

PIC Course
Assignment -2

1. TE Modes of a slab waveguide has E field component
 - a. in the plane of the waveguide
 - b. perpendicular to the plane of the waveguide
 - c. along the propagation direction only
 - d. equal in the the plane of the waveguide as well as perpendicular to the plane of the waveguide
2. TM Modes of a slab waveguide has E field component
 - a. in the plane of the waveguide
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3. In a channel waveguide propagating light in z-direction, the refractive index varies in
 - a. x direction only
 - b. y direction only
 - c. both x and y directions
 - d. all x , y and z directions
4. Given the effective index of a waveguide, we can obtain the propagation constant by
 - a. multiplying it with free space wave number
 - b. adding to it the free space wave number
 - c. dividing it by the free space wave number
 - d. subtracting from it the free space wave number
5. Super modes of directional coupler are expressed as $\Psi(x,y,z) = A\Psi_1 + B\Psi_2$; A and B are
 - a. functions of z only
 - b. functions of x and y
 - c. A is function of x and B is function of y
 - d. constants
6. The interaction length required for cross over state of a directional coupler is
 - a. directly proportional to the coupling coefficient
 - b. inversely proportional to the coupling coefficient
 - c. independent of coupling coefficient
 - d. Exponentially varies with coupling coefficient
7. In coupled mode theory, the second derivatives of A and B are neglected due to
 - a. Slow variation of A and B compared to field envelope
 - b. Fast variation of A and B compared to the field envelope
 - c. Slow variation of A compared to B compared
 - d. Fast variation of A compared to B compared
8. If S1 and S2 are input ports, and T1 and T2 are output ports of a directional coupler, the transition $S_1 \rightarrow T_2$ and $S_2 \rightarrow T_1$ defines following state
 - a. Cross over state
 - b. Bar state
 - c. Indeterminate State

- d. 3dB State
9. The coupling coefficient of a directional coupler doesn't depend on
- a. waveguide gap
 - b. Refractive index contrast
 - c. Interaction length
 - d. Operating wavelength
10. In an anisotropic medium, the refractive index
- a. Is a constant
 - b. varies in different directions
 - c. varies from point to point
 - d. doesn't depend on operating wavelength