



# VIT

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

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

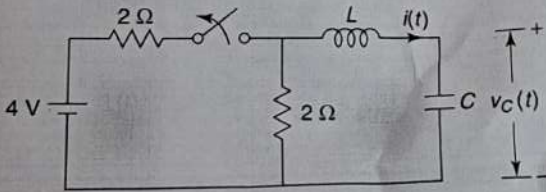
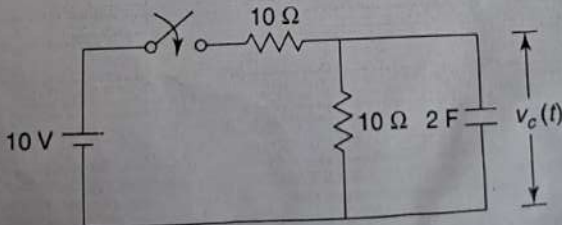
REG.NO.:

SLOT: C2+TC2+TCC2

Programme Name & Branch : B.Tech – BEC, BML, BVD  
Course Code and Course Name : BECE 203L and Circuit Theory  
Faculty Name(s) : SATHYA P, KATHIRVELAN J, VINOTH BABU K, VIJAY KUMAR, YOGESH KUMAR CHOUKIKER, BISWAJIT DWIVEDY, SHAH ARPAN HASMUKH MAYURI  
Class Number(s) : VL2024250500735, 0745,0743,0744,0732,0741,0742  
Date of Examination : 18-03-2025  
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:
  - CO2: Analyze the resonance and transient response of the first order, second order circuits.
  - CO5: Able to analyze the given network by transforming from time domain to S domain.
  - CO6: Analyze the given network using Fourier series and transforming from time domain to frequency domain.
- Assume suitable values for any missing information

| Q. No | Question                                                                                                                                                                                                                                                                                                                             | M  | CO | BL |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|
| 1.    | <p>The switch in the network of Figure 1 is opened at <math>t = 0</math>. Find <math>i(t)</math> for <math>t &gt; 0</math>, if <math>L = \frac{1}{2} H</math> and <math>C = 1 F</math> using time-domain transient analysis.</p>  <p>Figure 1</p> | 10 | 2  | 3  |
| 2.    | <p>The switch in the network shown in Figure 2 is closed at <math>t = 0</math>. Determine the voltage across the capacitor using Laplace transform. Assume zero initial conditions.</p>  <p>Figure 2</p>                                          | 10 | 5  | 3  |





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3. The network shown in Figure 3 has acquired a steady state at  $t < 0$  with the switch open. The switch is closed at  $t = 0$ . Determine  $v(t)$  by applying Laplace transform.

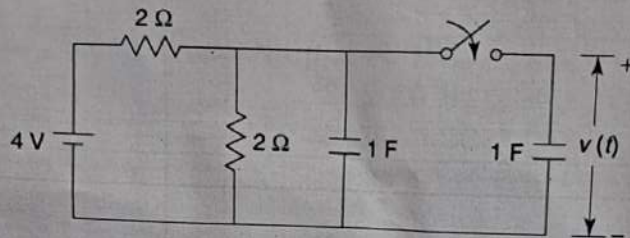


Figure 3

10 5 3

4. Let  $i_s(t) = 2 + \sum_{k=1}^{\infty} \frac{4}{n\pi} \sin(n\pi t)$ ,  $n = 2k - 1$  is applied to the circuit in Figure 4. Find  $v_o$  using Fourier series approach.

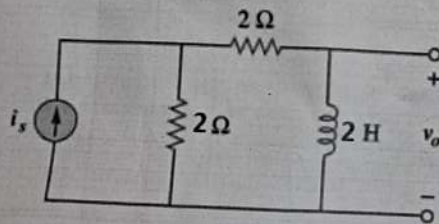


Figure 4

10 6 3

5. Find the voltage across the capacitor of circuit shown in Figure 5 using Fourier transform approach.

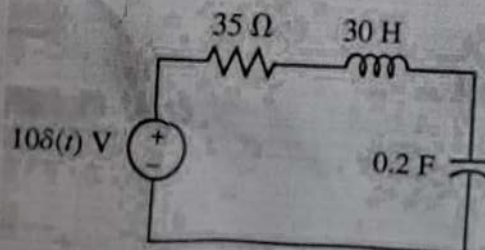


Figure 5

10 6 3