DPP - Daily Practice Problems

Name :

Date :

Start Time :

End Time :

PHYSICS 52

SYLLABUS : WAVE OPTICS - I (Interference of Light)

Max. Marks : 116 **Time : 60 min.**

GENERAL INSTRUCTIONS

- The Daily Practice Problem Sheet contains 29 MCQ's. For each question only one option is correct. Darken the correct circle/ bubble in the Response Grid provided on each page.
- You have to evaluate your Response Grids yourself with the help of solution booklet.
- Each correct answer will get you 4 marks and 1 mark shall be deduced for each incorrect answer. No mark will be given/ deducted if no bubble is filled. Keep a timer in front of you and stop immediately at the end of 60 min.
- The sheet follows a particular syllabus. Do not attempt the sheet before you have completed your preparation for that syllabus. Refer syllabus sheet in the starting of the book for the syllabus of all the DPP sheets.
- After completing the sheet check your answers with the solution booklet and complete the Result Grid. Finally spend time to analyse your performance and revise the areas which emerge out as weak in your evaluation.

DIRECTIONS (Q.1-Q.20) : There are 20 multiple choice questions. Each question has 4 choices (a), (b), (c) and (d), out of which **ONLY ONE** choice is correct.

Q.1 The intensity ratio of two waves is 9 : 1. These waves produce the event of interference. The ratio of maximum to minimum intensity will be

(a) 1 : 9 (b) 9 : 1 (c) 1 : 4 (d) 4 : 1

Q.2 The equation of two light waves are $y_1 = 6\cos \omega t$, $y_2 = 8\cos(\omega t + \phi)$. The ratio of maximum to minimum intensities produced by the superposition of these waves will be

(a) 49 : 1 (b) 1 : 49
(c) 1 : 7 (d) 7 : 1

Q.3 In a Young's double slit experiment, the separation between the slits is 0.10 mm, the wavelength of light used is 600 nm and the interference pattern is observed on a screen 1.0 m away. Find the separation between the successive bright fringes.

(a) 6.6 mm (b) 6.0 mm (c) 6 m (d) 6 cm.

Q.4 In Young's double slit experiment the two slits are illuminated by light of wavelength 5890 Å and the angular separation between the fringes obtained on the screen is 0.2°. If the whole apparatus is immersed in water then the angular fringe width will be, if the refractive index of water is 4/3?

(a) 0.30° (b) 0.15° (c) 15° (d) 30°

Q.5 The intensities of two light sources are I and 9I respectively. If the phase difference between the waves emitted by them is π then the resultant intensity at the point of observation will be –

(a) 3I (b) 4I (c) 10I (d) 82I

RESPONSE GRID	1. ⓐⓑⓒⓓ	2. ⓐⓑⓒⓓ	3. ⓐⓑⓒⓓ	4. ⓐⓑⓒⓓ	5. ⓐⓑⓒⓓ

Space for Rough Work

Q.6 In Fresnel's biprism experiment the width of 10 fringes is 2cm which are formed at a distance of 2 meter from the slit. If the wavelength of light is 5100Å then the distance between two coherent sources will be

(a) 5.1×10^{-4} m (b) 5.1×10^{4} cm
(c) 5.1×10^{-4} mm (d) 10.1×10^{-4}cm

Q.7 Two coherent sources of intensity ratio 1 : 4 produce an interference pattern. The fringe visibility will be -

(a) 1 (b) 0.8 (c) 0.4 (d) 0.6

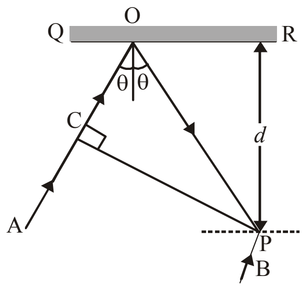
Q.8 When a mica sheet (μ = 1.6) of thickness 7 microns is placed in the path of one of interfering beams in the biprism experiment then the central fringe gets shifted at the position of seventh bright fringe. The wavelength of light used will be –

