

(SHORT-ANSWER)

PUNIT TIWARI

BASIC & APPLIED SCIENCES.

Vardhman	
PAGE NO.	
DATE: / /	200

#1: A ~~meter~~ meter stick makes an angle of 30° with respect to x' -axis of O' ? what must be the value of v if the meter stick make an angle of 45° with respect to the x axis of O ?

#2: A particle has velocity $\vec{V}' = 3\hat{i} + 4\hat{j} + 12\hat{k}$ in a coordinate system moving with velocity $0.6c$ relative to laboratory along +ve direction of x axis? find \vec{V} in lab frame

#3: prove $\frac{1}{\sqrt{1-\frac{v^2}{c^2}}} = 1 + \frac{KE}{m_0 c^2}$

#4: prove $\frac{1}{\sqrt{1-\frac{v^2}{c^2}}} = \sqrt{1 + \frac{p^2}{m_0^2 c^2}}$

#5: Two coherent sources whose intensity ratio is 81:1 produce interference fringes. Deduce ratio of maximum to minimum intensity of the fringe system?

#6: Two coherent sources of intensity ratio α interfere. show that interference pattern

$$\frac{I_{\max} - I_{\min}}{I_{\max} + I_{\min}} = \frac{2\sqrt{\alpha}}{1+\alpha}$$

#7 Distance b/w the slit and the bi-prism & b/w the bi-prism and the screen are 50 cm each the obtuse angle of bi-prism is 179° & refractive index is 1.5. If fringe width is 0.0135 cm, calculate the wavelength of the light?

#8 White light falls normally upon a film of soapy water whose thickness is 5×10^{-5} cm and refractive index is 1.33? what wave length in the visible region will be reflected more strongly?

#9 Two plano convex lens each of radius of curvature 100 cm are placed with their curved surface in contact with each other Newton's rings are formed by using a light of wavelength 6×10^{-5} cm. find distance b/w 10th & 20th rings?

#10: Explain.

(a) Bi-prism.

(b) Angular fringe-width.

(c) path-difference.

(d) Difference b/w Diffraction & Interference.

(e) Effect of slit width in a single slit diffraction experiment?

(f) Effect of slit width in double slit experiment?

11 plot the graph for grating spectrum?

12 What is dispersive power?

13 Define

- (a) Acceptance Angle
- (b) Fractional Refractive Index Change
- (c) Attenuation
- (d) Numerical Aperture

14: Difference b/w Single mode and multi-mode fiber.

15: Define population Inversion?
and tell pumping mechanism for Ruby & He Ne laser?

16: What is optic fiber?