Physics

20
25

Second secondary grade
Exam Models

Week
15

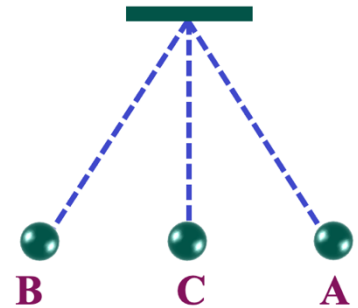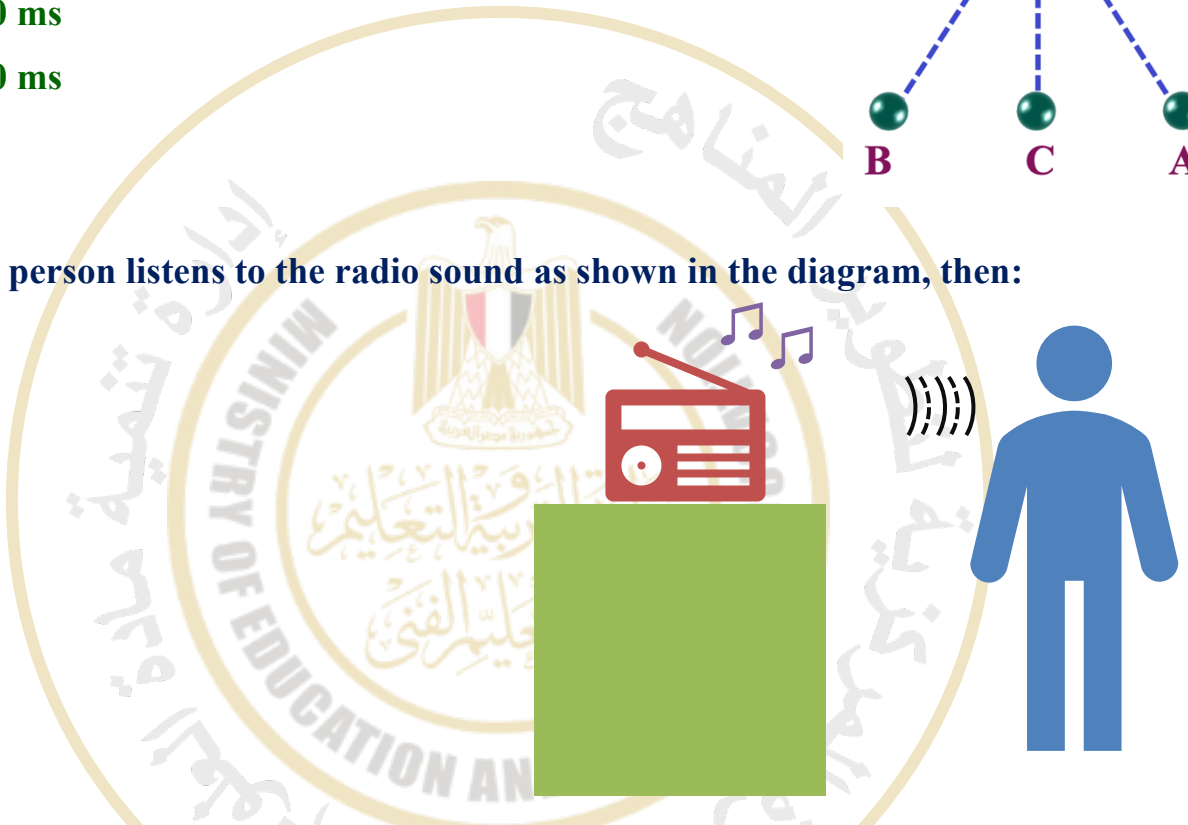Prepare and review

Exam (1)

® **Multiple Choice Questions**

1) The opposite figure represents a simple pendulum moving in a vibrating motion with a frequency of 1.25 Hz. The time taken by the body from (A) to (C) is equal to ……

   (A) 0.25 ms

   (B) 20 ms

   (C) 200 ms

   (D) 100 ms

2) When a person listens to the radio sound as shown in the diagram, then:

	The type of the received wave by the radio	The produced wave
(A)	Mechanical longitudinal	Mechanical longitudinal
(B)	Mechanical transverse	Electromagnetic transverse
(C)	Electromagnetic longitudinal	Electromagnetic longitudinal
(D)	Electromagnetic transverse	Mechanical longitudinal

3) Two volumes of different liquids flow in two tubes. The ratio of the flow times t_1/t_2 is = 1/3, the volume of the first is twice the volume of the second, and the mass flow rate is constant. Then the ratio of the densities of the two liquids (ρ_1/ρ_2) is ....

