

TIME: 1 Hour

DATE: 25th November, 2022

SECTION A

1. (a) State the number of (i) Branches (ii) Nodes (iii) Meshes and (iv) Loops in Figure 1 below

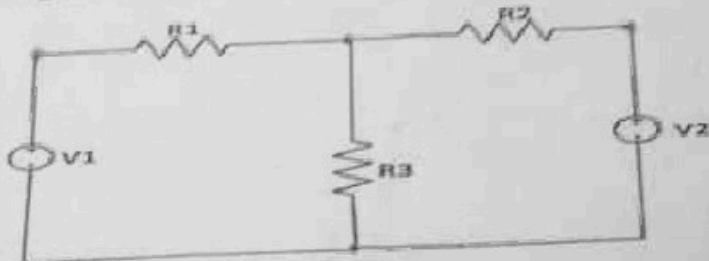


Fig. 1

2. (a) Using both Norton's and Thevenin's theorems, determine I_N , R_N , R_{TH} , V_{TH} , V_L and I_L in Fig. 2 below
 (b) Draw its Norton and Thevenin equivalent circuits.

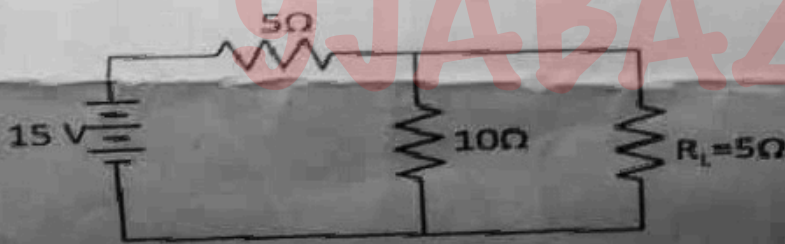


Fig. 2

SECTION B

- (a) Define A.C circuits
 (b) Mention the three circuit elements that can each determine the flow of current in a connected circuit.
- (a) In a purely inductive A.C circuit, discuss with graphical representation, the variation of the flow of current with supply voltage across the inductor.
 (b) A resistor can allow the flow of a current whose peak value is 28.3A in connection with a 100 A.C supply. When connected to a pure capacitor in series, the combination draws 15A from a 240V, 50Hz mains. Calculate (i) the impedance of the circuit, (ii) the capacitance of the capacitor, (iii) the voltage across the capacitor, (iv) the voltage across the resistor, and (v) show that the supply voltage is the phasor sum of (iii) and (iv) above.