Name …… Student ID……..

1. [30 points] Find v_1, v_2, v_3 and $\boldsymbol{i}$ of the circuit in Fig.1 using nodal analysis

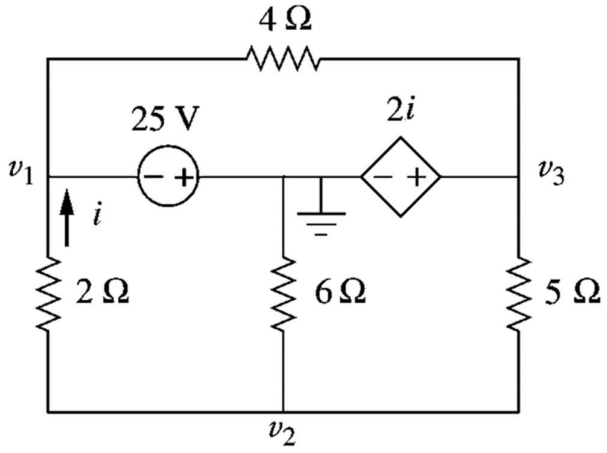

Fig.1

Name …… Student ID……..

2. [30 points] Find v_o of the circuit in Fig.2 using mesh analysis

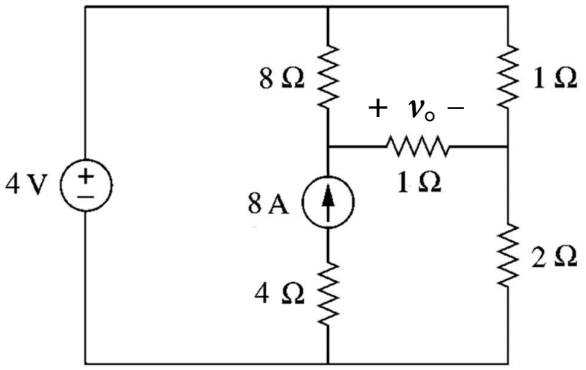

Fig.2

3. [30 points] Find i of the circuit in Fig.3 using superposition

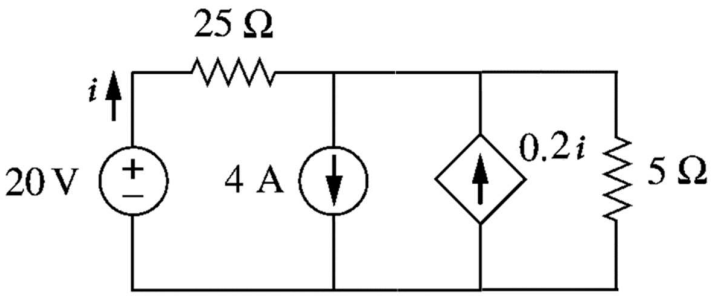

Fig.3

Name …… Student ID……..

4. [30 points] Find Thevenin's equivalent of the circuit in Fig.4

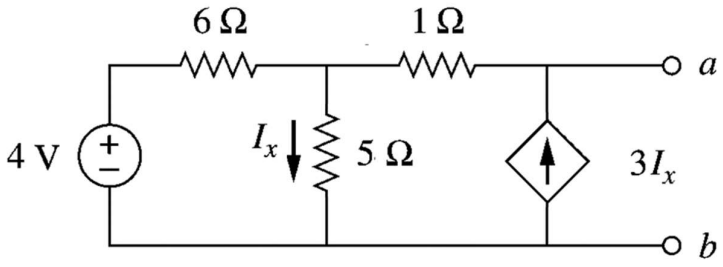

Fig.4

Name …… Student ID……..

4. [30 points] Find Thevenin's equivalent of the circuit in Fig.4

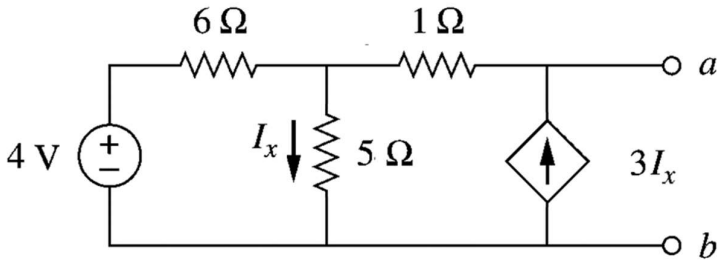

Fig.4

5. [30 points] Find amount of power supplied or absorbed by each element of the circuit. Specify for each element whether it is supplying or absorbing power.