(A) 3/2

(B) 2/3

(C) 1/6

(D) 6/1

4) The opposite figure represents: A light ray fell on a separating surface, part of it was reflected and the other part was refracted. The refractive index of the second medium is equal to:

(A) 1.65

(B) 1.74

(C) 2.49

(D) 1.43

$n_1 = 1.52$
$n_2 = ?$
70°
60°
Seperating surface
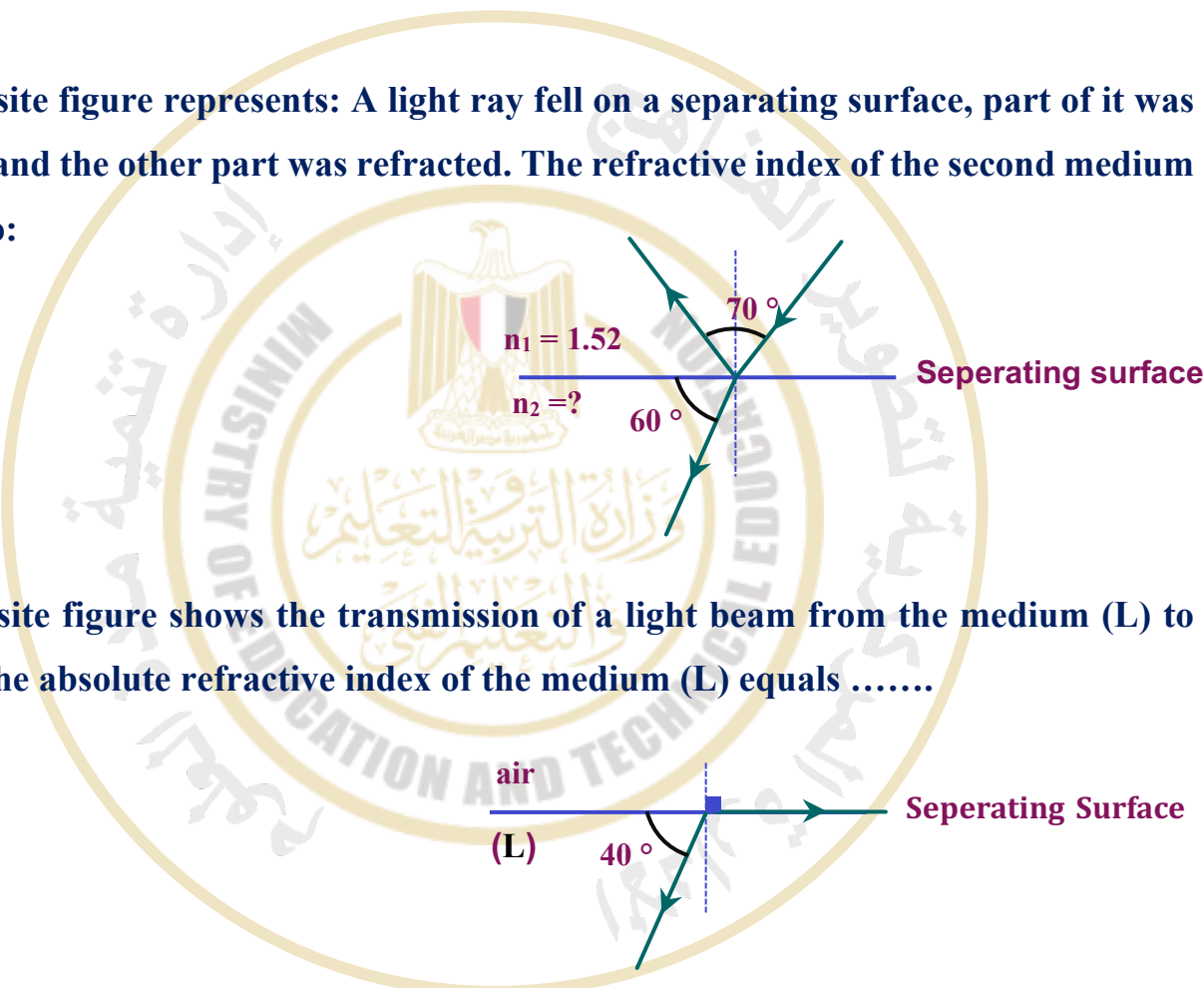
5) The opposite figure shows the transmission of a light beam from the medium (L) to the air. The absolute refractive index of the medium (L) equals ....

