Week 7: Assignment 7

The due date for submitting this assignment has passed.

Due on 2021-09-15, 23:59 IST.

As per our records you have not submitted this assignment.

1) In a photonic integrated circuit, the phase difference between two output ports of a typical directional coupler is π. *1 point*

- True
- False

No, the answer is incorrect.
Score: 0

Accepted Answers:
False

2) A broadband directional coupler can be designed in SOI platform by optimizing its geometry. *1 point*

- True
- False

No, the answer is incorrect.
Score: 0

Accepted Answers:
True

3) It is not possible to couple 100 % power to the cross port of directional coupler designed with two single-mode waveguides having different propagation constants. *1 point*

- True
- False

No, the answer is incorrect.
Score: 0

Accepted Answers:
True

4) A balanced MZI designed with wavelength dependent directional coupler design can offer wavelength independent transmission. *1 point*

- True
- False

No, the answer is incorrect.
Score: 0

Accepted Answers:
False

5) The effective index difference between the symmetric and asymmetric supermodes of a directional coupler is 0.03 at 1550 nm. The length required to couple 100 % power to the other port is _____ μm. (in 2 decimal points)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 25.7,25.9

1 point

Common data for questions 6 – 7:

The dispersion characteristics of a guided mode in a SOI waveguide is given by $n_{eff} = p_1\lambda^2 + p_2\lambda + p_3$, where $p_1 = -1.13 \times 10^{11}[1/m^2]$, $p_2 = -3.557 \times 10^5[1/m]$, and $p_3 = 3.509$, over the operating range 1520 – 1580 nm.

6) If the waveguide is used to design a microring resonator (MRR), the required perimeter of the ring to obtain a free spectral range (FSR) of 200 GHz at $\lambda \sim 1550$ nm is _____ μm. (in 2 decimal points)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 392,400

1 point

7) For the perimeter obtained in question 6, the order of resonance at 1550 nm is _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 686,688

1 point