## Grade 10 Chapter 6 Workbook Questions

St John Baptist De La Salle Catholic School, Addis Ababa

22/23 Academic Year

## Questions

- 1. What is the bouncing of waves when they encounter a different medium called?
- 2. Show that the speed of light in vacuum can be expressed in terms of the electric and magnetic constants in the following manner:  $c = \frac{1}{\epsilon_0 \mu_0}$ .
- 3. The period of a transverse electromagnetic wave is  $1\mu$ s, what is its frequency? What about its wavelength?
- 4. How is an electromagnetic field produced?
- 5. Radar is used to determine distances to various objects by measuring the round-trip time for an echo from the object.
  - (i) How far away is the planet Mars if the echo time is 1400 s?
  - (ii) What is the echo time for a speeding car 100.0 m from a police radar unit?
- 6. An object of height 10cm is placed in front of a convex mirror of radius 20 cm, 25 cm away from the mirror. Determine the height of the image, how far it is from the mirror, whether it is real or virtual and whether it is upright or inverted.
- 7. If a mirror produces a real image that is four times as large as the object and the object is located 40cm from the mirror, what is the focal length of the mirror?
- 8. What is the focal length of a makeup mirror that has a power of 1.50 D?
- 9. If Apple comes up with an iPhone that has a camera whose zoom lens has an adjustable focal length ranging from 100.0 to 400 mm. What is its range of powers?
- 10. A clear crystal is immersed in water, and you wish to identify it by finding its index of refraction. You arrange to have a beam of light enter it at an angle of  $46^{0}$ , and you observe the angle of refraction to be  $40^{0}$ . What is the index of refraction of the substance and its likely identity