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Grade - X
Board - CISCE

Date - 24/7/2021
Sub - Phy.
Chapters - Light

Pages - 6

23½/30

Varima

Q1>

i) Light is ~~not absorbed~~ where?

Write complete sentences

ii)
1> Angle of incidence. ✓
2> Thickness of the glass. ✗
3> Angle of the Prism. ✓

iii)
1> There should be ~~one~~ polished ~~sort~~ surface. ✗
2> The glass should be thick. ✗

iv) The beam of light moves towards the base while it passes through the prism. ✗

v) If the image appears magnified (i.e. place the lens ~~at a~~ a little bar from the printed page) then it is a convex lens. However, if it appears diminished, then it is a concave lens. ✓

vi) Glass absorbs U.V rays due to which quartz envelope is preferred as it can easily pass through ✓

vii) Upon bringing the blackend bulb end of a thermometer beyond the red light (once obtaining the spectrum through dispersion), the ✓

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drastically
temperature of the thermometer rises. Hence the infrared rays can be detected (as they can cause sudden rise in temperature.

viii)

i) If it is +, then the image is real.
If it is −, then the image is virtual.

ii) If it is +, then the image is erect.
If it is −, then the image is inverted.

ix) Infrared ~~waves~~ rays
Micro-waves

x) Given:-
$\lambda = 5500\ \text{Å}$
$v = 3\times10^8\ ms^{-1}$

$\therefore \nu = \frac{\lambda}{\lambda} \quad \frac{v}{\lambda}$

$= \frac{3\times10^8}{5500}$

$= \frac{3\times10^6}{55}$

$= \frac{3\times100\times10^4}{55}$ (1.818)

$\therefore \boxed{\nu = 5.454\times10^4\ Hz.}$

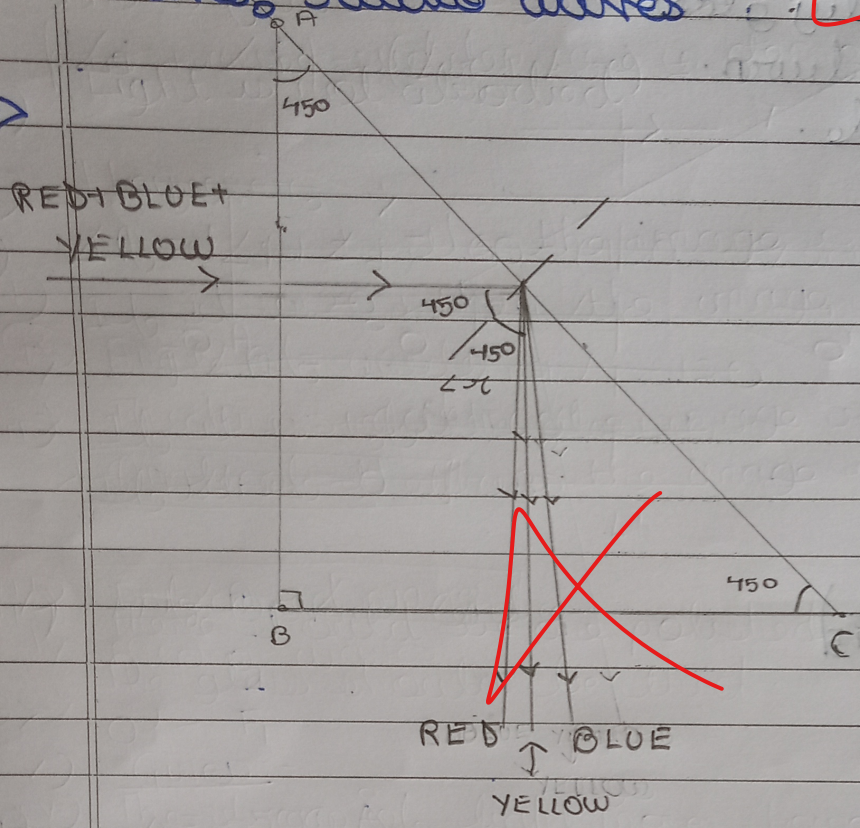
460
1.818 × 3
5454

6

Q2> Gamma rays, X-rays, infrared rays, micro-waves, radio waves.

