

Total No. of Questions: 22

Total No. of Pages: 04

Roll No. _____

Paper Code
3E1218

B.Tech. III-Sem (Main & Back) January-2026

Electrical & Electronics Engg.

3EX4-05 Electrical Circuit Analysis

EE,EX

3E1218

Time : 3 Hours

Maximum Marks : 70

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used / calculated must be stated clearly. Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. _____ 2. _____

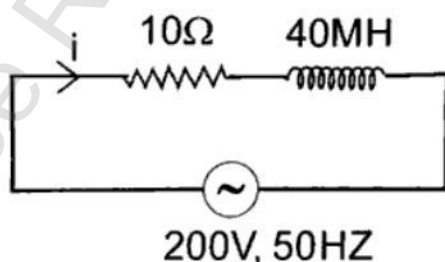
Part-A

(Answer should be given up to 25 words only)

All questions are compulsory T-437

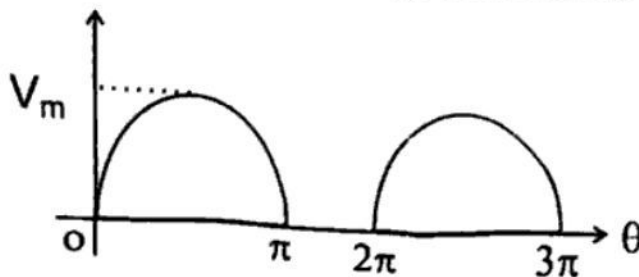
10x2=20

- Q. 1 State and explain maximum power transfer theorem. .
- Q. 2 Derive condition for symmetry for (A-B-C-D) parameters. .
- Q. 3 Comparison of series and parallel R-L, R-C, RL-C circuit. T-437
- Q. 4 A coil having resistance of 10Ω of inductance of 40MH is connected to 200V , 50Hz supply. Calculate impedance of the coil, current, power factor and power consumed. .



Q. 5

Find the average and RMS values of the wave forms shows.



Q. 6

Application of transmission parameters & hybrid parameters.

Q. 7

Explain the laplace transform.

Q. 8

Define the Nodal and mesh Analysis.

Q. 9

Characteristics of impedance parameters and admittance parameters.

Q.10

Three identical coils each of $[4.2+j5-6]$ ohms are connected in star across a 415V, 3-phase, 50Hz supply Determine (i) V_{ph} (ii) J_{ph}

Part B

(Analytical/Problem solving questions)

Attempt any Five questions.

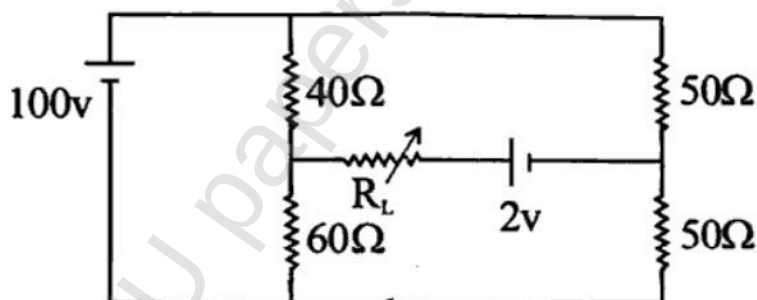
5x4=20

Q. 1

Write down restrictions on pole & zero locations for driving point function and transfer function.

Q. 2

Find maximum power in R_L .



Q. 3

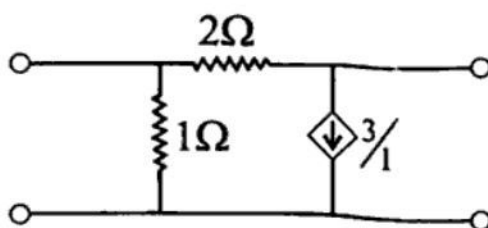
Explain the generation of alternating voltage in AC circuits.

Q. 4

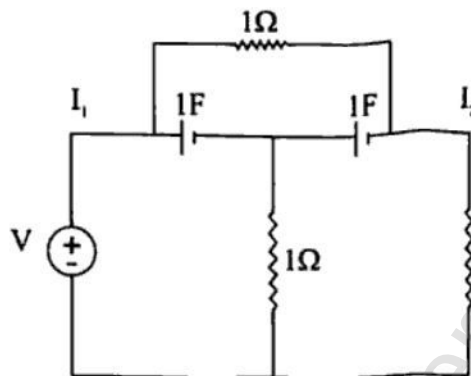
An alternating voltage is given by $V=141.4 \sin 314t$. Find (i) frequency (ii) rms value (iii) average value (iv) instantaneous value of voltage when it is 3MS.

Q. 5

The open circuit impedance matrix of the two port networks shown is.



- Q. 6 State and explain the Norton theorem.
- Q. 7 For the given network, find the driving point admittance Y_{11} & transfer admittance Y_{12} .



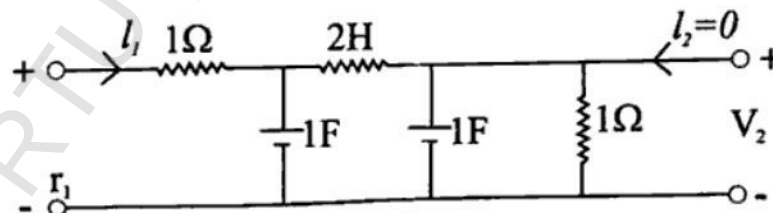
Part C

(Descriptive/Analytical/Problem Solving/Design question)

Attempt any three questions.

3x10=30

- Q. 1 Short note on:-
- Ideal transformer
 - Two-Port Network
- Q. 2 For the given ladder network determine the voltage transfer function v_2/v_1 .



- Q. 3 Obtain h parameters in terms of ABCD parameters.
- Q. 4 Plot pole zero diagram & obtain $v(t)$ of given network.

$$Y(s) = \frac{3s}{(s+2)(s^2+2s+2)}$$

Q. 5

^{T-437} Find the voltage V_x for the following circuit using superposition theorem. ^{T-437}

