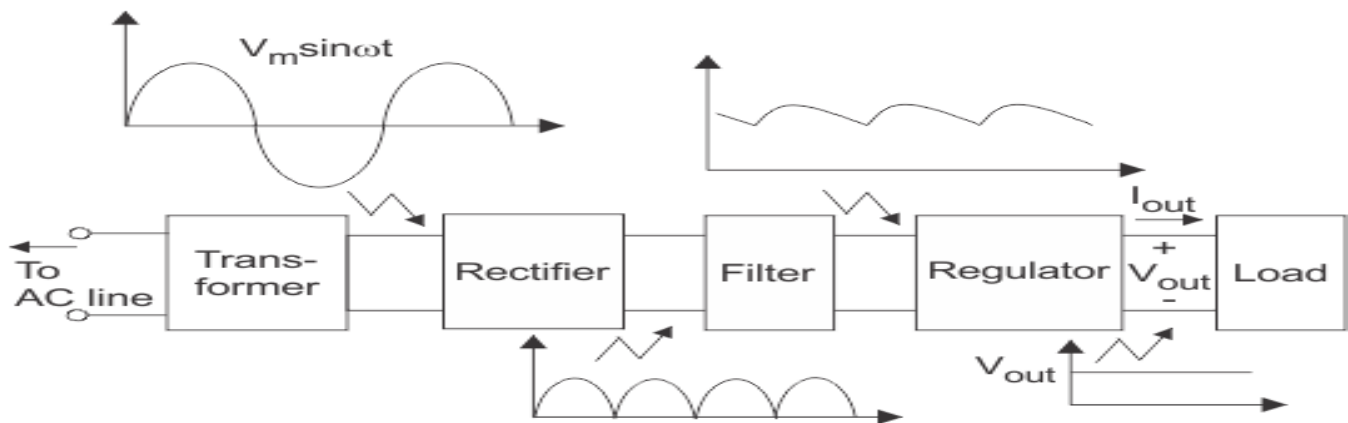


## Worksheet number 4

KEY TERMS: Components of linear power supply: Transformer, rectifier, filter, regulator

TASK: study the picture and the functions of the components below. Then match the text / A, B, S or D / with the right component.



Components of typical linear power supply

- A transformer is commonly used to step the input AC voltage level down or up. Most electronic circuits operate from voltages lower than the AC line voltage so the transformer normally steps the voltage down by its turns ratio to a desired lower level.
- The rectifier converts the AC sine wave into a pulsating DC wave.
- The rectifier produces a DC output but it is pulsating rather than a constant steady value over time like that from a battery.
- A filter is used to remove the pulsations and create a constant output.

- The regulator is a circuit that helps maintain a fixed or constant output voltage.
- Changes in the load or the AC line voltage will cause the output voltage to vary.
- Most electronic circuits cannot withstand the variations since they are designed to work properly with a fixed voltage.
- The regulator fixes the output voltage to the desired level then maintains that value despite any output or input variations.

- **TEXT A** This component converts the incoming signal from an AC format into raw DC. Either half wave or more commonly full wave devices may be used as they make use of both halves of the incoming AC signal.
- **TEXT B** The raw DC from the rectifier is far from constant falling to zero when the AC waveform crosses the zero axis, and then rising to its peak. The addition of a reservoir capacitor here fills in the troughs in the waveform, enabling the next stage of the power supply to operate. Large value capacitors are normally used within this stage.
- **TEXT C** This stage of the power supply takes the smoothed voltage and uses a regulator circuit to provide a constant output virtually regardless of the output current and any minor fluctuations in the input level.
- **TEXT D** This device is used to change the incoming line voltage down to the required level for the power supply. Typically it provides a step down function. It also isolates the output circuit from the line supply.

COMPONENT	TEXT
REGULATOR	
FILTER	
RECTIFIER	
TRANSFORMER	