

RTDC_T7_PRUEBA_EXTERNA_2022

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Parte 1 de 1 - 10.0 / 10.0 Puntos

Preguntas 1 de 7	1.5
1.5 Puntos	

- In Microwave Photonics systems (select all the correct answers):
- ☐ A. The carrier suppression effect can be avoided if we use double sideband modulation
 - ☐ B. External modulation implies lower insertion losses than direct modulation
 - ☒ C. The noise figure is defined as the ratio of the signal-to-noise ratio at the input to the signal-to-noise ratio at the output
 - ☒ D. Singe sideband modulation is possible if we employ external modulation where we apply a phase shift of 90° between the electrodes of the dual-drive modulator

Preguntas 2 de 7	1.5
1.5 Puntos	

- In microwave signal filtering (select the correct answer):
- ☒ A. In the context of incoherent filtering operation, the free spectral range (FSR) can be changed by varying the differential delay between adjacent samples T
 - ☐ B. RF signal filtering under self-beating operation requires the extraction of the optical carrier before photodetection.
 - ☐ C. In the context of incoherent filtering operation, the selectivity of the RF filter decreases by increasing the number of samples or taps N
 - ☐ D. All the answers are false

Preguntas 3 de 7	1.5
1.5 Puntos	

- Select the correct statement regarding fiber-wireless access networks:
- ☐ A. Cloud Radio Access Networks cannot provide native support to collaborative multipoint (CoMP) radio technologies between different cells.
 - ☒ B. The use of the CPRI standard on digital radio over fiber (DRoF) implies higher bit rates as compared to analog radio over fiber (RoF) transmission.
 - ☐ C. Software-defined networking in a DRoF access network allows the dynamic mapping of different RF subcarriers to different base stations.
 - ☐ D. A MCF implementing a link between the central office and the base station cannot provide MIMO antenna connectivity.

Preguntas 4 de 7	1.5
1.5 Puntos	

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Consider a MWP link implemented with standard singlemode fiber (chromatic dispersion $D = 17 \text{ ps}/(\text{km}\cdot\text{nm})$), employing double-sideband modulation at an opearting optical wavelength of 1550 nm. The maximum link length possible to avoid the carrier suppression effect in a radiofrequency range up to 20 GHz is 9.18 km.

Note: indicate 2 decimal places.

Preguntas 5 de 7	1.5
1.5 Puntos	

- In a cloud/centralized radio access networks using radio-over-fiber transmission:
- ☐ A. The processing resources at the central office cannot be shared with several base transceiver stations.
 - ☒ B. Since the RF frontend is shifted to the central office, RF signals are generated at the BBU and transmitted to the radiating elements through a fiber-optic fronthaul.
 - ☐ C. The optoelectronic and electrooptic devices cannot be placed at the Remote Radio Head (RRH)
 - ☐ D. Each Base Station is costly to build and operate as it needs a considerable number of autonomous equipment, including its own cooling and backup battery.

Preguntas 6 de 7	1.5
1.5 Puntos	

- Intermediate frequency over fiber as compared to radio over fiber (select all correct responses):
- ☐ A. allows a base station configuration with more flexibility to network upgrades in terms of wireless frequencies.
 - ☐ B. always results in more immunity to fiber chromatic dispersion effects.
 - ☒ C. transmits through the fiber network a radiofrequency signal at a lower frequency
 - ☒ D. can be implemented with optoelectronic devices with a lower RF bandwidth requirement.

Preguntas 7 de 7	1.0
1.0 Puntos	

- In integrated microwave photonics circuits, silicon nitride is the technological plataform that allows lower insertion losses.
- ☒ Verdadero
 - ☐ Falso