ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27
B.Sc. ELECTRONICS - I SEMESTER
MID SEMESTER TEST – AUGUST 2019
EL118: BASIC ELECTRONICS

Time:1 hour **Max Marks:30**

This question paper has two printed pages and three parts.

PART-A

Answer any <u>three</u> questions. **3x5=15**

1. a) Differentiate between ideal and non-ideal voltage source.
   b) Arrive at the expression for current and voltage for an ac voltage applied to a pure inductor. (2+3)

2. Derive an expression for instantaneous voltage across a capacitor in a series RC circuit driven by dc source. Define the time constant for the circuit.

3. With the help of neat diagram explain how V-I characteristics of a silicon diode are obtained. What is meant by Avalanche Breakdown of a diode?

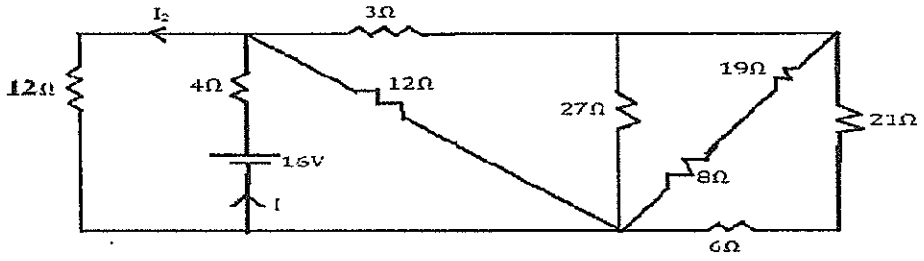
4. Explain with necessary circuits/diagrams the working of a center tapped full wave rectifier and derive its output dc voltage.

PART-B

Answer any <u>three</u> questions. **3x4=12**

5. A coil of inductance 0.02H and resistance 12Ω are connected in series with an ac source 230V,50Hz. Determine,
   a) the current b) the phase angle c) the p.d across the inductor coil
   d) the p.d. across the resistance.

OR



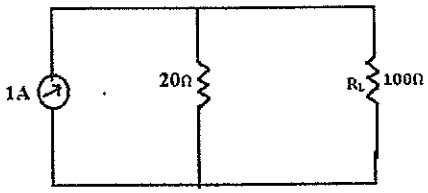
Find I and I_2 for the given circuit.

6. A coil of resistance 0.1Ω and inductance 0.5H is connected across a 12V battery. How long after the switch is closed, will the current reach 90% of its final value?
7. A 10:1 transformer is connected to an ac mains voltage of 230V,50Hz drives a full wave bridge rectifier having a load resistance of 1kΩ. Determine ripple factor and circuit efficiency for the circuit. (r_d=10Ω).
8. Determine the range of R_L for which a Zener gives a constant voltage in the Zener regulator circuit having the following values.
   V_{in}=30V, R_S=800Ω, V_Z=8V, P_Z=200mW.

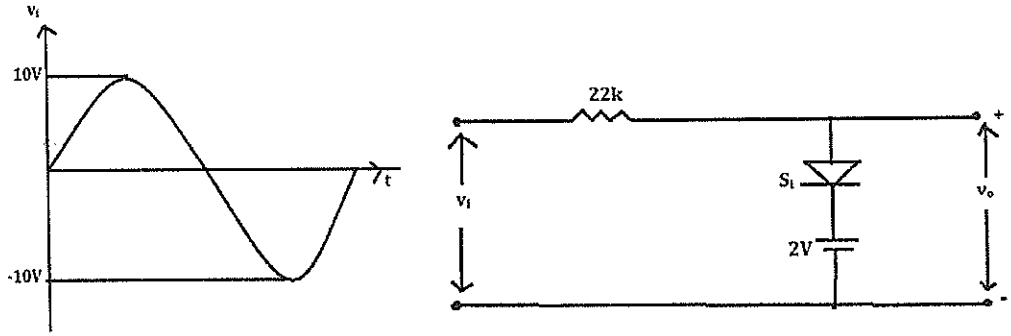
PART-C

Answer any <u>three</u> questions. **3x1=3**

9. Convert current source to voltage source.



10. Give the colour code for the resistor 0.1Ω ± 1%.
11. L filter is hardly used. Give reasons.
12. For the given circuit write the output.



--------XXXX--------