K.D.K. COLLEGE OF ENGINEERING NANDANVAN, NAGPUR

DEPARTMENT OF ELECTRONICS ENGINEERING

Sub: - Optical Communication **Assignment No-1** **Sem.:- VII (2017-18)**

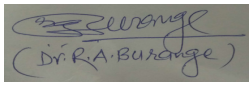
Date of Assignment: - 16/08/2017

Q.1 A certain optical fiber has an attenuation of 1.4 db/Km at 1200 nm. If 0.5 mw of optical power is initially launched into the fiber, what is the power level in μW after 7Km and 15 Km?

Q. 2 Describe the various mechanism of dispersion in optical fiber and explain the effect of dispersion on the bandwidth of optical communication channel.

Q.3 Explain the double crucible method for the fiber fabrication with neat diagram.

Last Date for Submission: - 16/03/2017



Prof .R.A.Burange

Subject Teacher

K.D.K. COLLEGE OF ENGINEERING NANDANVAN, NAGPUR

DEPARTMENT OF ELECTRONICS ENGINEERING

Sub: - Optical Communication **Assignment No-2** **Sem.:- VII Sem. (2017-18)**

Date of Assignment: - 14/08/2017

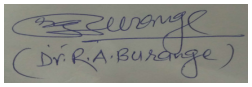
Q.1. An avalanche photodiode has a quantum efficiency of 45% at 0.85µm. When illuminated with the radiation of this wave length it produces an output photocurrent of 10 µA. After the avalanche gain the multiplication factor of 250. Calculate the received optical power of the device.

Q2. Given that the following measurement were taken for the avalanche photodiode. Calculate the multiplication factor for the device. I) Received optical power at 1.35 µm is 0.2 µm II) Corresponding output photocurrent that is after avalanche gain is 4.9 µA III) Quantum efficiency at 1.3 µm is 40%.

Q.3 An avalanche photodiode with a multiplication factor of 20 operates at a wavelength of 1.5 µm. Calculate the quantum efficiency and the output photocurrent from the device if its responsivity at this wavelength is 0.6 A/W AND 10^{10} photons of wavelength 1.5 µm incident upon it per second.

Q.3 When 800 photons per second are incident on a PIN photodiode operating at the wavelength of 1.3 µm they generate an average 550 electrons per second which are collected. Calculate the Responsivity of the device generation.

Last Date for Submission: - 21/08/2017



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DEPARTMENT OF ELECTRONICS ENGINEERING

Sub: - OPTICAL COMMUNICATION **Assignment No-3** **Sem.:- VII Sem. (2017-18)**

Date: - 06/09/2017

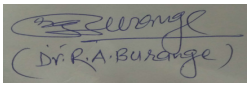
Q1. Explain the basic elements of Analog link.

Q2. Explain the Carrier to Noise ratio.

Q3. Explain what are the different System considerations while designing the fiber optics link.

Q4. Explain the link power budget.

Last Date for Submission: - 11/09/2017



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DEPARTMENT OF ELECTRONICS ENGINEERING

Sub: - OPTICAL COMMUNICATION **Assignment No-4** **Sem.:- VII Sem.**

Date: - 18/08/2018

CO-3

Q1 Give the constructional details of Surface emitter LED and state its advantages.

Q2. Estimate the external power efficiency of a planar LED when transmission factor of LED to air interface is 0.68 at internally generated optical power is 30% of external power supplied. Refractive index of LED is 3.6**.**

Q3. Explain Edge emitter LED. Give its comparison with Surface emitter LED**.**

Q4 Prove that Coupling efficiency at a Planner LED is $(NA)^2$. Write assumptions if any.

Last Date for Submission: - 25/08/2018

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