19-01-2022

Measurements and Instrumentations for TLCs.

Answer the following questions in an explanatory way to prove your knowledge of the different matters.

1) Draw the scheme and derive the input/output characteristic of a non-inverting amplifier based on the use of an operational amplifier. In case the required bandwidth is of 1 MHz and the gain is 10, define the essential specification of the operational amplifier to be used.
2) With reference to the following main specifications of a spectrum analyzer, provide a reasoned comparison between the expected performance of an FFT instrument and a heterodyne instrument:
    a. bandwidth
    b. frequency resolution
    c. sensitivity
    d. real-time capability
3) How the channel quality of an operating digital fiber link can be monitored?
4) Draw the basic scheme of an OTDR and explain the principle of operation of the instrument.
5) Referring to an optical component give the definition of insertion loss. Describe the procedure that can be used to measure the insertion loss of an optical fiber.

The total available time is one hour and half.