(a) 4000Å (b) 5000Å (c) 6000 Å (d) 7000Å

Q.9 In Young's double slit experiment, the distance between two slits is made three times then the fringe width will become –

(a) 9 times (b) 1/9 times (c) 3 times (d) 1/3 times

Q.10 In the given diagram, CP represents a wavefront and AO & BP, the corresponding two rays. Find the condition on θ for constructive interference at P between the ray BP and reflected ray OP



(a) $\cos\theta = 3\lambda/2d$ (b) $\cos\theta = \lambda/4d$
(c) $\sec\theta - \cos\theta = \lambda/d$ (d) $\sec\theta - \cos\lambda = 4\lambda/d$

Q.11 In Young's double slit experiment 10th order maximum is obtained at the point of observation in the interference pattern for λ = 7000 Å. If the source is replaced by another one of wavelength 5000 Å then the order of maximum at the same point will be–

(a) 12 th (b) 14 th
(c) 16 th (d) 18 th

Q.12 In Young's double slit experiment, white light is used. The separation between the slits is b. The screen is at a distance d (d > > b) from the slits. Some wavelengths are missing exactly in front of one slit. One of these wavelengths is

(a) $\lambda = \frac{b^2}{6d}$ (b) $\lambda = \frac{2b^2}{d}$ (c) $\lambda = \frac{b^2}{3d}$ (d) $\lambda = \frac{2b^2}{3d}$

Q.13 In Fresnel's biprism experiment distance of m^{th} bright fringe from zeroth order fringe will be –

(a) $(2m-1)\frac{\lambda D}{2d}$ (b) $\frac{mD\lambda}{d}$

(c) $\frac{md}{\lambda D}$ (d) $(2m+1)\frac{\lambda D}{2d}$

Q.14 Consider interference between waves from two sources of Intensites I & 4I. Find intensities at points where the phase difference is $\frac{\pi}{2}$.

(a) I (b) 5 I (c) 4 I (d) 3 I

Q.15 The width of one of the two slits in a Young's double slit experiment is double of the other slit. Assuming that the amplitude of the light coming from a slit is proportional to slit-width. Find the ratio of the maximum to the minimum intensity in the interference pattern.

(a) 34 : 1 (b) 9 : 1 (c) 4 : 1 (d) 16 : 1

Q.16 The intensity of the light coming from one of the slits in a young's double slit experiment is double the intensity from the other slit. Find the ratio of the maximum intensity to the minimum intensity in the interference fringe pattern observed.

(a) 9 : 1 (b) 34 : 1 (c) 4 : 1 (d) 16 : 1

Q.17 Two waves originating from source S_1 and S_2 having zero phase difference and common wavelength λ will show completely destructive interference at a point P if $(S_1P - S_2P)$ is-

(a) 5λ (b) $3\lambda/4$
(c) 2λ (d) $11\lambda/2$

RESPONSE GRID					
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	11. ⓐⓑⓒⓓ	12. ⓐⓑⓒⓓ	13. ⓐⓑⓒⓓ	14. ⓐⓑⓒⓓ	15. ⓐⓑⓒⓓ
	16. ⓐⓑⓒⓓ	17. ⓐⓑⓒⓓ			

Space for Rough Work

Q.18 In an interference pattern, at a point we observe the 16^{th} order maximum for $\lambda_1 = 6000$Å. What order will be visible here if the source is replaced by light of wavelength ? $\lambda_2 = 4800$ Å.

(a) 40 (b) 20
(c) 10 (d) 80

Q.19 In Young's experiment the wavelength of red light is 7.5×10^{-5} cm. and that of blue light 5.0×10^{-5} cm. The value of n for which $(n + 1)^{th}$ blue bright band coincides with n^{th} red bright band is-

(a) 8 (b) 4
(c) 2 (d) 1

Q.20 In Young's double slit experiment, carried out with light of wavelength $\lambda = 5000$Å, the distance between the slits is 0.2mm and the screen is at 200 cm from the slits. The central maximum is at $x = 0$. The third maximum will be at x equal to.

