Science Olympiad Test: Optical Systems & Spectroscopy

1. What is the function of the condenser in a compound microscope?

2. Which part of a telescope collects light to form an image?

3. How does a camera control the amount of light entering the lens?

4. What type of lens is used in glasses to correct nearsightedness?

5. What is the principle behind retro reflectors?

6. How does a periscope allow the user to see over an obstacle?

7. What is the difference between refracting and reflecting telescopes?

8. How does the magnification of a microscope relate to the focal lengths of its lenses?

9. What is the purpose of the aperture in a camera?

10. Which type of mirror is used in a periscope?

11. What is the principle behind absorption spectra?

12. How do chemical dyes produce color?

13. What does the peak wavelength in an absorption spectrum indicate?

14. How does Beer's Law relate absorbance to concentration?

15. What type of transitions occur in molecules during absorption spectroscopy?

16. What causes the dark lines in an absorption spectrum?

17. What is the role of a blank sample in spectroscopy experiments?

18. How does a solvent affect the results of absorption spectroscopy?

19. Which part of the electromagnetic spectrum is typically used in UV-Vis spectroscopy?

20. What are common applications of absorption spectra in chemical analysis?

21. How does light interact with a retro reflector to return to its source?

22. What is the main advantage of using reflecting telescopes over refracting telescopes?

23. How does a compound microscope achieve high magnification?

24. What determines the resolving power of a telescope?

25. How do filters enhance the study of absorption spectra?