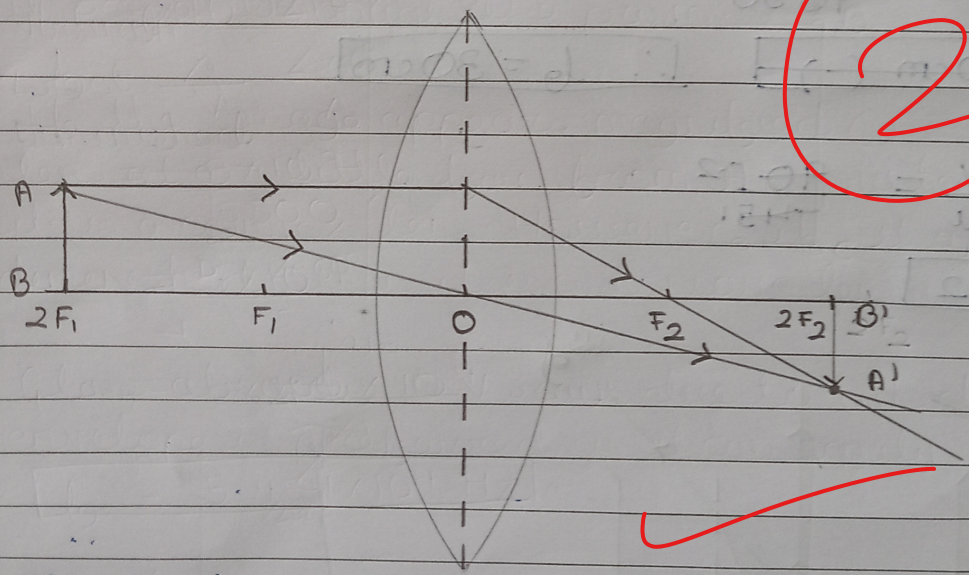
(2)

Q3>



(2)

Q4>



Object placed at $2F_1$.

Q5>

1> It is absorbed by glass.
2> Can cause skin burn
3> It is not visible.

2

Q6>

~~u = 45cm~~

a) Convex lens.

b) u = 45cm

v = 90cm

$\therefore \frac{1}{f} = \frac{1}{v} - \frac{1}{u}$

$= \frac{1}{90} - \left(\frac{-1}{45}\right)$

$= \frac{1+2}{90}$

$\frac{1}{f} = \frac{3}{90}$ ~~=~~ 30

3

f

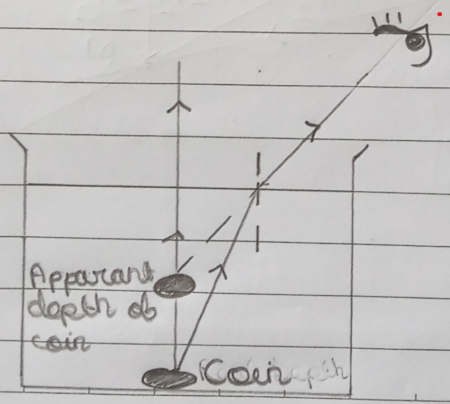
~~$\therefore$ f = 90cm (-)~~ $\therefore$ f = 30cm

c) $m = \frac{v}{u} = \frac{90}{-45} = -2$

$\therefore$ m = -2

Q7>

i)



