PHYSICS

AAKASH INSTITUTE ENGLISH

Mock Test 37

Example

1. If θ is the angle between the transmission axes of the polarizer and the analyser and l_0 be the intensity of the polarized light incident

on the analyser, then Intensity of transmitted light through analyser would be

A. $(l_0 \cos\theta)^2$

B. $\sqrt{2} l_0 \cos^2\theta$

C. $\frac{l_0}{\sqrt{2}} \cos^2\theta$

D. $l_0 \cos^2\theta$

Answer: D

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2. In Young's experiment, fringe width was found to be 0.8 mm. If whole apparatus is immersed in water of refractive Index, $\mu = \frac{4}{3}$, new fringe width is

A. 0.6

B. 0.8

C. 0.3

D. 0.4

Answer: A

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3. Choose the incorrect statement for the polarisation by reflection.

A. The reflected light and refracted light is at 90" in complete polarization by reflection

B. If θ_p, is angle of polarization, then refractive index should always be greater than tan θ_p

C. At the angle of polarization, the percentage of the polarized light in the reflected beam is greatest

D. Both (1) & (3)

Answer: B

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4. Plane polarized light can be obtained by using

A. A Nicole prism

B. Tourmaline crystal

C. Convex lens

D. Both (1) & (2)

Answer: D

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5. In single sit diffraction experiment, the width of the central maximum inversely proportional to

A. Distance between source and screen

B. Sild width

C. Wavelength of light used

D. Both (1) & (3)

Answer: B

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6. In Young's double sit experiment two light sources when placed at a distance d apart, then Interference pattem having fringe width

w. If the distance between the sources is reduced to d/3, then fringe width would be

A. $\frac{w}{3}$

B. 3w

C. w

D. $\frac{w}{2}$

Answer: B

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7. A plane polarised light is passed through a polaroid, when the polaroid is given one full rotation about the direction of light, then

A. The intensity of transmitted light gradually decreases to zero and remains zero

B. The intensity of transmitted light gradually increases to maximum and remains maximum

C. There is no change in intensity

D. The intensity of transmitted light is maximum and zero two tirties during rotation

Answer: D

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8. The intensity of light emerging from one slit is nine times than that from the other slit in Young's double sit interference set up. The

ratio of maximum intensity to minimum intensity in the fringe pattern is

A. $2:1$

B. $4:1$

C. $6:1$

D. $8:1$

Answer: B

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9. In the Fraunhofer class of diffraction

A. The source of light and the screen are al finile distance from diffracting apertura

B. The source and the screen are at infinite distances from the aperture

C. The source and the Screen are very close to each other

D. Both (1) & (3)

Answer: B

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10. In a single slit diffraction pattern

A. All fringes are of same width

B. Central fringe do not exist

C. Central fringe is twice as wide as first secondary maxima

D. Central fringe is half as wide as other maxima

Answer: C

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11. A light of wavelength fall on a plane surface at an angle of incidence 53. The refractive index of surface material, if the reflected light is completely plane polarised is

A. $\mu = \frac{4}{3}$

B. $\mu = \frac{4}{5}$

C. $\mu = \frac{3}{5}$

D. $\mu = \frac{5}{3}$

Answer: A

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12. In Young's double slit experiment:

A. The interference pattern has a number of equally spaced bright and dark bands

B. The interference pattern has a central bright maximum which is twice as wide

as other maximum

C. Intensity of all bright bands is same

D. Both (1) & (3)

Answer: D

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13. In YDSE, a glass slab of refractive index, $\mu = 1.5$ and thickness 'l' is introduced in one of the interfening beams of wavelength $\lambda = 5000A$. If on introducing the slab, the

central fringe shift by 2 mm, then thickness of stab would be (Fringe width, $\beta = 0.2mm$)

A. $3 \cdot 10^{-3} mm$

B. $1 \cdot 10^{-4} mm$

C. $1 \cdot 10^{-2} mm$

D. $2 \cdot 10^{-3} mm$

Answer: C

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14. The diffraction effect can be observed in

A. Only sound waves

B. Only light waves

C. Only ultrasonic wave

D. Sound as well as light waves

Answer: D

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15. In single slit experiment, if green light is instead of orange light then width of fringe will

A. Remain same

B. Become narrower

C. Becomes twice

D. Becomes four-times

Answer: B

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16. The amplitude factor of resulting wave, formed by superposition of two sinusoidal waves of equal amplitude a and constant phase difference is given by

A. $2a\cos\phi$

B. $2a\cos\left(\frac{\phi}{2}\right)$

C. $2a\cos\left(\frac{\phi}{3}\right.$

D. $Zero$

Answer: B

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17. The average value of $\cos^2\left(\frac{\phi}{2}\right)$ in one cycle is

A. Zero

B. $\frac{1}{3}$

C. $\frac{1}{2}$

D. $\frac{1}{4}$

Answer: C

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18. Two sources with intensity $4I_0$, and $9I_0$, interfere at a point in medium. The minimum intensity would be

A. $5I_0$

B. $4I_0$

C. $2I_0$

D. I_0

Answer: D

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19. The path length difference between two waves coming from coherent sources for destructive interference should be

A. Zero

B. $(2n)\lambda$

C. $(2n-1)\frac{\lambda}{3}$

D. $(2n+1)\frac{\lambda}{2}$

Answer: D

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20. Two waves of equal amplitude a from two coherent sources $(S_1 \& S_2)$ interfere at a point R such that $S_2R - S_1R = 1.5\lambda$The intensity at point R Would be

A. Zero

B. $2a^2$

C. $5a^2$

D. $6a^2$

Answer: A

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21. When two waves of intensities l_1 and l_2 coming from coherent sources interfere at a point P, where phase difference is ϕ, then resultant intensity (l_{res}) at point P would be

A. $l_{res} = l_1 - l_2 - 2\sqrt{l_1 l_2}$

B. $l_{res} = l_1 + l_2 + 2\sqrt{l_1 l_2}\cos\phi$

C. $l_{res} = l_1 + l_2 - 2\sqrt{l_1 l_2}\cos^2\phi$

D. $l_{res} = (l_1)^2 + (l_2)^2 - 2(l_1 l_2)\cos^2\phi$

Answer: B

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