(a) 1.67 cm (b) 1.5 cm
(c) 0.5 cm (d) 5.0 cm

DIRECTIONS (Q.21-Q.23) : In the following questions, more than one of the answers given are correct. Select the correct answers and mark it according to the following codes:

Codes :
(a) 1, 2 and 3 are correct **(b)** 1 and 2 are correct
(c) 2 and 4 are correct **(d)** 1 and 3 are correct

Q.21 The Young's double slit experiment, the ratio of intensities of bright and dark fringes is 9. This means that

(1) The intensities of individual sources are 5 and 4 units respectively
(2) The intensities of individual sources are 4 and 1 units respectively
(3) The ratio of the their amplitudes is 3
(4) The ratio of their amplitude is 2

Q.22 In an experiment similar to Young's experiment, interference is observed using waves associated with electrons. The electrons are being produced in an electron gun. In order to decrease the fringe width

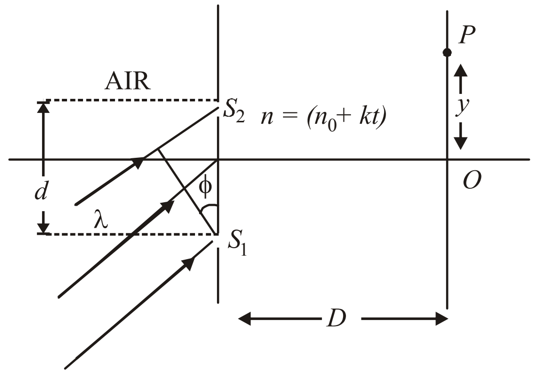
(1) electron gun voltage be increased.
(2) the slits be moved away from each other.
(3) the screen be moved closer to interfering slits.
(4) electron gun voltage be decreased.

Q.23 Interference fringes were produced in Young's double slit experiment using light of wave length 5000 Å. When a film of material 2.5×10^{-3} cm thick was placed over one of the slits, the fringe pettern shifted by a distance equal to 20 fringe width. The refractive index of the material of the film cannot be

(1) 1.25 (2) 1.33
(3) 1.5 (4) 1.4

DIRECTIONS (Q.24-Q.26) : Read the passage given below and answer the questions that follows :

In a Young's double slit experiment a monochromatic light whose wavelength is λ strikes on the slits, separated by distance *d,* as shown in the figure. Refractive index of the medium between slits and screen varies with time *t* as $n = n_0 + kt$. Here n_0 and k are positive constants. Position of any point P on screen is measure by its *y*-coordinate as shown.



Q.24 The y co-ordinate of central maxima at any time *t* is

(a) $\dfrac{D\sin\phi}{n_0 + kt}$ (b) $\dfrac{D\cos\phi}{n_0 + kt}$

(c) $\dfrac{D\sin\phi}{(n_0 + kt)^2}$ (d) $\dfrac{D\cos\phi}{(n_0 + kt)^2}$

RESPONSE GRID
18. ⓐⓑⓒⓓ 19. ⓐⓑⓒⓓ 20. ⓐⓑⓒⓓ 21. ⓐⓑⓒⓓ 22. ⓐⓑⓒⓓ
23. ⓐⓑⓒⓓ 24. ⓐⓑⓒⓓ

Space for Rough Work

Q.25 The velocity of central maxima at any time t as a function of time t is

(a) $\frac{-2kD\sin\phi}{(n_0+kt)^2}$ (b) $\frac{-kD\sin\phi}{(n_0+kt)^2}$

(c) $\frac{-2kD\sin\phi}{(n_0+kt)}$ (d) $\frac{-kD\sin\phi}{(n_0+kt)}$

Q.26 If a glass plate of small thickness b is placed in front of S_1. How should its refractive index vary with time so that central maxima is formed at O.

(a) $n_0+kt+\frac{2d\sin\phi}{b}$ (b) $n_0+kt-\frac{2d\sin\phi}{b}$

(c) $n_0+kt-\frac{d\sin\phi}{b}$ (d) $n_0+kt+\frac{d\sin\phi}{b}$

DIRECTIONS (Q. 27-Q.29) : Each of these questions contains two statements: Statement-1 (Assertion) and Statement-2 (Reason). Each of these questions has four alternative choices, only one of which is the correct answer. You have to select the correct choice.

