

# END TERM EXAMINATION

FOURTH SEMESTER [B.TECH] MAY-JUNE 2026

Paper Code: EEC-208

Subject: Circuits and Systems

Time: 3 Hours

Maximum Marks: 60

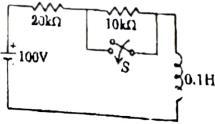
Note: Attempt all questions as directed. Internal choice is indicated.

Q1 Attempt any four of the following questions: (4x5=20)

- 1. What is Dirac Delta function? State and explain its properties.
- 2. Explain with example the different operations on signals.
- 3. What are the classification of systems? Explain.
- 4. Explain the different types of response present in the system.
- 5. What is Fourier transform? Explain its properties?
- 6. Illustrate with example Norton's theorem with AC supply.
- 7. What is graph theory? Explain tie-set and cut-set matrix.
- 8. What is Network Function? What are the necessary conditions for driving point function.

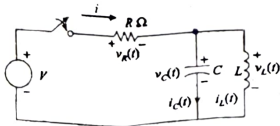
Q2 Define Energy and Power signal? Determine the energy and power of  $X(t) = e^{-t}|t|$ . (10)

Q3 A DC voltage 100 V is applied in the fig. shown below with switch S is open. The switch is closed at  $t=0$ . Find the expression of current  $i(t)$ . (10)



Q4 Define fundamental time period and fundamental frequency? Check whether the signal is periodic or not. Also find fundamental time period and fundamental frequency of the signal.  $X(t) = \sin(2\pi t/3)\cos(4\pi t/3)$  (10)

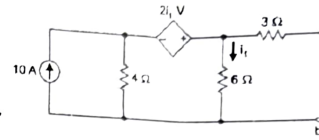
Q5 Consider a parallel RLC circuit with dc excitation as shown below. Find the expression of  $i(t)$ . (10)



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Q6 State Thevenin's Theorem? Find the thevenin's equivalent across a-b terminals. (10)



Q7 Explain the conditions of symmetry and reciprocity in two port network. Prove that for a reciprocal network  $Y_{12} = Y_{21}$  (10)

Q8 What is two port network? Explain different types of parameters. Derive the expression for converting Y parameters to ABCD parameters? (10)

Q9 What is Hurwitz Polynomial? What are its conditions? Find the range of 'a' for which P(s) is Hurwitz. (10)

$P(s) = 2s^4 + s^3 + as^2 + s + 2$

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