

OLLSCOIL NA hÉIREANN, CORCAIGH
THE NATIONAL UNIVERSITY OF IRELAND, CORK

COLÁISTE NA hOLLSCOILE, CORCAIGH
UNIVERSITY COLLEGE, CORK

SUMMER EXAMINATIONS, 2007

B.E. DEGREE (ELECTRICAL)
HIGHER DIPLOMA IN PHYSICS

OPTICAL ELECTRONICS
EE4007

Prof. Dr. U. Schwalke
Professor P.J. Murphy
Dr. S.L. Prunty
Dr. A.P. Morrison

Time Allowed: *3 hours*

FIVE QUESTIONS TO BE ANSWERED, AT LEAST TWO FROM EACH SECTION.
USE SEPARATE ANSWER BOOKS FOR EACH SECTION

The use of a Casio fx570w or fx570ms calculator is permitted.
The use of Log Tables and Graph paper are permitted.

Physical Constants:

Free electron mass, $m_0 = 9 \times 10^{-31}$ kg
Planck's constant, $h = 6.626 \times 10^{-34}$ J s
Electronic charge, $q = 1.602 \times 10^{-19}$ C
Boltzmann's constant, $k_B = 1.38 \times 10^{-23}$ J K⁻¹
Room temperature = 300 K
Speed of light in free space, $c = 3 \times 10^8$ m s⁻¹