(a) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.

(b) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1.

(c) Statement -1 is False, Statement-2 is True.

(d) Statement -1 is True, Statement-2 is False.

Q.27 **Statement-1 :** No interference pattern is detected when two coherent sources are infinitely close to each other.

Statement-2 : The fringe width is directly proportional to the distance between the two slits.

Q.28 **Statement-1 :** In Young's experiment, the fringe width for dark fringes is same as that for white fringes.

Statement-2 : In Young's double slit experiment performed with a source of white light, only black and bright fringes are observed.

Q.29 **Statement-1 :** In Young's double slit experiment, the fringes become indistinct if one of the slits is covered with cellophane paper.

Statement-2 : The cellophane paper decreases the wavelength of light.

RESPONSE GRID					
	25. ⓐⓑⓒⓓ	26. ⓐⓑⓒⓓ	27. ⓐⓑⓒⓓ	28. ⓐⓑⓒⓓ	29. ⓐⓑⓒⓓ

DAILY PRACTICE PROBLEM SHEET 52 - PHYSICS			
Total Questions	29	Total Marks	116
Attempted		Correct	
Incorrect		Net Score	
Cut-off Score	28	Qualifying Score	46
Success Gap = Net Score – Qualifying Score			
Net Score = (Correct × 4) – (Incorrect × 1)			

Space for Rough Work

DAILY PRACTICE PROBLEMS

PHYSICS SOLUTIONS

52

1. (d) $\frac{I_1}{I_2}=\frac{9}{1}$

$$\frac{I_{max}}{I_{min}}=\left[\frac{\sqrt{\frac{I_1}{I_2}}+1}{\sqrt{\frac{I_1}{I_2}}-1}\right]^2=\left[\frac{\sqrt{9}+1}{\sqrt{9}-1}\right]^2$$

$$\frac{I_{max}}{I_{min}}=\frac{4^2}{2^2}=\frac{4}{1}$$

2. (a) $a_1=6$ units, $a_2=8$ units

$$\frac{I_{max}}{I_{min}}=\frac{\left[\frac{a_1}{a_2}+1\right]^2}{\left[\frac{a_1}{a_2}-1\right]^2}=\frac{\left[\frac{6}{8}+1\right]^2}{\left[\frac{6}{8}-1\right]^2}$$

$$\frac{I_{max}}{I_{min}}=\frac{49}{1}$$

3. (b) The separation between the sucessive bright fringes is-

$$\beta=\frac{D\lambda}{d}=\frac{1\times600\times10^{-9}}{0.1\times10^{-3}}$$

$\beta=6.0$ mm.

4. (b) $\omega_a=\lambda/d$

$$\therefore\ \omega_a\propto\lambda\Rightarrow\frac{(\omega_a)_{water}}{\omega_a}=\frac{\lambda_{water}}{\lambda}$$

$$\Rightarrow\frac{(\omega_a)_{water}}{\omega_a}=\frac{\lambda}{\mu_{water}\lambda}$$

$$\Rightarrow(\omega_a)_{water}=0.15°$$

5. (b) $I'=I_1+I_2+2\sqrt{I_1I_2}\cos\phi$

$I_1=I,\ I_2=9I,\ \phi=\pi$

$$I'=I+9I+2\sqrt{9I^2}\cos\pi=10I-6I=4I$$

6. (a) $d=\frac{D\lambda}{\beta}$ .... (1)

According to quesion.

$\lambda=5100\times10^{-10}$m

$\beta=\frac{2}{10}\times10^{-2}$ m .... (2)

$D=2$m, $d=?$.

