TEST ON RAY OPTICS

1. A ray of light is incidenting on a plane mirror at an angle of 30°. The deviation produced in the ray is ( )
   a. 30°
   b. 60°
   c. 90°
   d. 120°
2. A plane mirror makes an angle of 30° with horizontal. If a vertical ray strikes the mirror, find the angle between mirror and reflected ray. ( )
   a. 30°
   b. 45°
   c. 60°
   d. 90°
3. Two plane mirrors are at 45° to each other. If an object is placed between them, then the number of images will be? ( )
   a. 5
   b. 9
   c. 7
   d. 8
4. An object 5cm tall is placed 1m from a concave spherical mirror which has radius of curvature 20cm. The size of image is …… ( )
   a. 0.11 cm
   b. 0.5 cm
   c. 0.55 cm
   d. 0.6cm
5. In a concave mirror experiment an object is placed at a distance x_1 from the focus and the image is formed at a distance x_2 from the focus. The focal length should be____ ( )
   a. x_1x_2
   b. $\sqrt{x_1x_2}$
   c. $x_1 + x_2$
   d. $\sqrt{x_1/x_2}$
6. The relationship between the linear magnification "m", the object distance "s" and focal length "f" is ( )
   a. $m = \frac{f-s}{f}$
   b. $m = \frac{f}{f-s}$
   c. $m = \frac{f+s}{f}$
   d. $m = \frac{f}{f+s}$

7. The refractive index of a certain glass is 1.5 for light whose wave length in vacuum is 6000 A°. The wave length of light when passes through glass is _____ ( )
   a. 4000 A°
   b. 6000 A°
   c. 9000 A°
   d. 15000 A°
8. A rectangular tank of depth 8 m is full of water, the bottom is seen at the depth __( )
   a. 6 m
   b. 8/3 m
   c. 8 m
   d. 10 m
9. For a colour of light the wavelength in air is 6000 A° in water is 4500 A°. Then the speed of light in water is_____ ( )
   a. 5×10^{14} m/s
   b. 2.25×10^{8} m/s
   c. 4×10^{8} m/s
   d. Zero
10. Determine the power of the corrective contact lens required by a myopic eye whose far point is at 50 cm. ( )
   a. 2D
   b. -2D
   c. 3D
   d. -3D
11. A double convex thin lens made of glass of refractive index 1.5 has radii of curvature 12 cm each. The focal length of this lens when immersed in a refractive index 1.25 ( )
   a. 20 cm
   b. 30 cm
   c. 25 cm
   d. 35 cm
12. Determine the image distance and image height for a 5.00-cm tall object placed 20.0 cm from a concave mirror having a focal length of 15.0 cm. ( )
   a. s_i = 60.0 cm and **y_i = -15.0 cm**
   b. s_i = -60.0 cm and **y_i = -15.0 cm**
   c. s_i = -60.0 cm and **y_i = 15.0 cm**
   d. s_i = 60.0 cm and **y_i = 15.0 cm**
13. A magnified, inverted image is located a distance of 32.0 cm from a concave mirror with a focal length of 12.0 cm. Determine the object distance and tell whether the image is real or virtual ( )
   a. **s_i = 19.2 cm** and **Real**

b. s_i = **-19.2 cm** and virtual
c. s_i = **19.2 cm** and virtual
d. s_i = **-19.2 cm** and **Real**

14. A convex mirror has a focal length of -10.8 cm. An object is placed 32.7 cm from the mirror's surface. The image distance is _____

15. A 2.80-cm diameter coin is placed a distance of 25.0 cm from a convex mirror which has a focal length of -12.0 cm. The image distance and the diameter of the image is _____and _____

16. A focal point is located 20.0 cm from a convex mirror. An object is placed 12 cm from the mirror. The image distance is _____

17. The refractive index of glass with respect to water is 9/8. If the velocity of light in glass is 2×10^8 **m/sec. the velocity of light in water**

( )

a. 2.25×10^8 **m/sec**
b. 2.9×10^8 **m/sec**
c. 1.5×10^8 **m/sec**
d. None

18. The critical angle for glass –water interface is (if the refractive index of glass is 1.5 and that of water is 1.33) ( )

a. Sin^{-1} **(0.88)**
b. Sin^{-1} **(0.6)**
c. Sin^{-1} **(0.5)**
d. Sin^{-1} **(0.7)**

19. The time taken by light to travel a distance of 3m in water (velocity of light in vacuum = 3×10^8 **m/sec,** $\mu = 4/3$**)** ( )

a. 1.33×10^{-8} **m/sec**
b. 1.33×10^8 **m/sec**
c. 2×10^8 **m/sec**
d. 2×10^{-8} **m/sec**

20. The wave length of light in vacuum is 6000 A°. When it travels normally through glass of thickness 2.0 cm then the number of waves of light in 2cm thickness of glass is

( )

a. 5×10^4
b. 5×10^3
c. **500**
d. **50**

21. The angle at which light is to be incident on the surface of water so that the angle between reflected and refracted rays is equal to 90°(refractive index of water = 4/3) is _____

22. The number of images formed by two plane parallel mirrors are ( )

a. 2
b. 5
c. 4
d. ∞

23. The magnification for a plane mirror is ( )

a. 0
b. 1
c. -1
d. ∞

24. When the incoming ray is parallel to optic axis then the reflected ray from spherical mirror ( )

a. Passes through the centre of the curvature
b. Passes through midpoint of centre of curvature and focal point
c. Passes through focal point
d. None of the above

25. If the power of biconvex lens is 'P' then what is the power of each part of the biconvex lens when it is divided in to two equal halves ( )

a. 2P
b. P/2
c. P
d. 4P

BY
PHYSICS DEPARTMENT,
RGU IIIT, BASAR.