

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, December 2025

B. Tech. Semester I, 2025-26

Roll No.....

EE1118: Fundamentals of Electrical and Electronics Engineering

Time: 2 Hrs.

M. Marks: 30

Instructions to students:

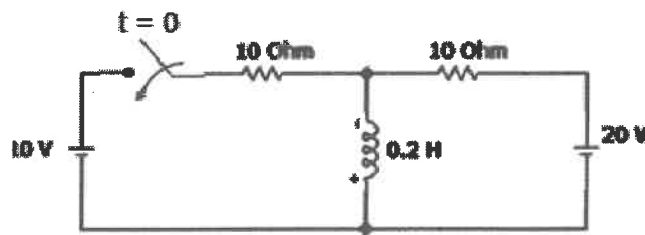
1. Do not write anything other than your roll number on question paper.
2. Mention all the assumptions for your answers clearly.
3. Non-programmable calculator allowed

- Q 1.** Consider the circuit shown below. The switch has been open for a long time, and at $t = 0$ it closes.

5.0
(EE1118.2)

Determine:

- i. Time constant.
- ii. $i_L(0^-)$
- iii. $i_L(\infty)$
- iv. Expression of $i(t)$ at $t > 0$

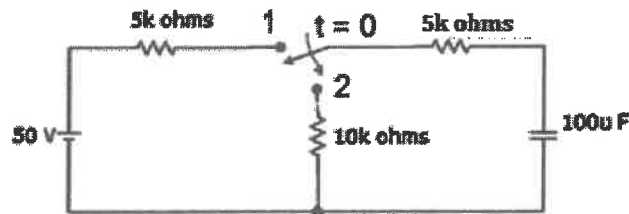


- Q 2.** The switch in circuit shown was in position 1 for a long time. It is moved from position 1 to position 2 at time $t = 0$.

5.0
(EE1118.2)

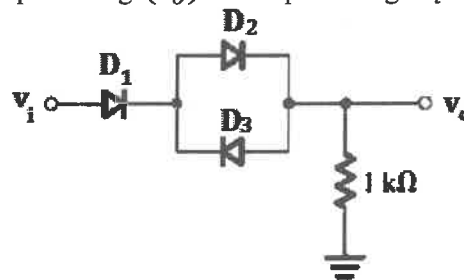
Determine:

- i. Time Constant.
- ii. $v_C(0^-)$
- iii. Expression for $v_C(t)$, $t > 0$
- iv. Sketch the wave form of $v_C(t)$, $t > 0$



- Q 3.** In the circuit shown below, draw the equivalent circuit considering the diode as a silicon diode, and determine the output voltage (v_o). The input voltage v_i is given as 5 volts.

5.0
(EE1118.3)

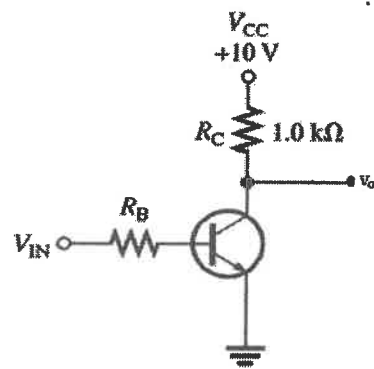


- Q 4.** A bridge rectifier with 24 V (rms) secondary and 50 Hz supply uses 4 Si diodes (0.7 V drop each). Find

5.0
(EE1118.3)

- i. Average output voltage
- ii. PIV
- iii. Ripple voltage if $R_L = 5K\ Ohm$ and $C = 470\mu F$

- Q 5. For the transistor circuit given below, find
- V_{CE} when $V_{IN} = 0$ V.
 - Minimum value of I_B is required to saturate this transistor if β is 200. Consider $V_{CE}(\text{sat}) = 0.2$ V.
 - Maximum value of R_B when $V_{IN} = 5$ V transistor to remain in saturation.
 - Mode of Transistor when $R_B = 200$ k Ω



5.0
(EE1118.4)

- Q 6. Design an op-amp circuit to generate a voltage given by the

$$v_o = -(10v_{s1} + 4v_{s2} + 5v_{s3})$$
 Draw the schematic diagram and find the value of the discrete components used for the design.

5.0
(EE1118.5)