NPTEL » Integrated Photonics Devices and Circuits

Announcements

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Mentor

Course outline How does an NPTEL online course work? Week 0 MATLAB Week 1 Week 2 Week 3 Week 4 Week 5 Week 6 Week 7 Integrated Optical Components: Directional Coupler: Coupled Waveguides Contd..... Integrated Optical Components: Directional Coupler: Design and Modelling Integrated Optical Components: DC based MZI and Microring Resonator (MRR) Week 7: Lecture notes Quiz: Week 7: Assignment 7 Week 7 Feedback Form: Integrated Photonics Devices and Circuits Week 8 Week 9

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| The due date for submitting this assignment has passed. | Due on 2021-00-15, 22-50 IST |
|---|---|
| As per our records you have not submitted this assignment. | Due on 2021-09-15, 23:59 IST. |
| In a photonic integrated circuit, the phase difference between two output ports of a typical directional coupler in the second coupler in the phase difference between two output ports of a typical directional coupler in the phase difference between two output ports of a typical directional coupler in the phase difference between two output ports of a typical directional coupler in the phase difference between two output ports of a typical directional coupler in the phase difference between two output ports of a typical directional coupler in the phase difference between two output ports of a typical directional coupler in the phase difference between two output ports of a typical directional coupler in the phase difference between two output ports of a typical directional coupler in the phase difference between two output ports of a typical directional coupler in the phase difference between two output ports of a typical direction of the phase difference between two output ports of a typical direction of the phase difference between two output ports of a typical direction of the phase difference between two output ports of the phase differen | is π . 1 point |
| ○ True ○ False | |
| No, the answer is incorrect. Score: 0 | |
| Accepted Answers: False | |
| 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 | |
| It is not possible to couple 100 % power to the cross port of directional coupler designed with two single-mod propagation constants. | e waveguides having different 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 | ndent 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 couple 100 % power to the other port is μm. (in 2 decimal points) | 0.03 at 1550 nm. The length required to |
| | |
| 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 | 1. |
| 6) If the waveguide is used to design a microring resonator (MRR), the required perimeter of the ring to obtain a fr $\lambda \sim 1550$ nm is μ m. (in 2 decimal points) | ree spectral range (FSR) of 200 GHz at |
| | |
| No, the answer is incorrect. Score: 0 | |
| Accepted Answers: (Type: Range) 392,400 | |
| (Type: Flarige) 602,400 | 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 |