From eqs. (1) and (2)

$$d=\frac{2\times51\times10^{-8}}{2\times10^{-3}}=5.1\times10^{-4}\text{ m}$$

7. (b) $V=\frac{I_{max}-I_{min}}{I_{max}+I_{min}}=\frac{\frac{I_{max}}{I_{min}}-1}{\frac{I_{max}}{I_{min}}+1}$ .... (1)

$$\frac{I_{max}}{I_{min}}=\left(\frac{\sqrt{\frac{I_1}{I_2}}+1}{\sqrt{\frac{I_1}{I_2}}-1}\right)^2 \quad .... (2)$$

According to question

$\frac{I_1}{I_2}=\frac{1}{4}$ .... (3)

From eqs. (2) and (3)

$$\frac{I_{max}}{I_{min}}=\left(\frac{\sqrt{\frac{1}{4}}+1}{\sqrt{\frac{1}{4}}-1}\right)^2=\frac{\frac{9}{4}}{\frac{1}{4}}=9 \quad .... (4)$$

From eqs. (1) and (4)

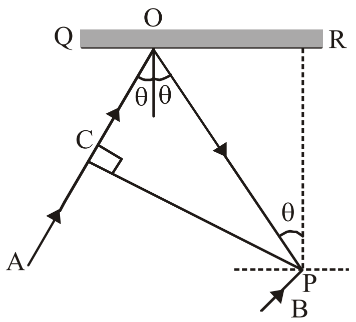
$$V=\frac{[9-1]}{[9+1]}=\frac{8}{10}=0.8$$

8. (c) $\lambda=\frac{(\mu-1)t}{n}=\frac{(1.6-1)\times7\times10^{-6}}{7}$

$\lambda=6\times10^{-7}$ meter $\Rightarrow\lambda=6000$ Å

9. (d) $\beta\propto\frac{1}{d}$ $\therefore$ d On increasing d three times β will become 1/3 times.

10. (b) $\therefore$ PR = d $\Rightarrow$ PO = d secθ and CO = PO cos 2θ = d sec θ cos 2θ is



Path difference between the two rays
$\Delta = CO + PO = (d \sec\theta + d \sec\theta \cos 2\theta)$
Phase difference between the two rays is
$\phi = \pi$ (One is reflected, while another is direct)
Therefore condition for constructive interference should be

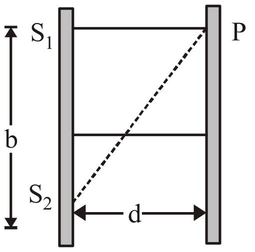
$$\Delta = \frac{\lambda}{2}, \frac{3\lambda}{2} ....$$

or $\quad d \sec\theta(1 + \cos 2\theta) = \frac{\lambda}{2}$

or $\quad \frac{d}{\cos\theta}\left(2\cos^2\theta\right) = \frac{\lambda}{2} \Rightarrow \cos\theta = \frac{\lambda}{4d}$

11. (b) $n_1\lambda_1 = n_2\lambda_2$
$10 \times 7000 = n_2 \times 5000$
$n_2 = 14$

12. (a, c) Path difference between the rays reaching infront of slit S_1 is.
$S_1P - S_2P = (b^2 + d^2)^{1/2} - d$
For distructive interference at P



$$S_1P - S_2P = \frac{(2n-1)\lambda}{2}$$

i.e., $(b_2 + d_2)^{1/2} - d = \frac{(2n-1)\lambda}{2}$

$$\Rightarrow \quad d\left(1+\frac{b^2}{d^2}\right)^{1/2} - d = \frac{(2n-1)\lambda}{2}$$

$$\Rightarrow \quad d\left(1+\frac{b^2}{2d^2}+......\right) - d = \frac{(2n-1)\lambda}{2}$$

(Binomial Expansion)

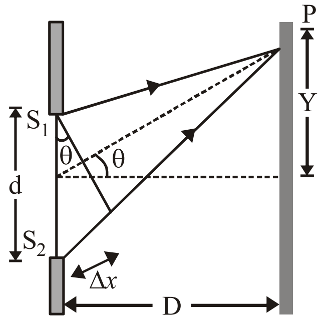
$$\Rightarrow \quad \frac{b}{2d} = \frac{(2n-1)\lambda}{2} \Rightarrow = \frac{b^2}{(2n-1)d}$$

