



Sub: - OPTICAL COMMUNICATION

Assignment No-1

Sem.:- VII Sem.

Date: - 29/06/2018

CO-1

Q1. Derive an expression for maximum acceptance angle of an optical fiber.

Q2. Prove that Number  $Mg = v^2 / 4$  for graded index fiber having parabolic profile, where  $Mg$  is mode volume for graded index fiber and  $V$  is the normalized frequency.

Q3. Step index fiber has  $n_1 = 1.48$  and  $n_2 = 1.46$ . Calculate acceptance angle in air for skew rays which changes its direction by  $150^\circ$  at each reflections.

Q4. Describe with ray diagram i) Multimode step index fiber ii) Single mode step index fiber. Compare advantages and Disadvantages.

Last Date for Submission: - 06/07/2018

Dr.R.A.Burange

Subject Teacher



Date: - 18/08/2018

**CO-3**

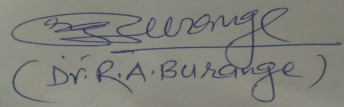
Q1 Give the constructional details of Surface emitter LED and state its advantages.

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 Planar LED is  $(NA)^2$  . Write assumptions if any.

**Last Date for Submission: - 25/08/2018**



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