$d \Longrightarrow \Delta d$
الأفضل تكتب

Sheet 3

1

$\because\ 2d \sin\theta = m\lambda$

صغيرة ← ى ١. جداً

$d = m\lambda$

$\therefore m = \dfrac{2d}{\lambda} = \dfrac{2\times 1.5\times 10^{-6}}{546\times 10^{-9}} = 5.49 \simeq$ **5 fringes**

$\lambda = 546\times 10^{-9}\ m$
$d = 1.5\times 10^{-6}\ m$ ← كانت بـ μm
$m = ?$

2

$\because\ 2\Delta d = m\lambda$

$\therefore \lambda = \dfrac{2d}{m} = \dfrac{2\times 2.4\times 10^{-9}}{90}$

$= \boxed{5.33\times 10^{-11}\ m}$

$d = 2.4\times 10^{-9}\ m$
$m = 90$
$\lambda = ?$

3

$2\Delta d = m\lambda$

$\Delta d = \dfrac{m\lambda}{2} = \dfrac{(8)(6328\times 10^{-9})}{2}$

$= \boxed{2.53\times 10^{-5}\ m}$

$\lambda = 6328\times 10^{-9}\ m$
$m = 8$
$d = ?$

4

$2L = \dfrac{m\lambda}{n}$

$\therefore 2\times(250\times 10^{-9}) = \dfrac{1\times\lambda}{1.4}$

$\therefore \lambda = 700\times 10^{-9}\ m = \boxed{700\ nm}$

$L = 250\times 10^{-9}\ m$
$n = 1.4$
$m = 1$
$\lambda = ?$

5 a):- $2L = \dfrac{m\lambda}{n}$ $\quad\therefore 2L = \dfrac{1(450\times 10^{-9})}{1.2}$

$\therefore L = 1.87\times 10^{-9}\ m$

b) $m = 2$ $\quad\therefore 2L = \dfrac{m\lambda}{n}$ $\quad\therefore \lambda = \dfrac{2Ln}{m}$

$\therefore \lambda_2 = 2.25\times 10^{-9}\ m,\ \lambda_3 = 1.5\times 10^{-9}\ m,\ \lambda_4 = 1.12\times 10^{-9}\ m$

$\lambda = 450\times 10^{-9}\ m$
$n = 1.2$
a):- $L = ?$

b) $m = 2$ جرب بـ
$m = 3$
$m = 4$

6

$$2L = \frac{m\lambda}{n}$$

$$2L = \frac{(1)(500\times10^{-9})}{1.32}$$

$$\therefore L = 189\times10^{-9}\ m = \boxed{189\ nm}$$

$n = 1.32$

$\lambda = 500\ nm$

$L = ?$

$m = 1$

7

$$N_m - N_{air} = \frac{2t}{\lambda}(n-1)$$

$$= \frac{2\times(5.08\times10^{-2})}{(633\times10^{-9})}(1.000283-1)$$

$$= \boxed{47.03\ Fringes}$$

$t = 5.08\times10^{-2}\ m$

$\lambda = 633\times10^{-9}\ m$

$n = 1.000283$

$N_m - N_{air} = ?$

8

$$N_m - N_{air} = \frac{2t}{\lambda}(n-1)$$

$$86 = \frac{2\times75\times10^{-6}}{610\times10^{-9}}(n-1)$$

$$\therefore \boxed{n = 1.35}$$

$t = 75\times10^{-6}\ m$

$N_m - N_{air} = 86$

$\lambda = 610\times10^{-9}\ m$

$n = ?$