For $n = 1, 2$ ...., $\lambda = \frac{b^2}{d}, \frac{b^2}{3d}$

13. (b) Distance of mth bright fringe from central fringes is

$$X_m = \frac{mD\lambda}{d}$$

14. (a, b) For microwave $l = \frac{c}{f} = \frac{3\times10^8}{10^6} = 300$ m



As Dx = d sin q

Phase difference f $= \frac{2\pi}{\lambda}$ (Path difference)

$$= \frac{2\pi}{\lambda}(d\sin\theta) = \frac{2\pi}{300}\ (150 \sin q) = p \sin q$$

$I_R = I_1 + I_2 + 2\sqrt{I_1 I_2}\cos\theta$
Here $I_1 = I_2$ and $\phi = \pi\sin\theta$

$$\therefore \quad I_R = 2I_1\ [(\pi\sin\theta)] = 4I_1\cos^2\left(\frac{\pi\sin\theta}{2}\right)$$

I_R will be maximum when $\cos^2\left(\frac{\pi\sin\theta}{2}\right) = 1$

$\therefore \quad (I_R)_{max} = 4I_1 = I_o$

Hence $I = I_o\cos^2\left(\frac{\pi\sin\theta}{2}\right)$

If $\theta = 0$, then $I = I_o\cos\theta = Io$
If $\theta = 30°$, then $I = I_o\cos^2(\pi/4) = I_o/2$
If $\theta = 90°$, then $I = I_o\cos^2(\pi/2) = 0$

15. (b) $I = R^2 = {a_1}^2 + {a_2}^2 + 2a_1 a_2\cos\delta$

$$= I + 4I + 4I\cos\frac{\pi}{2} = 5I$$

16. (b) Suppose the amplitude of the light wave coming from the narrower slit is A and that coming from the wider slit is 2A. The maximum intensity occurs at a place where constructive interference takes place. Then the resultant amplitude is the sum of the individual amplitudes.
Thus,
$A_{max} = 2A + A = 3A$
The minimum intensity occurs at a place where destructive interference takes place. The resultant amplitude is then difference of the individual amplitudes.
Thus, $A_{min} = 2A - A = A$.

$$\therefore \quad \frac{I_{max}}{I_{min}} = \frac{(A_{max})^2}{(A_{min})^2} = \frac{(3A)^2}{(A)^2} = 9$$

17. (b) $\frac{I_1}{I_2}=\frac{2}{1}$

$$\frac{a_1}{a_2}=\sqrt{\frac{I_1}{I_2}}=\frac{\sqrt{2}}{1}$$

At the point of constructive interference, the resultant amplitude becomes $(a_1+a_2)=\sqrt{2}+1$ at the point of destructive interference, the resultant amplitude is

$(a_1-a_2)=\sqrt{2}-1$

$$\therefore \frac{I_{max}}{I_{min}}=\frac{(a_1+a_2)^2}{(a_1-a_2)^2}=\frac{(\sqrt{2}+1)^2}{(\sqrt{2}-1)^2}=34$$

18. (d) For destructive interference :
Path difference= $S_1P-S_2P=(2n-1)\lambda/2$.
For $n=1$, $S_1P-S_2P=(2\times 1-1)\lambda/2=\lambda/2$.
$n=2$, $S_1P-S_2P=(2\times 2-1)\lambda/2=3\lambda/2$.
$n=3$, $S_1P-S_2P=(2\times 3-1)\lambda/2=5\lambda/2$.
$n=4$, $S_1P-S_2P=(2\times 4-1)\lambda/2=7\lambda/2$.
$n=5$, $S_1P-S_2P=(2\times 5-1)\lambda/2=9\lambda/2$.
$n=6$, $S_1P-S_2P=(2\times 6-1)\lambda/2=11\lambda/2$.
So, destructive pattern is possible only for path difference = $11\lambda/2$.

