



KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Food Engg) 2017 Admission
II Semester Final Examination-July 2018

Elen.1201

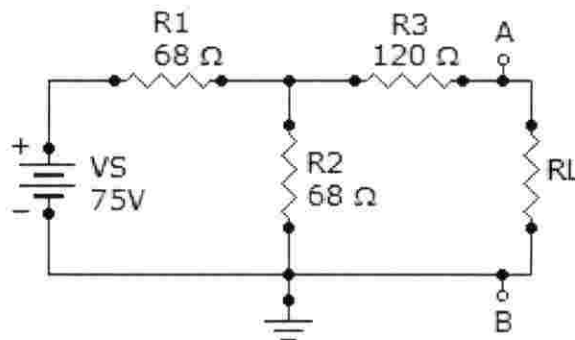
BASIC ELECTRICAL ENGINEERING (2+1)

Marks: 50
Time: 2 hours

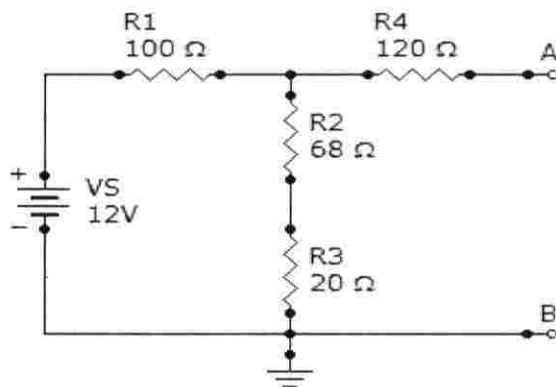
I Answer the Following.

(10x1=10)

- Kirchoff's laws are applicable to
 - dc only
 - sinusoidal wave only
 - dc and ac sinusoidal waves
 - all wave shapes
- Determine I_N for the circuit consisting of V_S , R_1 , R_2 , and R_3 shown in the given circuit



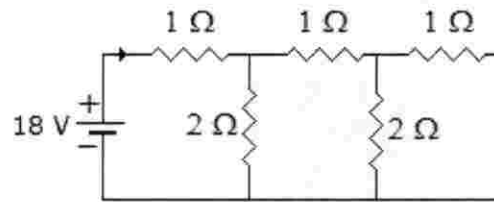
- 676 mA
 - 245 mA
 - 431 mA
 - 75 mA
- Find the Thevenin equivalent (V_{TH} and R_{TH}) between terminals A and B of the circuit given



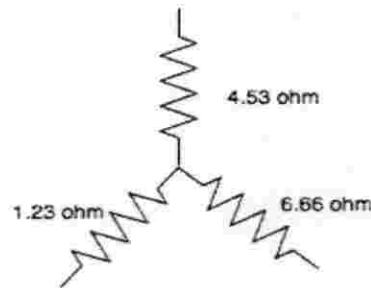
- 562 mV, 167
 - 5.62 V, 167
 - 5.62 V, 188
 - 562 mV, 188
- What is the angular difference between $+j4$ and $-j4$?
 - 30°
 - 90°
 - 180°
 - 270°
 - The complex number $40 \angle 55^\circ$ is equivalent to
 - $55 + j55$
 - $40 + j40$
 - $45.88 + j65.52$
 - $22.94 + j32.76$

P.T.O

- 6 An infinite ladder is constructed with $1\ \Omega$ and $2\ \Omega$ resistors shown below



- a. 8.18 A
b. 0 A
c. 9 A
d. can't determined
- 7 Find the equivalent delta circuit.



- a. 3ohm, 10ohm, 5ohm
b. 3ohm, 10ohm, 15ohm
c. 3ohm, 1ohm, 5ohm
d. 3ohm, 10ohm, 6ohm
- 8 The forward voltage across a conducting silicon diode is about
a. 0.3 V.
b. 1.7 V.
c. -0.7 V.
d. 0.7 V.
- 9 Zener diodes with breakdown voltages less than 5 V operate predominantly in what type of breakdown?
a. Avalanche
b. Zener
c. Varactor
d. Schottky
- 10 Which of the following controls the level of I_D ?
a. V_{GS}
b. V_{DS}
c. I_G
d. V_{DG}

II Write Short notes on any FIVE of the following (5x2=10)

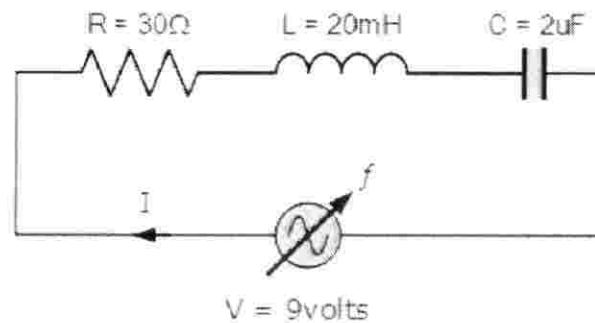
- 1 Give statement of Superposition theorem and explain with suitable example?
- 2 What is meant by distribution board? What is the difference between fuse and a switch?
- 3 What is meant by earth continuity conductor? What should be the minimum size of ECC? Why charcoal and salt is used in earthing?
- 4 What are the active and reactive powers?
- 5 Simplify $ABC + \overline{A}BC + A\overline{B}C + \overline{A}\overline{B}C$
- 6 Implement AND gate using NOR gate only and verify using truth table
- 7 In a series RLC circuit, the voltage across L and C at resonance may exceed even the supply voltage. Why?

III Answer any FIVE of the following. (5x4=20)

- 1 Explain the method to derive star equivalent resistance of delta structured resistances.
- 2 Describe difference between n-type, p-type and intrinsic semiconductors.
- 3 Phenomenon of self inductance and mutual inductance.
- 4 Need for biasing the transistor. Also define Q-point of a transistor
- 5 Convert the numbers:
a. $(205)_8 = ()_2$ b. $(FACD)_{16} = ()_8$
- 6 Biasing and working of pnp transistor.
- 7 Working and characteristics of SCR.

IV Answer any ONE of the following (1x10=10)

- 1 A series resonance network consisting of a resistor of 30Ω , a capacitor of $2\mu\text{F}$ and an inductor of 20mH is connected across a sinusoidal supply voltage which has a constant output of 9 volts at all frequencies. Calculate, the resonant frequency, the current at resonance, the voltage across the inductor and capacitor at resonance, the quality factor and the bandwidth of the circuit.



- 2 Discuss the working of Half wave rectifier with the help of suitable schematic diagram. Also find out the expression for average and rms output current.