ii) $\angle i = \angle e = 60°$ ①

$|\angle i + \angle i| - (\angle r + \angle r) = \delta$

~~However,~~

~~$\angle A = \angle r + \angle r - 60 - (180 - (\angle r + \angle r))$~~

~~$= -120 + \angle r + \angle r$~~

~~$\delta + \angle A = 60 - \angle i + \angle i - 120$~~

~~$= 60° + 60° - 120°$~~

~~$\delta + \angle A = 0$~~

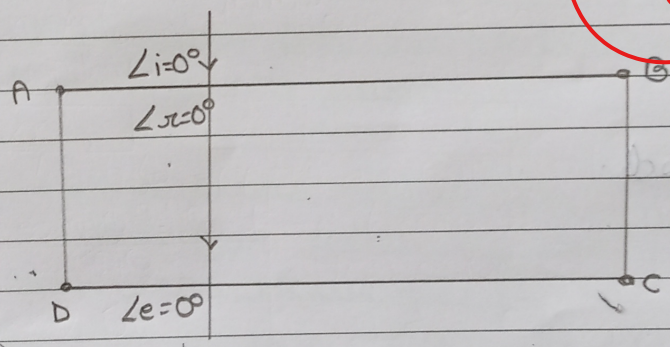
$\delta + \angle A = \angle i + \angle i$

2½

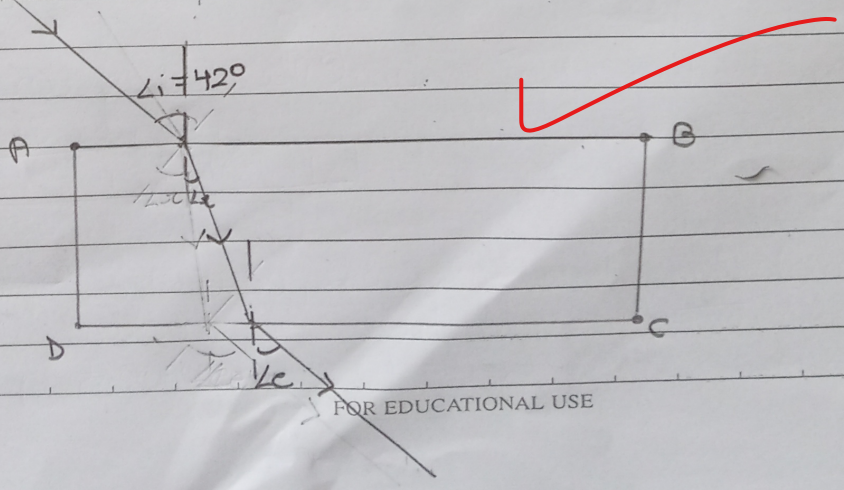
Q8>

3

a)

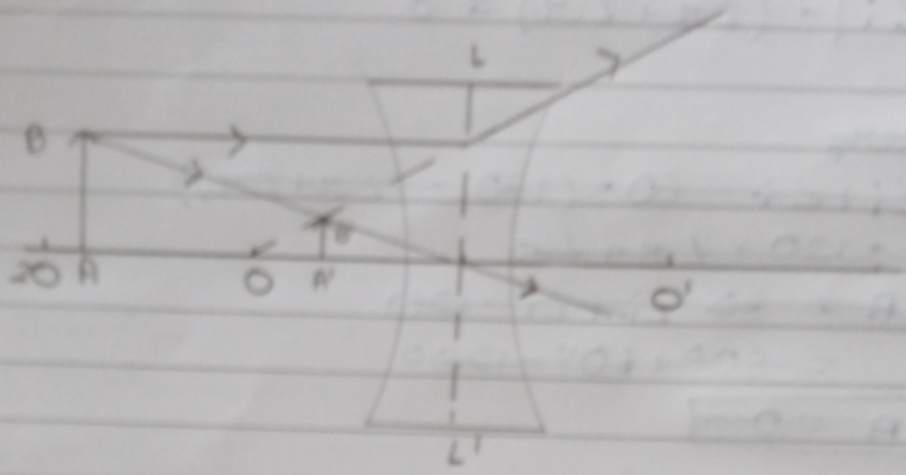


b)



Q9)

i)



ii) LL' - Optical ~~Centre~~ Line.
O - F_2
O' - F_1

iii)
1) Virtual.
2) Erect.
3) Diminished.

3