

[This question paper contains 4 printed pages.]

5995

Your Roll No.

B.Sc. (H) ELECTRONICS / Ist Sem. B

Paper – ELHP-106

Electronics Practicals – II

(Admissions of 2010 and onwards)

Time : 1 Hr.

Maximum Marks : 25

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

*The question paper comprises of two sections :
Section A and Section B. All questions in
Section A carry 1 mark each and any five must
be attempted. All questions in Section B carry
two marks each and any ten must be attempted.
Use of Scientific calculator is allowed.*

SECTION A

Do any five of the following.

1. Outline any four qualities that can be measured using the multimeter. (1)
2. Classify the following components as active or passive : resistors, inductors, diodes and transistors. (1)

P.T.O.

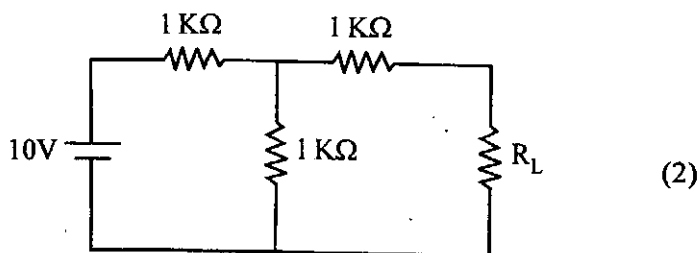
3. For a given circuit, the equivalent Thevenin voltage $V_M = 10V$ and the equivalent Thevenin Resistance $R_M = 1K\Omega$. Draw the corresponding Norton's equivalent circuit. (1)
4. Name any software that can be used for circuit simulation. (1)
5. In the Lissajous phase measurement, a perfect circle is observed on the CRO. What is the phase difference between the two input signals? (1)
6. Determine the time constant of a series RC circuit given that $R = 1K\Omega$ and $C = 0.1 \mu F$. (1)
7. Given that $C = 0.1 \mu F$, $R = 65\Omega$, $L = 1 \text{ mH}$, what is the total reactance of a parallel RLC circuit at resonance. (1)

SECTION B

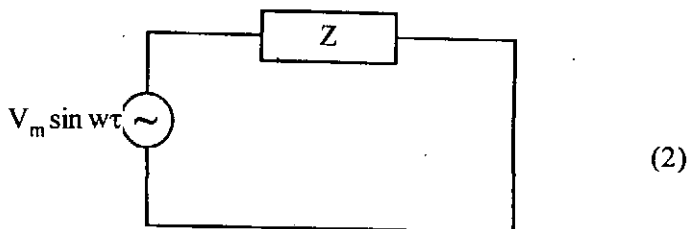
Do any ten of the following.

8. In a three branch parallel circuit 10 mA current flows in each branch. What happens to the current in each of the branches if (a) one of the branch opens (b) one of the branch shorts? (2)
9. Define instantaneous, peak to peak, average and RMS value for a given sine wave. (2)

10. An input sinusoidal signal to the CRO can be mathematically expressed as $V(t) = 2 \sin 2\pi 10^3 t$. Draw the observed signal on a CRO by suitably marking the peak to peak voltage and time period if the volt/div = 1V and time/div = 1 ms. Keeping the volt/div unchanged, if the time/div is now changed to 0.5 ms draw the corresponding waveform observed on the CRO. (2)
11. Find the maximum power transferred to the load R_L in the given circuit :



12. State the Superposition theorem. (2)
13. In the given circuit how does the current vary as a function of frequency if 2 is (a) a capacitor (b) an inductor.



14. In a series RC circuit with a DC input and time constant $\tau = 1$ ms, draw the discharge curve. What will be the effect on this curve if the value of Resistance is now doubled. (2)
15. If a square wave input is provided to a differentiator circuit, draw the corresponding output waveforms when (a) $T \gg RC$ (b) $T \ll RC$. (2)
16. Design a high pass filter with a cutoff frequency $f_c = 2$ KHz. (2)
17. In the Lissajous frequency measurement, the frequency of the signal applied to the x input of the CRO is 5 KHz and to the y input is 10 KHz. What pattern will be observed on the CRO screen? (2)
18. For a series RLC circuit draw the expected frequency response curve. Define the resonant frequency and Q Factor. (2)
19. Define the Two Port Z parameters. Why are they also known as open circuit parameters? (2)
20. Illustrate, using any circuit, how will you experimentally determine Z_{11} and Z_{21} . (2)