**13EC32E2-OPTOELECTRONICS**

 Credits: 4

Hours /week: 4 Hrs Sessional Marks: 40

Univ.Exam.Duration: 3Hrs Univ.Examination.Marks: 60

**UNIT-I**

**OPTICAL RADIATION:** Radiometric and photortietric definitions. Blackbody radiation, Material interactions, Temperature.

**UNIT-II**

 **LASERS:** Radioactive Processes, Laser excitations, Gaussian characteristics of the laser beam, optical feedback, Q-switching and mode locking. Specific Lasers – Helium – Neon Laser, Argon ion Laser, Carbondioxiode Laser, Neodymium Laser, Semiconductor Laser, Free electron Laser.

**UNIT-III**

**MODULATION OF LIGHT:**  Polarization, Light propagation in crystals, Electro-optic modulation. Acousto-optic modulation. Magneto-optic devices. Image binarization using photographic process.

**UNIT-IV**

**FOURIER OPTICS:** Scalar theory of diffraction. Fourier transform properties of Lenses. Optical information processing systems, special filtering using binary filters. Nonlinear optical signal processing using contact screens, Apodization.

**UNIT-V**

**ELECTRO-OPTIC SYSTEMS:** Holography, phase contrast microscopy. Pattern recognition. Optical computing systems.

 **TEXTBOOKS:**

1. Electro-Optical Devices and systems by M.A.Karim PWS-KENT publishing company
2. Optical Electronics by A.K.Ghatak and K.Thygarajan, Cambridge University press.

**REFERENCE BOOKS:**

 1. Optoelectronics-Emmanual Rosencher & Borge Vinter by Cambridge University

 2. Laser Principals and Applications by J.Wilson, J.F.B.Hawkes, PHI Publications.