

JK Lakshmipat University, Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Makeup Examination, December 2025
 B. Tech. Semester I, 2025-26

Roll No.....

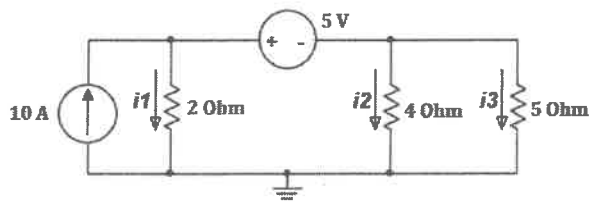
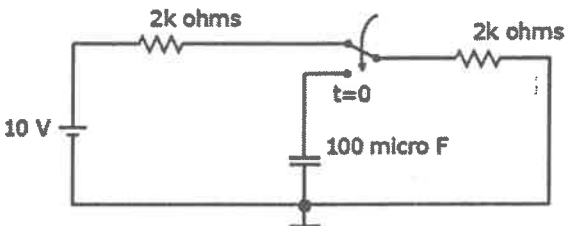
EE1118 Fundamentals of Electrical and Electronic Engineering

Time: 2 hours

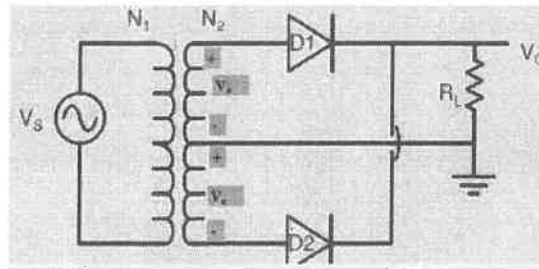
Max. Marks: 30

Instructions to students:

1. Do not write anything other than your roll number on the question paper.
2. Mention all the assumptions for your answers clearly.
3. Non-programmable calculator is allowed for this exam

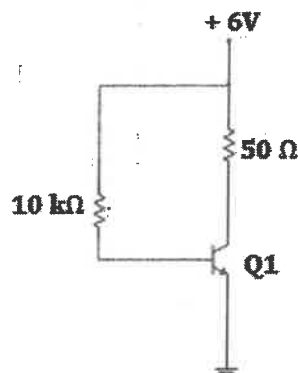
Q1.	Determine the currents i_1, i_2, and i_3 from the circuit below with the reference node as indicated 	5.0 (EE1118.1)
Q2.	The switch in the circuit shown was in position 1 for a long time. It is moved from position 1 to position 2 at time $t = 0$. Determine the following: - Time Constant. $v_C(0-)$ - Expression for $v_C(t)$, $t > 0$ - Sketch the wave form of $v_C(t)$, $t > 0$ 	5.0 (EE1118.2)
Q3.	A diode has a saturation current $I_S = 1 \times 10^{-12} A$ and ideality factor $n=1$. At room temperature $kT/q=25$ mV. Calculate diode current I at forward biases $V = 0.3$ V.	5.0 (EE1118.3)
Q. 4	In full-wave rectifier is used in conjunction with a centered-tapped transformer, as shown in the figure below. The supply voltage is 110V rms,	5.0 (EE1118.3)

the turns ratio for each half of center center-tapped transformer is **10:1** . Design the rectifier using Si diodes with a forward voltage drop of 0.7V.



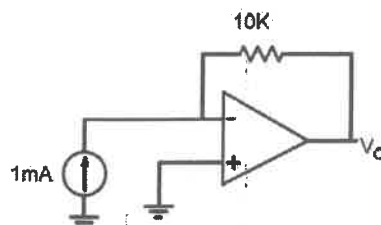
- What is the average DC value at the output?
- What should be the Peak Inverse Voltage of the Diodes used?
- What would be the capacitor value required if we needed a ripple voltage of 0.2 V, given the load resistance is 5 K ohms?

- Q. 5** For the following transistor circuit, calculate the minimum and maximum value of emitter current when β of the transistor varies from 75 to 150. Also calculate the corresponding values of the collector to emitter voltage. Take $V_{BE} = 0.2 V$ and $V_{CC} = +6 V$



5.0
(EE1118.4)

- Q. 6** Calculate the v_o in the op-amp circuit shown below, given that supply voltages to the op-amp are $\pm 15V$. Justify by mentioning the properties of the op-amp circuit used for arriving at this result.



5.0
(EE1118.5)

All the best!