Assignment L2

5. The board contains the following blocks, which are connected as shown in the diagram:

[Diagram of a circuit with labeled components]

a) Determine the relationship between the input voltage (V1) and the output voltage (V2).

b) Determine the current in the output branch.

c) Determine the power dissipated in the output branch.

6. A linear potential divider circuit is constructed as shown in the diagram:

[Diagram of a linear potential divider circuit]

a) Determine the relationship between the input voltage (V1) and the output voltage (V2).

b) Determine the current in the output branch.

c) Determine the power dissipated in the output branch.

7. A simple linear amplifier circuit is constructed as shown in the diagram:

[Diagram of a simple linear amplifier circuit]

a) Determine the relationship between the input voltage (V1) and the output voltage (V2).

b) Determine the current in the output branch.

c) Determine the power dissipated in the output branch.

8. A temperature sensor is used to measure the temperature of a substance. The sensor has a voltage output of 1V when the temperature is 0°C. The output voltage increases by 0.1V for each degree Celsius increase.

a) Determine the relationship between the temperature (T) and the output voltage (V).

b) Determine the temperature of the substance when the output voltage is 1.5V.

c) Determine the power dissipated in the sensor if the temperature is 20°C and the output voltage is 1.6V.