(A) 1.3

(B) 1.55

(C) $\sqrt{2}$

(D) 1.6

air
(L)
40°
Seperating Surface

6) The figure shows a mirror tilted to the horizontal at an angle of 30°. If a light beam falls on the mirror, and the reflected beam is parallel to the horizontal, then the angle of reflection is equal to .....

(A) 20°

(B) 40°

(C) 60°

(D) 50°

θ
40°
horizontal
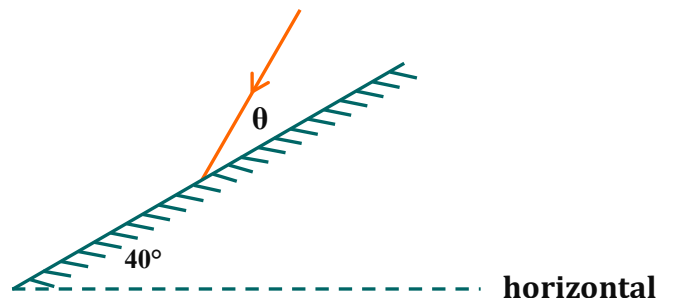
7) The opposite figure shows the path of a light beam that fell on one of the faces of an equilateral triangular prism and emerged from the other face deviating as shown in the figure. The refractive index of the prism material ………
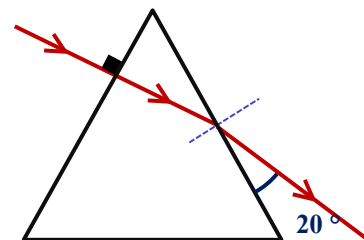
(A) 2.53

(B) 0.395

(C) 1.085

(D) 1.5

8) The figure shows equal quantities of different liquids poured into identical cones. If you know that Viscosity M > Viscosity Z > Viscosity X > Viscosity Y. Which liquid collects in the basin first?

(A) Liquid M

(B) Liquid Y

(C) Liquid X

(D) Liquid Z
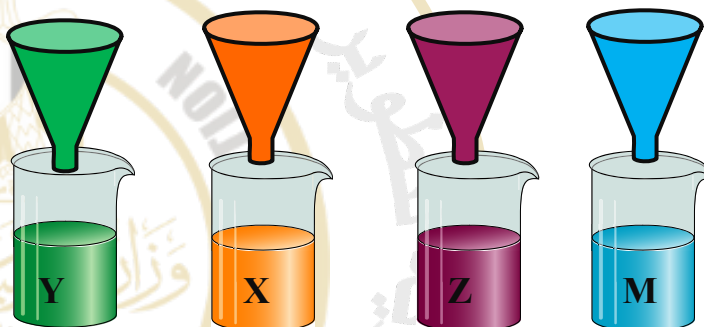
9) A light ray moves between two transparent media with different optical densities at a non-zero angle of incidence. If you know that the ratio between the wavelength of the incident light in the first medium and the wavelength in the second medium is 3/2, it is expected that the light ray ………..

(A) is totally reflected.

(B) is transmitted without suffering deviation.

(C) is refracted away from the normal line.

(D) is refracted towards the normal line

10) A thin prism with a refractive index of 1.5, the ratio between the deviation angle of the light in it and the apex angle is ……..

(A) 1/5

(B) 1/2

(C) 1/4

(D) 1/3

11) If you know that n = 1.5 for glass, which of the following figures causes the incident ray to be totally reflected?

(A) B, C.

(B) D, C.

(C) A, C.

