1) Name the structures labeled in the image below.

A ___________________________________________________________________
B ___________________________________________________________________
C ___________________________________________________________________
D ___________________________________________________________________
E ___________________________________________________________________
F ___________________________________________________________________
G ___________________________________________________________________

2) The __________________________ provides about ______ % of the converging power needed to focus images on the back of the eye. The remaining ______ % of the focusing power comes from the ______________________, which actually becomes thicker when a person looks a near objects due to contraction of the ______________________.

3) Name the structures labeled in the image on the following page.

A ___________________________________________________________________
B ___________________________________________________________________
C ___________________________________________________________________
D ___________________________________________________________________
E ___________________________________________________________________
F ___________________________________________________________________
G ___________________________________________________________________
H ___________________________________________________________________
I ___________________________________________________________________
J ___________________________________________________________________
4) There are _______ times more rod photoreceptors than cones in the human retina, and __________________________________ are the least numerous of all.

5) The lowest ratio of photoreceptors to ganglion cells occurs in the fovea – approximately ________ to one -- which enables the very high acuity vision associated with this region. In the periphery, a single ganglion cell can receive input from more than __________ photoreceptors.

6) Place the following six anatomical zones in order of decreasing diameter and write the largest diameter in mm of each zone beside its name: Fovea, Parafovea, Perifovea, Foveola, Umbo, Foveal Avascular Zone.

A ___________________________________________  D ___________________________________________
B ___________________________________________  E ___________________________________________
C ___________________________________________  F ___________________________________________
7) Complete the following table indicating the neurotransmitter and type of output (graded or action potential) for each type of neuron.

<table>
<thead>
<tr>
<th>Cell Type</th>
<th>Neurotransmitter</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ganglion Cell</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bipolar Cell</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photoreceptor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8) Rhodopsin belongs to a family of receptors known as __________________________
                      __________________________. The first two words of this receptor family's name refer to what protein in rhodopsin's case? __________________________
The residue of rhodopsin that covalently binds 11-cis retinal is __________________________.

9) In the normal retina, ABCA4 flips __________________________
to the cytoplasmic leaflet of the disk membrane. In Stargardt disease, the impairment of ABCA4 function causes __________________________
to accumulate on the inner leaflet of the disk. This material also accumulates within and beneath the retinal pigment epithelium in the form of the ophthalmoscopically visible __________________________ that are characteristic of Stargardt disease.
10) The process depicted in the two images above is known as ________________________ and takes place on a time scale of ________________________.

Name all the lettered molecules in these two images.

A ________________________   F ________________________

B ________________________   G ________________________

C ________________________   H ________________________

D ________________________   I ________________________

E ________________________   J ________________________

K ________________________   O ________________________

L ________________________   P ________________________

M ________________________   Q ________________________

N ________________________
11) The process depicted in the two images above is known as ___________________________ and takes place on a time scale of ___________________________.

Name all the lettered molecules in these two images.

A ___________________________   G ___________________________
B ___________________________   H ___________________________
C ___________________________   I ___________________________
D ___________________________   J ___________________________
E ___________________________   K ___________________________
F ___________________________