

॥ अंतरी पेठवू ज्ञानज्योत ॥
उत्तर महाराष्ट्र विद्यापीठ, जळगांव.

जा. क्र. उमवि/९४/६/२६/२३४०

दिनांक : १५. ७. १९९४

प्रति,

उत्तर महाराष्ट्र विद्यापीठाची संलग्न असलेल्या
सर्व विज्ञान महाविद्यालयांचे मा. प्राचार्य
यांसी-

विषय :- सुधारित अभ्यासक्रम जून, १९९४ पासून.

महोदय,

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार उत्तर महाराष्ट्र
विद्यापीठाची संलग्न असलेल्या विज्ञान महाविद्यालयांचे मा. प्राचार्य यांना
कळविण्यांत येते की, जून, १९९४ पासून तृतीय वर्ष विज्ञान या वर्गासाठीचा
फिजिक्स [प्रेक्टिकल] व रासायनशास्त्र या विषयांचा सुधारित अभ्यासक्रम अंगलात
येत आहे. आपल्या महाविद्यालयात सदरचा विषय शिकविला जात असल्यामुळे
नवीन अभ्यासक्रम सोबत पाठवित आहोत.

मा. प्राचार्य, विज्ञान महाविद्यालय यांना विनंती करण्यांत येते की,
त्यांनी या पत्राचा आशय व नवीन अभ्यासक्रम सर्व संबंधित प्राध्यापकांच्या
नजरेत आणावा.

कळावे,

आपला विश्वासू,

सोबत:- अभ्यासक्रम.

उप कुलसचिव.

प्रत माहितीसाठी सादर :-

- १] मा. अधिष्ठाता, विज्ञान विभागाचा, उ. म. वि., जळगांव.
- २] मा. कुलसचिव, उ. म. वि., जळगांव.
- ३] मा. उप कुलसचिव, परीक्षा-पूर्वार्ध/उत्तरार्ध विभाग, उ. म. वि., जळगांव.
- ४] मा. सहा. कुलसचिव, परीक्षा-पूर्वार्ध/उत्तरार्ध विभाग, उ. म. वि., जळगांव.
- ५] मा. सहा. कुलसचिव, सभा व अभिलेख विभाग, उ. म. वि., जळगांव.

दुबासा. /-

SDD
16/93

NORTH MAHARASHTRA UNIVERSITY, JALGAON.

T.Y.B.Sc. (PHYSICS)

PRACTICAL COURSE - I.

With effect from June, 1994.

(GENERAL PHYSICS, HEAT, SOUND, AND OPTICS)

A) GENERAL PHYSICS (Any Four Experiments)

- 1) Resonance Pendulum.
- 2) S.T. by Quinke's method.
- 3) γ and n by Searls method.
- 4) To determine the Co-efficient of viscosity of a given liquid by rotating Cylinder method.
- 5) To study Coupled Oscillations and hence to determine Co-efficient of Coupling.
- 6) S.T. by Soap bubble method.
- 7) Bifilar suspension (with stop watch)-

B) HEAT (Any Two Experiments)

- 1) Jolly's steam Calorimeter.
- 2) Thermal Conductivity of a metal by Forbe's method.
- 3) Stefan's Constant.
- 4) Thermal Conductivity of a rubber by rubber tubing method.

SOUND (Any Two Experiments)

- 1) Velocity of Sound by phase shift method.
- 2) Determination of Velocity of sound in liquid by Ultrasonic interferometer.
- 3) Acoustic audibility of a human ear.
- 4) Velocity of sound by using Kundt's tube , audio, Oscillator and microphone.

C) OPTICS (Any Four Experiments)

- 1) By total internal reflection (glass/liquid).
- 2) Determination of unknown wavelength of a given source using L. Loyd's single mirror.
- 3) To determine resolving power of grating spectrometer.
- 4) To estimate temperature of sodium flame.
- 5) To determine the Cardinal points of given lens system by Searl's goniometer.
- 6) Measurement of wave length of laser beam (He/Ne laser)
- 7) Diffraction at st. edge.

D) ELECTRICITY (Any Four Experiments)

- 1) To find unknown inductance by Maxwell's induction bridge/Anderson's bridge.
- 2) To determine the dielectric Constant. Using LCR bridge.
- 3) Hysteresis by Ballistic Galvanometer (Determination of B and H).
- 4) To study Oscillatory Charge and discharge of Condenser through an inductance and resistance-- (Physics Expt. by S.P.Singh Vol. I).
- 5) To study the Characteristics of thermister.
- 6) Electromagnetic pendulum.
- 7) Platinum Resistance thermometer.

T.Y.B.Sc. (PRINCIPAL PHYSICS)

PRACTICAL COURSE - II.

A) ELECTRONICS (Any Four Experiments)

- 1) To study Characteristics of thyatron/SCR - (P.U.Lab.manual).
- 2) Sensitivity of C.R.O. and Lissouges figures.
- 3) Design and Build E.R.P.S. using transistor circuit.
- 4) Study of Logic.gates using discrete Components.
(OR. AND, NOT, NAND, NOR)
- 5) Study of R-C and L-C filters.
- 6) Characteristics of UJT and relaxation Oscillator.
- 7) To study the adder circuit of Op-amp. .
- 8) Verification of De-Morgan's Theorem.