(D) B, A.
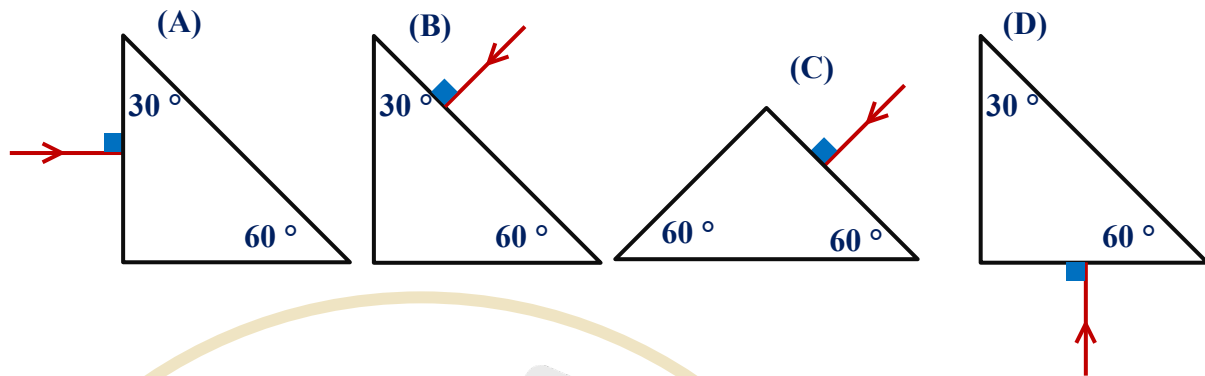
12) In Thomas Young's experiment. If you know that the distance between the central fringe and the second bright fringe is 10 mm, the distance between the two slits is 0.3 mm, and the distance of the barrier from the two slits is 3 m. Then the wavelength of the monochromatic light used is equal to

(A) 4×10^{-7}m

(B) 5×10^{-7}m

(C) 6×10^{-7}m

(D) 8×10^{-7}m

13) The figure shows an image of a palm tree on the surface of the earth. In order to see the image inverted, the order of the refractive index of light in the three layers of air is .....

(A) $n_1 < n_2 < n_3$

(B) $n_2 < (n_1 = n_3)$

(C) $n_1 = n_2 = n_3$

(D) $n_1 > n_2 > n_3$
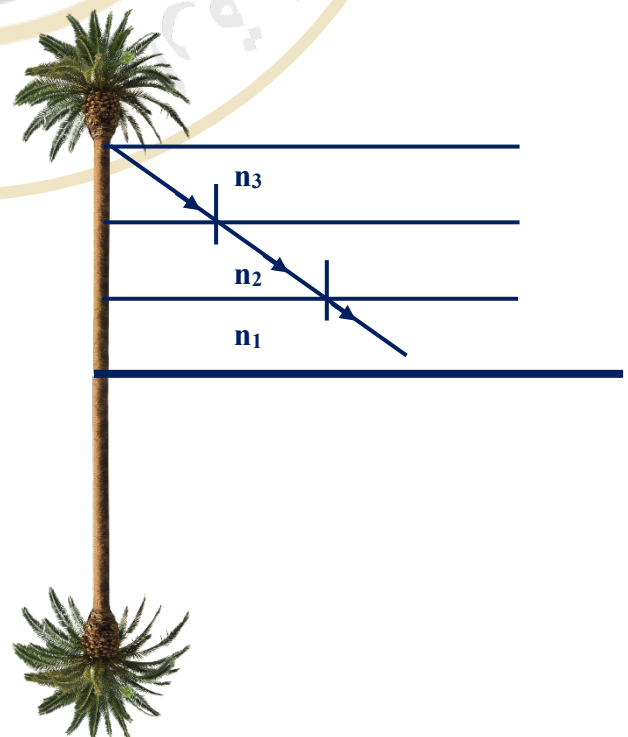
14) Four students measured the angle of refraction of a monochromatic light beam incident on one of the faces of a thin prism with a refractive index of $\sqrt{3}$ using a protractor. The results were as follows:

| Student (1)	Student (2)	Student (3)	Student (4)
5 °	15 °	20 °	30 °

Which student's measurement was correct?

