4\text{ V}$ and $V_{GS(th)} = 2\text{ V}$, $V_{DD} = 24\text{ V}$, $R_1 = 100\text{ k}\Omega$, $R_2 = 15\text{ k}\Omega$, $R_D = 200\text{ }\Omega$.	10	3	3
4.	Determine Q-Point for the E-MOSFET circuit with the following specifications; $I_{D(on)} = 3\text{ mA}$ at $V_{GS(on)} = 10\text{ V}$ and $V_{GS(th)} = 5\text{ V}$, $V_{DD} = 40\text{ V}$, $R_1 = 22\text{ M}\Omega$, $R_2 = 18\text{ M}\Omega$, $R_D = 3\text{ k}\Omega$ and $R_S = 0.82\text{ k}\Omega$.	10	3	3
5.	Construct an LC Hartley oscillator with $f_0 = 50\text{ kHz}$. Also, sketch the waveform.	10	3	2