B) MODERN PHYSICS AND SOLID STATE PHYSICS (Any Four Experiments)

- 1) Counting statistics using G.M.Counter.
- 2) Verification of Einsteins photoelectric relation using a photo-cell. (Determination of Planks Constant).
- 3) e/m using Thomson method.
- 4) To determine efficiency of a Solar cell.
- 5) To estimate the energy gap of a semiconductor.
- 6) Hall Effect. (Determination of Hall Constant).
- 7) Sp. heat of graphite at different temperature.

T.Y.B.Sc. PRACTICAL COURSE OPTIONAL- I.

c) TECHNICAL ELECTRONICS

EXPERIMENTS (Any Eight Experiments)

- 1) Design and fabrication of a transformer.
- 2) To make two PCB's with
 - i) discrete components (like SCR motor control)
 - ii) IC components (Op-amp adder).
- 3) Study of CRO and its use to find all parameters of a pulse, (Rise time, fall time, duration and amplitude).
- 4) Thermistor thermo-meter (temp.transducer)
- 5) DAC (R-2R ladder without Op-amp.)
- 6) Voltage to frequency convertor (using Op-amp)
- 7) Digital multiplexer using Ic 7400 and 7420.
- 8) Astable multivibrator using Ic 555 (designing and building).
- 9) FET as VVR.
- 10) Verification of DeMorgan's theorems using IC.

T.Y.B.Sc. PRACTICAL

c) VACCUUM TECHNOLOGY:-

EXPERIMENTS (Any Eight Experiments)

- 1) To describe function of various parts of rotary pump. (with schematic diagram).
- 2) To describe the constructional details and working of vapour diffusion pump.
- 3) To calibrate and study the function of pirani gauge.
- 4) To study unclaud/guage (vacuu-stat).
- 5) To evacuate the system with rotary pump (measurement of vacuum with and without ballast using mclaud gauge).
- 6) To measure pumping speed of a rotary vacuum system. (using Gaedes equation).
- 7) Demonstration of oil diffusion pump and to evacuate the system and measure the ultimate vacuum.
- 8) To measure the pumping speed of a vacuum system by the steady state method.
- 9) To study the effect of conductance on the pumping speed of an oil diffusion pumping module.
- 10) To investigate the variation of pumping speed of a vapour diffusion pumping module with the pressure in vacuum system.
- 11) Deposition of metallic thin film.

T.Y.B.Sc. (PHYSICS)

PRACTICAL OPTIONAL COURSE.

MICROPROCESSOR

c) FIRST TERM (Any Four)

- 1) T to F conversion.
- 2) Study of Shift register.
- 3) Study of 4 bit DAC using Op-Amp at output stage.
- 4) Study of monitor Commands of 8085 system. (Compulsory).
- 5) Study of Up-down Counter IC.....
- 6) Diode ROM using decoder and tristate switch.

SECOND TERM (Any Four) at least one should be from expt. 5 and 6).

- 1) Experiment to demonstrate data transfer instruction like Register to Register, Register to from Memory, Memory to memory, Storage of data from the part of memory to other.
- 2) Write a software programme for multiplication of two eight bit numbers (product can be 8 bit or 16 bit) multiplication by successive addition.
- 3) Average given set of data (Data is smaller, than FFH, and result is not a fraction) use successive subtraction.
- 4) Write a program for Hex as well Decimal counter. Display counts on clear screen at middle of screen.
- 5) Write a programme to make lamp ON or OFF for given time interval or ON and OFF continuously after regular interval of time (Exact time calculation not expected).
- 6) Write a programme to display a given message on 4 seven segment display interfaced with system. Flashing of data is expected. Message may contain a letters like H,O,L,E,C,U,P and numarals from 0 to 9.

T.Y.B.Sc. (PHYSICS) PRACTICAL PAPER-II OPTIONAL

c) COMPUTER PROGRAMMING (Any Eight Experiments)

- 1) Writing a text using different format. (eg. H,X,A,I,F d.w. etc).
- 2) Write a program to find maximum and minimum number from a list of number.
- 3) Write a program to find root of a quadratic equation.
- 4) Write a program to convert a decimal number to its binary equivalent.
- 5) Write a program to arrange an array in ascending and

descending order.

- 6) Write a program to generate prime numbers.
- 7) Write a program for multiplication of two matrices.
- 8) Write a program to find a square root of an equation by bisection method.
- 9) Write a program to find a root of an equation by Newton Rapusion method.
- 10) Write a program to find a root of an equation by Regular Palsi method.
- 11) Write a program to integrate a function using simpsons rule.
- 12) Write a program to find factorial of a numbers.

At least eight program printout should be possessed by the student at the time of examinations.

OPTIONAL

C) T.Y.B.Sc. (PHYSICS) REFRIGERATION AND AIR CONDITIONING.

(Any Eight Experiments)

- 1) Study of tools required for the refrigeration system and their uses.
- 2) Leakage testing of a given refrigeration system.
- 3) Study of chilling plant.
- 4) To determine C.O.P. by using chilling plant.
- 5) Study of water cooler.
- 6) Study of window type air conditioner.
- 7) Oil testing (density and viscosity) and oil charging in the compressor.
- 8) Gas filling in the given systems.
- 9) Study of Refrigerator.

PHYSICS PRACTICAL COURSE III.

PROJECT COURSE

A topic for the project must be assigned to the concerned student at the begining of the first term.

The project should be ^{such that} ~~at least~~ 40 periods per term ^{the student should work at} including library and the laboratory work.

A teacher should guide 5 (five) students in a batch for which work-load of the teacher should be counted 4 (four) periods per week.
