

Mid-West University
Examinations Management Office
End Semester Examinations 2081

Bachelor level/ B.E. Computer/ 1st Semester

Time: 3 hours

Subject: Basic Electrical Engineering (EL411/EL501)

Full Marks: 50

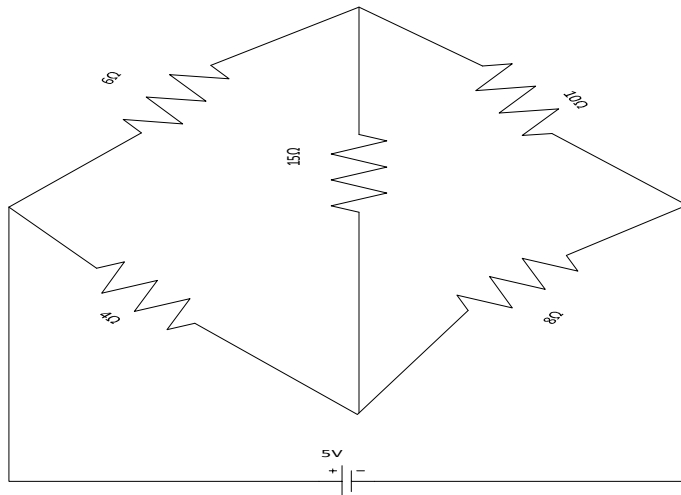
Pass Marks: 25

- Attempt all the questions
- Figures in the margin indicate full marks.
- Assume suitable values, with a stipulation, if necessary.
- Candidates are required to answer the questions in their own words as far as possible.

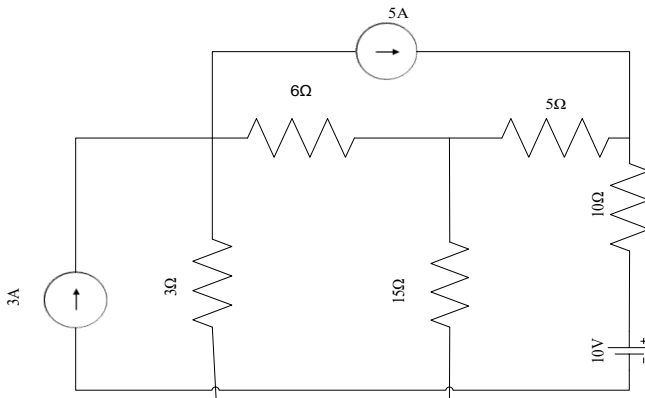
1. a) Define independent sources of energy. [2]

b) Calculate the resistance of 200 m length of copper wire having radius of 1 mm. The resistivity of the copper is $1.72 \times 10^{-3} \Omega\text{m}$. If the wire is drawn to twice to its original length, also find the resistance. [3]

2. a) Find the current in 15Ω resistor of the network shown below using Delta-Star transformation: [5]

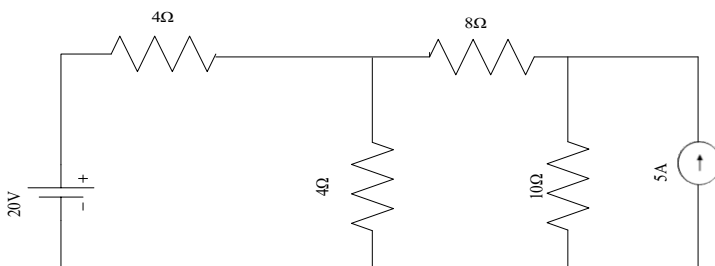


b) Find the nodal voltages of the given network by using nodal analysis method [5]

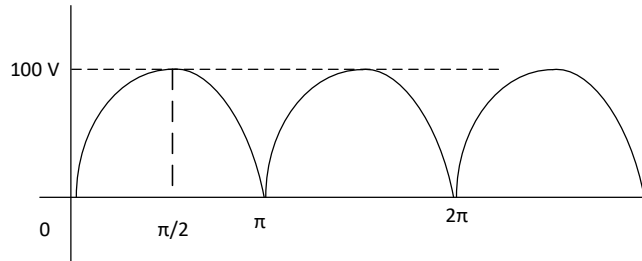


3. a) State and prove maximum power transfer theorem. [5]

b) Using Norton's theorem, calculate the current through the 8Ω resistor in the network given below: [5]



4. What is parallel plate capacitor and explain how the charge is stored in it? [5]
5. Define waveform, phase and cycle. Find the average value and rms value of the given waveform: [2+3]



6. a) Explain in detail, the ac through RLC circuit and also show the equation of power. [5]
- b) A coil having resistance of the 10Ω and inductance of 0.2H is connected in series with capacitor of $59.7\mu\text{F}$. The circuit is connected across 220V , 50Hz AC supply. Calculate: [5]
- i) Current ii) Impedance iii) PF iv) Active power v) Reactive Power
7. A balanced three phase load of 2KW at a PF of 0.8 (lagging) is connected across the three-phase supply. If the line current is 12.5A , calculate resistance and reactance in each branch of the star connected load. What will be the line current, active and reactive power when connected in delta? [5]

The End