PIC 部分问题

Vhaleking

Q1: Compare the following materials from 4 aspects

1. LiNbO3
2. Submicron silicon photonics
3. Silica on silicon
4. Polymers
   a) Operating wavelengths
   b) Index contrast
   c) Capability to integrate the light source
   d) Capability to make fast modulators

Q3: How to define the TE and TM polarisations in the waveguide and explain its effect on the losses.

Q5: Write down the complete design flow and explain

Q6: Compare these modulation methods from 4 aspects

1. Carrier
2. Thermal
3. Liquid crystals
4. Franz-Keldysh effect (或量子受限斯塔克效应)
   a) Strength
   b) Speed
   c) Power consumption
   d) Applicability

Q11: Explain what is an echelle grating. Why is it lossy due to its inner structures?

Q13: How can you unintentionally have the coupling between clockwise propagating modes and counter-clockwise propagating modes in a ring resonator? What will the spectrum be like?

Q16: In what fabrication processes there will be some variability? Which kind of variability patterns do people typically identify? Give one example of during which process we can have the following variability.

1. Long-range radial thickness variation
2. Line-width variation with the change of pattern density
3. Waveguide-width variation on different dies on the wafer.