To setup ImageMagick, OpenCV, and Tesseract OCT, we need to set up Linux Subsystem on Windows. All you need to do is installing ubuntu app on windows store.

This is the link that shows the instruction how to set up Linux subsystem.
https://docs.microsoft.com/en-us/windows/wsl/install-win10

OpenCV (3.3.1 version) installation:
Type the following steps on the command line.

sudo apt-get install build-essential
sudo apt-get install cmake git libgtk2.0-dev pkg-config libavcodec-dev libavformat-dev libswscale-dev
sudo apt-get install python-dev python-numpy libtbb2 libtbb-dev libjpeg-dev libpng-dev libtiff-dev libjasper-dev libdc1394-22-dev

cd ~/<my_working _directory>
Go to https://opencv.org/releases.html and download source code
cd ~/opencv
mkdir release
cd release
cmake -D CMAKE_BUILD_TYPE=RELEASE -D CMAKE_INSTALL_PREFIX=/usr/local ..
make -j8
sudo make install

For compiling convenience, do following steps.
After following the instruction, you just need to compile with `pkg-config opencv --cflags --libs` option in g++
sudo vim /etc/ld.so.conf.d/opencv.conf

        ##note: that is a lowercase 'L'

#type this into the file
/usr/local/lib

#exit out of file and enter:
sudo ldconfig
sudo vim /etc/bash.bashrc

```
#in the newly opened file:
#type this at the bottom of the file
PKG_CONFIG_PATH=$PKG_CONFIG_PATH:/usr/local/lib/pkgconfig
export PKG_CONFIG_PATH

sudo apt-get install execstack
sudo /usr/sbin/execstack -c /usr/local/lib/libopencv_*
```

Leptonica and Tesseract OCR installation:
Currently, newest version of tesseract OCR has compile error, so we need to install 3.0.5 version. 3.0.5 version is the most newest stable version.

Leptonica

```
# remove tesseract binaries and languages
sudo apt-get remove tesseract-ocr*

# remove leptonica
sudo apt-get remove libleptonica-dev

# make sure other dependencies are removed too
sudo apt-get autoclean
sudo apt-get autoremove --purge

#install required libraries
sudo apt-get install autoconf automake libtool
sudo apt-get install autoconf-archive
sudo apt-get install pkg-config
sudo apt-get install libpng12-dev
sudo apt-get install libjpeg8-dev
sudo apt-get install libtiff5-dev
sudo apt-get install zlib1g-dev
sudo apt-get install libicu-dev
sudo apt-get install libpango1.0-dev
sudo apt-get install libcairo2-dev
sudo apt-get install libtool
```

```
#Install leptonica-1.75.2
Go to http://www.leptonica.org/download.html and download source file
cd leptonica
autoreconf -i
./autobuild
./configure
sudo make
sudo make install
```

tesseract-OCR (3.0.5v)
Download source from this link: https://lucacerone.net/2017/install-tesseract-3-0-5-in-ubuntu-16-04/
Copy the source file from your windows to Linux subsystem.
cp /mnt/<drive>/User/your user name/location of the source file ~/location that you wants to install.
Note: you can access windows repositories from Linux subsystem from /mnt/

Unzip the file
cd tesseract
./autogen.sh
./configure --enable-debug
LDFLAGS="-I/usr/local/lib" CFLAGS="-i/usr/local/include" make
sudo make install
sudo make install -langs
sudo ldconfig

To extract text from image file, you need to install tessdata (trained set of data).
Download tessdata from this link: https://lucacerone.net/2017/install-tesseract-3-0-5-in-ubuntu-16-04/
This tessdata includes many languages, if you need only English, you can copy only English data to tessdata repository.
Copy the tessdata and copy it to the /usr/share/tesseract-ocr/tessdata or similar to this.
(if that does not work try /usr/local/share/tessdata)
^^ sudo cp

ImageMagick
sudo apt-get install ghostscript
sudo apt-get install libgs-dev
sudo apt-get install gs-esp
sudo apt-get --purge remove imagemagick
Get the source of ImageMagick, untar it, cd ImageMagick-xx
./configure --with-gslib=yes [and what else you need]
Confirm in the output near the bottom gslib yes yes and not gslib yes no
make
make install

Graphical Applications

https://seanthegeek.net/234/graphical-linux-applications-bash-ubuntu-windows/

In order to run Linux GUI applications on Bash On Ubuntu on Windows, you must:

Install a X server for Windows

Configure bash to tell GUIs to use the local X server

Install VcXsrv

In order to run graphical Linux applications, you' ll need an X server.

VcXsrv is the only fully open source and up-do-date native X server for windows.

Download and run the latest installer

Run XLaunch whenever you run the program

Press Next three times and press finish button.

A X icon will appear in your system tray.

Configure bash to use the local X server

In bash run:

echo "export DISPLAY=localhost:0.0" >> ~/.bashrc

To have the configuration changes take effect, restart bash, or run:

. ~/.bashrc

Test a graphical application

Install x11-apps

sudo apt-get install x11-apps

Run xeyes

A new window will open, containing a pair of eyes that will follow your mouse movements.

Compiling example:
g++ sample.cpp -o sample `pkg-config opencv --cflags --libs` -llept -ltesseract