Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - APR 2023

Semester : Semester II - 2022
Course Code : ECE1001
Course Name : Sem II - ECE1001 - Elements of Electronics Engineering
Program : CAI,COM,CSE&CSG

Date : 13-APR-2023
Time : 9.30AM - 11.00AM
Max Marks : 50
Weightage : 25%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **(5 X 2 = 10M)**

1. Intrinsic semiconductor behaves like insulator, to increase the conductivity of these semiconductor an impurities are added. Intrinsic semiconductor are made extrinsic by doping….. and ……. type of impurities.

(CO1) [Knowledge]

2. Color coding is a technique to find out the value of the resistor. Saurabh needs a resistance of 10KΩ with 20% tolerance. What is the color coding for it.

(CO1) [Knowledge]

3. Full wave rectifiers are more efficient than half wave rectifiers. The Vodc and Iorms of full wave rectifier is ……

(CO2) [Knowledge]

4. The filter circuit is used to smoothen the rectifier output. Name the components for the circuit.

(CO2) [Knowledge]

5. Zener diode under goes a break down, which provides a constant voltage connected under reverse bias condition. This break down voltage is known as_____.

(CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(2 X 10 = 20M)**

6. (a) A PN-junction diode is formed when a p-type semiconductor is fused to an n-type semiconductor creating a potential barrier voltage across the diode junction. Explain in detail the V-I characteristics of PN Junction diode.(5 Marks)
(b) Diode approximation is a mathematical method used to approximate the nonlinear behavior of real diodes to enable calculations and circuit analysis. Classify the various approximation models with appropriate diagram.(5 Marks)

(CO1) [Comprehension]

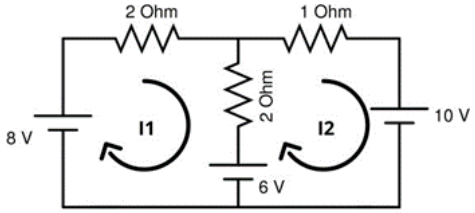
7. (a) A half-wave rectifier is used in soldering iron types of circuits and is also used in mosquito repellent to drive the lead for the fumes. Design a half wave rectifier which can be built using a step-down transformer with N1 and N2 turns and a diode D connected with load resistor R. (5 Marks)
(b) A Zener diode is a silicon semiconductor device that permits current to flow in either a forward or reverse direction. Explain in detail with the required equations the working of zener diode as voltage regulator. (5 Marks)

(CO2) [Comprehension]

PART C

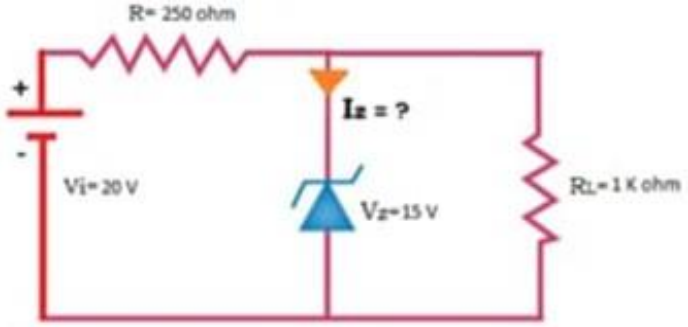
ANSWER ALL THE QUESTIONS **(2 X 10 = 20M)**

8. (a) Silicon diode is having higher temperature coefficient than germanium diode. A Silicon diode working at 95 degree Centigrade with its reverse saturation current as 20μA and forward current of 120mA with η=2. Determine the forward voltage required to be applied across the diode. (5 Marks)
(b) KVL and KCL are the two laws used to calculate voltage and current in a circuit respectively. For the given below circuit calculate the branch currents. (5 Marks)



(CO1) [Application]

9. Zener diodes are widely used as voltage references and as shunt regulators to regulate the voltage across small circuits. In the given figure zener diode has breakdown volatage =15V, which is used in voltage regulator circuit. Find the current flowing through the zener diode.



(CO2) [Application]