19. (b) The distance of a bright fringe from zero order fringe is given by-

$$X_n=\frac{n\lambda D}{d}$$

D & d is constant
$n_1\lambda_1=n_2\lambda_2$
$n_1=16, \lambda_1=6000\,A^o, \lambda_2=4800\,Å$

$$n_2=\frac{n_1\lambda_1}{\lambda_2}=\frac{16\times 6000}{4800}=20$$

20. (c) $n_1\lambda_1=n_2\lambda_2$ for bright fringe
$n(7.5\times 10^{-5})=(n+1)(5\times 10^{-5})$

$$n=\frac{5.0\times 10^{-5}}{2.5\times 10^{-5}}=2.$$

21. (b) $X_n=\frac{n\lambda D}{d}$ or $X_3=\frac{3\lambda D}{d}$

$$X_3=\frac{3\times(5000\times 10^{-8}\,cm)\times 200\,cm}{0.02\,cm}=1.5\,cm.$$

22. (b, d) $\frac{I_{max}}{I_{max}}=9\Rightarrow\left(\frac{a_1+a_2}{a_1-a_2}\right)^2=9\Rightarrow\frac{a_1+a_2}{a_1-a_2}=3$

$$\Rightarrow\frac{a_1}{a_2}=\frac{3+1}{3-1}\Rightarrow\frac{a_1}{a_2}=5 \text{ There } I_1:I_2=4:1$$

23. (a) Fringe width $\beta=\frac{\lambda D}{d}$

According to de Broglie,

Wavelength $\lambda=\frac{h}{p}=\frac{h}{\sqrt{2meV}}$

As V increases, λ decreases, β decreases.

Also $\beta\propto\frac{1}{d}$ and $\beta\propto D$.

24. (a) $n=\frac{(\mu-1)tD}{d}$

but $\beta=\frac{\lambda D}{d}\Rightarrow\frac{D}{d}=\frac{\beta}{\lambda}$

$n=(\mu-1)\,t\,\beta/\lambda$
$20\beta=(\mu-1)\,2.5\times 10^{-3}\,\{\beta/5000\times 10^{-8}\}$

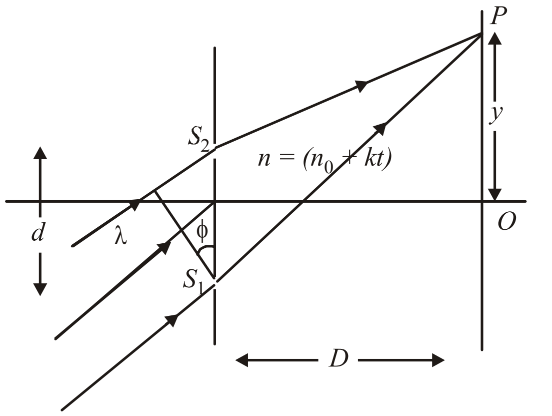
$$\mu-1=\frac{20\times 5000\times 10^{-8}}{2.5\times 10^{-3}}=0.4$$

$\mu=1.4.$

25. (a) $S_1P-S_2P=\frac{dy}{D}$

For central maxima,

$$\Delta x=(n_0+kt)\frac{dy}{D}-d\sin\phi=0$$



$$\therefore y=\frac{D\sin\phi}{n_0+kt}\text{ (y-coordinates of central maximum).}$$

26. (b) $\frac{dy}{dt}=\frac{-kD\sin\phi}{(n_0+kt)^2}$ = velocity of central maximum.

27. (d) For central maxima to be formed at O

$$n'\left(\frac{n}{n'}-1\right)b=d\sin\phi$$

Here $n' = n_0 + kt$, n = refractive index of plate.

$$n = n_0 + kt + \frac{d \sin \phi}{b}$$

28. (d) When d is negligibly small, fringe width β which is proportional to 1/d may become too large. Even a single fringe may occupy the whole screen. Hence the pattern cannot be detected.

29. (d) In Young's experiments fringe width for dark and white fringes are same while in Young's double slit experiment when a white light as a source is used, the central fringe is white around which few coloured fringes are observed on either side.

30. (d) When one of slits is covered with cellophane paper, the intensity of light emerging from the slit is decreased (because this medium is translucent). Now the two interfering beam have different intensities or amplitudes. Hence intensity at minima will not be zero and fringes will become indistinct.