

Hall Ticket Number:

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Code No. : 14164 (D) N/O

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD**  
*Accredited by NAAC with A++ Grade*

**B.E. IV-Semester Main & Backlog Examinations, July-2023**

**P Spice Modeling for Electrical Circuits**

Max. Marks: 60

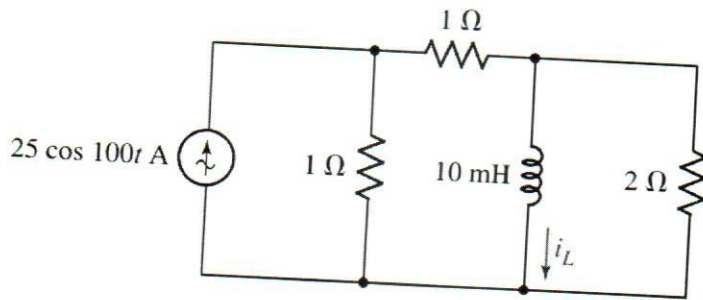
Time: 3 hours

Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B**

**Part-A (10 × 2 = 20 Marks)**

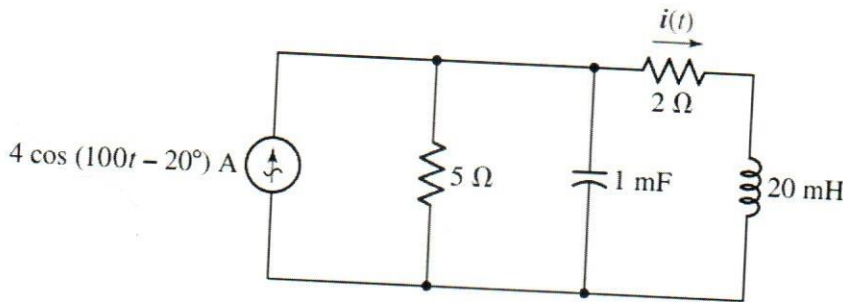
Q. No.	Stem of the question	M	L	CO	PO
1.	Give an example of Textual Scientific Notation which is used in PSPICE software.	2	1	1	1,2
2.	Write syntax of voltage dependent voltage source in PSPICE A/D software	2	1	1	1,2
3.	Write the part name for a voltage-controlled current source in PSPICE A/D software	2	1	2	1,2
4.	Write any two applications of PSPICE A/D software	2	1	2	1,2
5.	Explain the significance of .TRAN statement to analyze AC electrical circuits	2	1	3	1,2
6.	Write the syntax of sinusoidal AC voltage source	2	1	3	1,2
7.	Describe .PLOT command	2	1	4	1,2
8.	What is the use of .PRINT statement in a circuit file in PSPICE A/D software	2	1	4	1,2
9.	Write the syntax for DC parametric sweep statement in electrical circuits	2	1	5	1,2
10.	Describe the use of .MODEL statement in PSPICE A/D software	2	1	5	1,2
<b>Part-B (5 × 8 = 40 Marks)</b>					
11. a)	Explain the format of output file in PSPICE A/D software.	4	2	1	1,2
b)	Write a PSpice program to print $i$ in the circuit shown below.	4	3	1	1,2
12. a)	Describe the format of a circuit file in PSPICE A/D software with a suitable example.	4	2	2	1,2
b)	Write a PSpice program to print $v_o$ and $i_o$ in the circuit shown below.	4	3	2	1,2

13. a) Write a PSpice program to print  $i_L$  in the output file for the circuit shown below



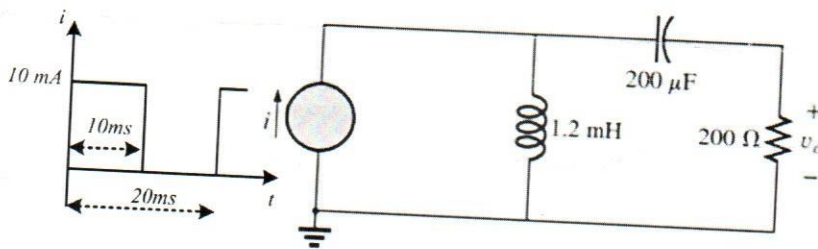
4 2 3 1,2

3 b) Write a PSpice program to print  $i(t)$  and power dissipated in  $5\Omega$  in the output file for the circuit shown below



4 4 3 1,2

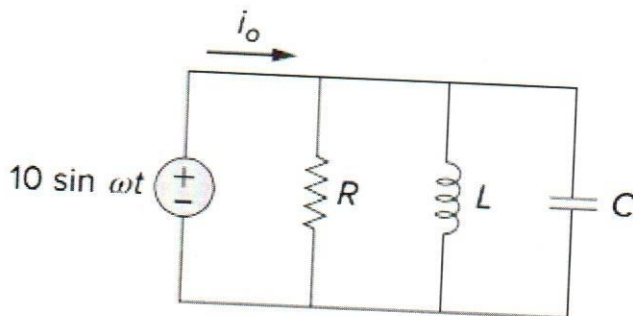
14. a) Write a PSpice program to print harmonic voltages in v0 up to 15th harmonic for the circuit shown below.



4 2 4 1,2

b) In the following circuit, the frequency of source is varied from 50 Hz to 100 kHz with a decade increment and 20 points per decade. Write a PSpice program to print current through R, if C varies from  $5\mu\text{F}$  to  $10\mu\text{F}$  with a step increment of  $1\mu\text{F}$ . Let  $R = 8\text{ k}\Omega$  and  $L = 0.2\text{ mH}$ .

4 3 4 1,2



15. a) For NPN transistor, write a PSpice program to plot output characteristics if VCE is varied from 0 to 12 V in steps of 0.02 V and IB is varied from 0 to 1 mA in steps of 200 μA. Use Q2N2222A NPN transistor with model parameters IS = 3.295E-14, BF = 173, VA = 83.3 V, CJE = 29.6 PF, CJC = 19.4 PF, TF = 489.88 PS, and TR = 4.9 NS.

4 2 5 1,2