(A) Student (1)

(B) Student (2)

(C) Student (3)

(D) Student (4)

15) If you know that the dispersive power of a thin prism with a apex angle of 8° is 0.037 and the refractive index of yellow is 1.54. Then the angular dispersion of this prism is

(A) 0.11°

(B) 0.14°

(C) 0.12°

(D) 0.16°

16) A simple pendulum oscillates passing through points A, B, C, D, and E as shown in the figure. The ratio of the displacement travel time $(AD)^{\rightarrow}$ to the displacement travel time $(AB)^{\rightarrow}$ is.....
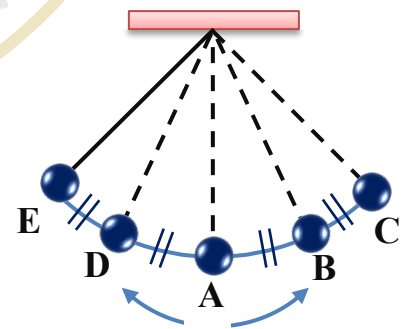
(A) 1/2

(B) 1/4

(C) 1/3

(D) 1/1

17) **The figure shows the transmission of a light beam between the first medium and the second medium. The relative refractive index from the second medium to the first medium = ...**

(A) 1.932

(B) 0.299

(C) 3.346

(D) 0.518
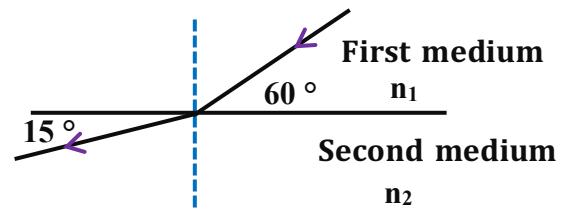
18) **If the critical angle of a transparent medium with air is 53.13°, then the speed of rays in this medium is approximately equal to .....**
   **(Knowing that the speed of light in air is 3×10^8 m/s)**

(A) 2.4×10^8 m/s

(B) 1.8×10^8 m/s

(C) 2.03×10^8 m/s

(D) 3.75×10^8 m/s

19) **The distance between the central fringe and the third dark fringe is 50 cm in Young's experiment. The distance between the central fringe and the second dark fringe is equal to**

(A) 10 cm

(B) 20 cm

(C) 30 cm

(D) 50 cm

20) **In the figure shown, if the angle of incidence of the light ray decreases by 10°, the reflected light ray rotates at an angle of:**

(A) 10°, clockwise.

(B) 20°, clockwise.

(C) 10°, counterclockwise.

(D) 20°, counterclockwise
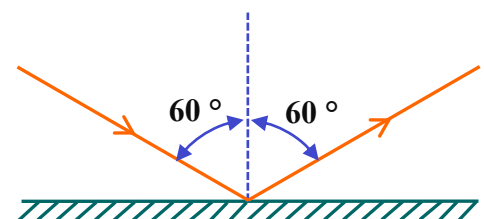
Essay Questions

21) A light beam fell on one of the faces of a triangular prism with a refractive index of $\sqrt{2}$. The path of the beam was as shown in the figure. Calculate the value of angle (θ)
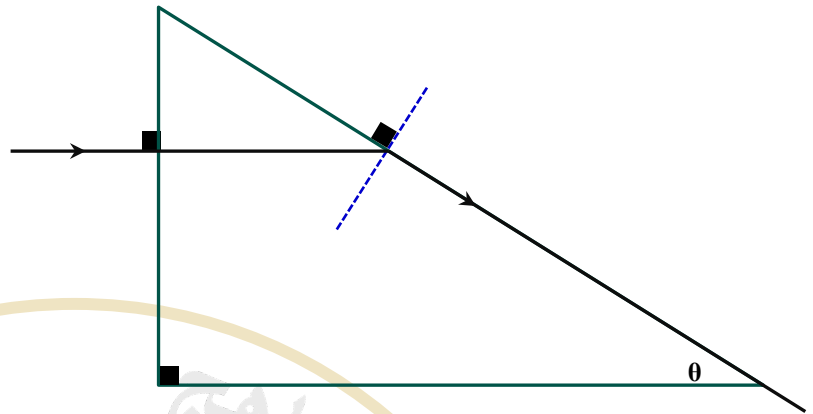
22) In the opposite figure, if a force of 10 N acts on the upper plate to move at a speed of 3 m/s, calculate the viscosity coefficient of the fluid.

40 cm

20 cm

5 cm