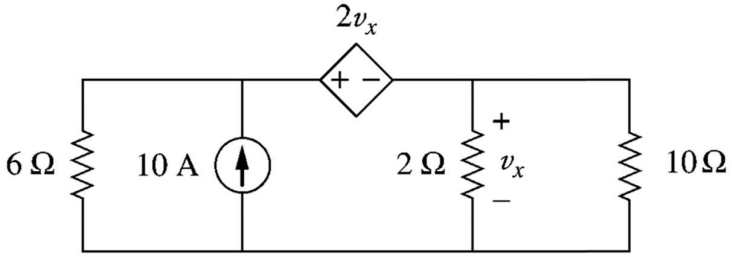

Fig.5

6. [30 points]

6.1 According to the Fig.6 and component list below **draw a schematic diagram** of the circuit.

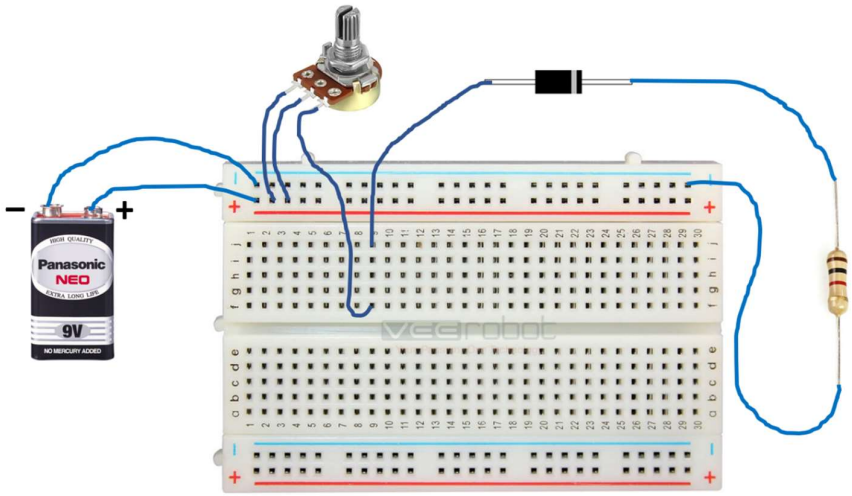

Fig.6

Resistor 1k Ω 1/4 W Diode 1N4001 V_F = 0.7 V Potentiometer B10k Ω Battery 9 V.

The complete answer must:

- Use the **correct symbol** for each component
- Write down the **value** of each component next to its symbol
- Write down the **direction of current** flowing in the circuit and **polarities of the voltage** across each component

6.2. Determine the following parameters and their units of each waveform shown in Fig.7.

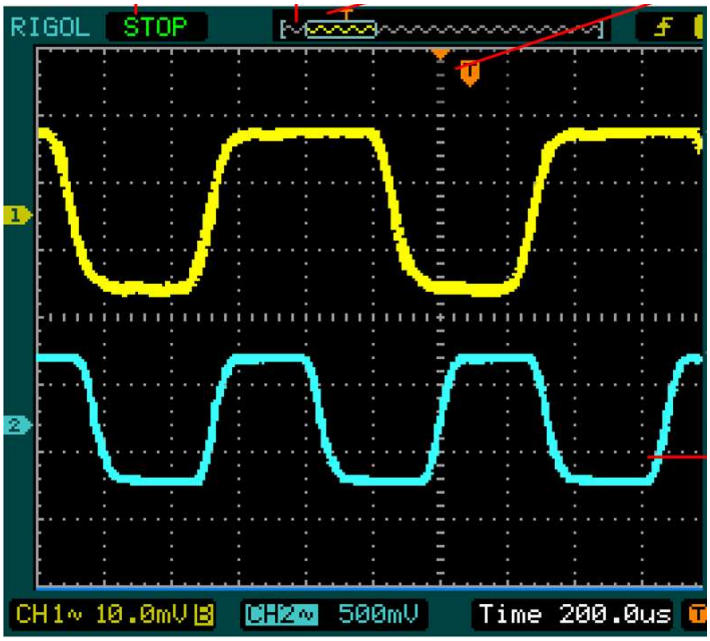

Fig.7

1) Amplitude

2) Period

3) Frequency

4) Offset voltage

Clearly show how you calculate. The answer without explanation have no credit.