

# Honors Physics Exam on Light Form M – R

Name \_\_\_\_\_ Per \_\_\_\_

**This exam is worth 75 points.** You may use your Notes, PowerPoint, or Text on this exam but NO help from human beings! You MUST HAND WRITE THESE EXAMS in INK!! NO PRINTED or PENCIL PAPERS WILL BE ACCEPTED! EXPLAIN IN COMPLETE SENTENCES AND GIVE EXAMPLES! MATH CALCULATIONS MUST SHOW THE HUP, TWO, THREE, FOUR.

1. Illustrate and tell why we have *Blue Skies* and *Red Sunsets*.
2. Illustrate the FIVE cases of OBJECTS and IMAGES in the DOUBLE CONVEX LENS.
3. Contrast the systems of *COLOR* of *LIGHT* and *PIGMENTS*, and give an example of each.
4. Diagram how *Primary* and *Secondary Rainbows* are formed.
5. Define and illustrate these terms: *Rectilinear Propagation*, *Reflection*, *Refraction*, *Interference*, *Diffraction*.
6. Diagram and explain the *Photoelectric Effect*, and give a practical example of its use.
7. Diagram and explain how the *LASER* works. Give two practical uses for it.
8. Diagram a microscope and show how the object produces its images.
9. illustrate and tell how the *Umbra* and *Penumbra* cause a *Total* and *Partial Eclipse* of the Sun.
10. Diagram and explain how *Michelson* measured the *Speed of Light* using an octagonal mirror system between two California mountains.
11. What was Maxwell's big discovery about light and what did the *Quantum Theory* contribute to the theories of light?
12. Diagram and explain why the moon glows red when totally eclipsed.
13. Define: *Luminous*, *Illuminated*, *Translucent*, *Opaque*, and *Transparent*.

**SHOW YOUR METHOD OF SOLUTION TO THESE PROBLEMS, (The 1, 2, 3, 4).**

14. Equal *illumination* is caused by a 50 cd source at 25 cm and an unknown light at 10 cm. Find the intensity of the unknown.
15. An object 18 cm high is placed 32 cm from a concave mirror, focal length 16.0 cm. Calculate a) the location of the image, and b) the height of the image.

**When finished, STAPLE this exam onto your papers and turn it in on the due date.**