

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Sc(Tech) - I
Instrumentation

PAPER IV

Optical, Analytical, Biomedical, Environmental Instrumentation

Laser Instrumentation, principals of laser types of lasers construction of laser, application of laser in distance measurement communication holography etc.

Fiber Optics, principles of optical fibers, materials for optical fibers, production of optical fibbers, sources,detectors,couplings, application of fiber optics, illuminators, endoscopy, communication etc.

Analytical Instrumentation :

Introduction to instrumentation system, need for an integrated approach

Analytical Instruments :

Working principles, operation and data analysis of the following instruments Spectrophotometers, Atomic AAS, Electron Microscopes.

Nuclear Magnetic Resonance Spectrometer.

Principal of operation, sample preparation and data analysis, stability of magnetic fields and electronics.

Mass Spectrometer :

Application Area, Working Principles of static and dynamic instruments, analysis of data.

X-ray techniques and their application to radiography fluorescence and differactometry Interpretation of data.

Moss Bauer spectrometers :

Principles of operation, measurement of radioactivity and analysis of data.

Biomedical Instrumentation :

Introduction to transducer and their application, recording electrodes.

EEG,ECG and other potentials :

Working principles and precaution.

Blood pressure instruments, introduction to homodynamic.

Introduction to ultra sound and topographic techniques.

Introduction of data and precaution for measurements.

Introduction to working principles and operation of pacemakers.

defibrillators heart-lung and other ICU instrumentation.

RECOMMENDED BOOKS :

1. **Air pollution-physical and chemical fundamentals. J.H.Seinfeld. Mc Graw Hill NY 1975.**
2. **Meteorological instruments, W.E.Knowles Middleton and A.S.Spilhans, University Toronto Press 1953.**
3. **H.Willard, L.L. Merrit, J.A.Dean, F.A. Settle. Instrumental methods of analysis VI Edn.**
4. **Environmental instrumentation Frichtschen, L.J.and Gay, L.W.**
5. **Thermal comfor Fanger, P.O. 1982.
Robert E. Krieger Publishing Company, Malbar, FL.**