

### Answer on Question #41371, Physics, Optics

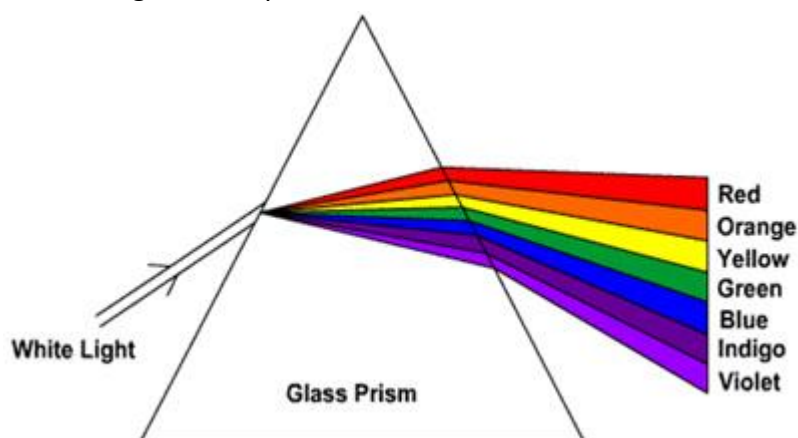
Fig. shows the view through the eye-piece of a prism spectrometer with its slit illuminated by the source of light emitting three wavelengths corresponding to yellow (Y), green (G) and unknown colour (X). The colour X may be:



- (1) Red
- (2) Orange
- (3) Pink
- (4) None of these

#### Solution

Each individual wavelength within the spectrum of visible light wavelengths is representative of a particular color. That is, when light of that particular wavelength strikes the retina of our eye, we perceive that specific color sensation. Isaac Newton showed that light shining through a prism will be separated into its different wavelengths and will thus show the various colors that visible light is comprised of.



The separation of visible light into its different colors is known as **dispersion**. Each color is characteristic of a distinct wavelength; and different wavelengths of light waves will bend varying amounts upon passage through a prism; for these reasons, visible light is dispersed upon passage through a prism. Dispersion of visible light produces the colors red (R), orange (O), yellow (Y), green (G), blue (B), indigo (I), and violet (V).

Thus, after the yellow and green colours can go only blue, indigo and violet colours.

**Answer** (4) None of these.

