

RTDC_T6_PRUEBA_DE_CLASE_Mañana_2022

Volver a la Lista de Exámenes

Parte 1 de 1 - 10.0 / 10.0 Puntos

Preguntas 1 de 8	1.34
1.34 Puntos	

- Which of the following scenarios require multiple-input-multiple-output signal processing at the receiver side? (Select all that apply)
- ☐ A. Homogeneous multicore fiber transmission where all the cores are surrounded by a trench with lower refractive index than the core.
 - ☒ B. Few-mode fiber link implementing both mode-division multiplexing and polarization-mode multiplexing.
 - ☐ C. Few-mode fiber link implementing mode-group-division multiplexing with weak coupling between the groups of modes.
 - ☒ D. Homogeneous multicore few-mode fiber with low intercore crosstalk, where each core propagate 3 modes strongly coupled: LP01, LP11a and LP11b modes.

Preguntas 2 de 8	1.34
1.34 Puntos	

[Pulse para ver instrucciones adicionales](#)

A homogeneous MCF has a cladding radius of 62.5 microns and is composed of 14 cores, each one with an effective area of 72 square microns. Its relative core multiplicity factor (with 1 decimal place) is: 12.6

Preguntas 3 de 8	1.34
1.34 Puntos	

- If a heterogeneous single-mode multicore fiber is bent (select all that apply):
- ☒ A. The phase-matching condition between any pair of cores is avoided for bending radius values above the threshold (or critical) bending radius.
 - ☒ B. The crosstalk increases up to a certain bending radius (threshold or critical bending radius), which corresponds to the maximum bending radius that forces two adjacent cores to behave as homogeneous cores.
 - ☐ C. Maximum transfer of energy between adjacent cores happens when the difference in the phase propagation constant of those cores is maximum.
 - ☐ D. The threshold (or critical) bending radius does not depend on the effective index difference between adjacent cores.

Preguntas 4 de 8	0.98
0.98 Puntos	

- The coupling between modes LP_{21,b} and LP₀₁ modes is higher than the coupling between modes LP₀₂ and LP_{21,b}.
- ☐ Verdadero
 - ☒ Falso

Preguntas 5 de 8	1.34
1.34 Puntos	

- Select the correct statement regarding Few-Mode Fibers:
- ☐ A. None of the above is correct
 - ☒ B. The Differential Group Delay between modes is reduced if distributed or discrete mode coupling is high.
 - ☐ C. Differential mode attenuation can be compensated by MIMO digital signal processing if we use direct detection.
 - ☐ D. High Differential Group Delay decreases the complexity of the MIMO digital signal processing stage.

Preguntas 6 de 8	0.98
0.98 Puntos	

- The intercore crosstalk is reduced if we surround each core by a trench with a lower refractive index than the core.
- ☒ Verdadero
 - ☐ Falso

Preguntas 7 de 8	1.34
1.34 Puntos	

- Select the correct statement for multiplexers/demultiplexers in SDM fibers:
- ☐ A. Spatial Light Modulators work independently of the polarization of the incident optical beam.
 - ☐ B. Free-space multiplexers/demultiplexers based on spot couplers can only excite individual LP modes.
 - ☒ C. Mode multiplexers/demultiplexers for few-mode fibers based on phase masks scale poorly with the number of modes.
 - ☒ D. Photonic lanterns can multiplex or demultiplex the modes with no loss.

Preguntas 8 de 8	1.34
1.34 Puntos	

[Pulse para ver instrucciones adicionales](#)

What is the maximum value of the mode coupling coefficient (in 1/meter) between neighboring cores of a MCF fiber if we want to have a maximum crosstalk level of -40 dB after 48-km propagation and the small bending radius is 55 cm? Take the propagation constant as 7 radians/micron and the core to core distance as 38 micron, Please, indicate 4 decimal places, for instance, 0.XYZP: 0.0007