2007-COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY
B.TECH DEGREE EXAMINATION
OPTO ELECTRONICS
(ELECTRONICS AND COMMUNICATION ENGINEERING)

TIME-3HOUR
MARKS-100

ANSWER ALL QUESTIONS

MARKS [10*10=100]

1a. write Newton's lens equation and explain the symbols used.

b. explain the propagation of light through step index fibre and obtain the expression for acceptance angle of the fibre.

c. determine the numerical aperture of an optical fibre which has a core refractive index of 1.5 and cladding refractive index 1.47

2a. write notes on :

i. diffraction

ii. polarisation

b. discuss how dispersion effect affects signal transmission through optical fibre.

c. determine Brewster angle for a light reflecting surface with refractive index 1.5

3 . write short notes on:

i. step index fibre

ii. graded index fibre

iii.single mode fibre

iv. multimode fibre

4 . describe the structure of modes in slab wave guide

5 . describe the structure and pumping of semiconductor laser diode.

6 . explain the construction and working of

i. avalanche photo diode

ii. PN photo diode

7 . explain in detail time division and wavelength division multiplexing techniques

8 . write notes on

i. optical receivers

ii. optical modulation

9a. explain the construction of optical ICs

b. discuss industrial application of lasers and optical fibre

10a. describe the military applications of optical fibres

b. discuss the structure of Public Net Work with reference to optical fibre