STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

SYLLABUS

L - SCHEME

(Implements from the Academic year 2011- 2012 onwards)

Course Name	:	All branches of Diploma in Engineering and Technology and Special Programmes except DMOP, HMCT and Film & TV
Semester	:	I Semester
Subject Title	:	Engineering Physics – I Practical
Subject Code	:	1007

Teaching and Scheme of Examination : **No of weeks per semester : 16 weeks**

Subject	Instructions		Examination			
	Hours/Week	Hours/Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
Engineering Physics – I Practical	**3 Hrs**	**48 Hrs**	**25**	**75**	**100**	**3 Hrs**

RATIONALE:

In diploma level Engineering education skill development plays a vital role. The skill development can be achieved by on hand experience in handling various instruments, apparatus and equipment. This is accomplished by doing engineering related experiments in practical classes in various laboratories.

GUIDELINES:

- **In order to develop best skills in handling Instruments/Equipment and taking readings in the practical classes, every two students should be provided with a separate experimental setup for doing experiments in the laboratory.**

- **The external examiners are requested to ensure that a single experimental question should not be given to more than three students while admitting a batch of 30 students during Board Examinations.**

ALLOCATION OF MARKS

Formula with explanation	10
Figure / Circuit diagram with parts	05
Tabulation with proper units	10
Observation (including taking readings)	35
Calculation	10
Result	05
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Total	75 Marks
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FIRST SEMESTER

1007   ENGINEERING PHYSICS - I PRACTICAL

List of Experiments with objectives:

1. a) MICROMETER (SCREW GAUGE).

    To measure the thickness of the given glass plate using micrometer.

    b) VERNIER CALIPERS.

    To measure the length and diameter of the given solid cylinder using vernier calipers

    and to calculate the volume of the solid cylinder.

2. CONCURRENT FORCES.

    To verify the parallelogram law of forces and Lami's theorem.

3. COPLANAR PARALLEL FORCES

    To verify the conditions of equilibrium of coplanar parallel forces.

4. PRINCIPLE OF MOMENTS.

    To determine the mass of the given metre scale and the mass of the given body.

5. UNIFORM BENDING METHOD.

    To determine the Young's modulus of the material of a metre scale.

    (Measurement of breadth and thickness of the scale to be done with digital

    vernier calipers and digital micrometer.)

6. NON - UNIFORM BENDING METHOD.

    To determine the Young's modulus of the material of a metre scale.

    (Measurement of breadth and thickness of the scale to be done with digital

    vernier calipers and digital micrometer.)

7. TORSION PENDULUM.

    To determine the rigidity modulus of the material (steel) of a thin wire using two

    symmetrical masses.

8. POISEUILLE'S METHOD.

    To determine the coefficient of viscosity of water by capillary flow method, using variable   pressure head arrangement.

9. STOKES' METHOD.

    To determine the coefficient of viscosity of a high viscous liquid.

10. SURFACE TENSION.

    To determine the surface tension of water by capillary rise method.

11. SONOMETER.

    To determine the frequency of the given tuning fork.

12. DEFLECTION MAGNETOMETER

    To compare the magnetic moments of the two bar magnets using deflection

    magnetometer in Tan A position, by

    a) Equal distance method and
    b) Null deflection method

FIRST SEMESTER

LIST OF EQUIPMENT

1. a) MICROMETER (SCREW GAUGE).

     Screw gauge and Glass Plate

    b) VERNIER CALIPERS.

     Vernier Calipers and Solid Cylinder

2. CONCURRENT FORCES.

     Vertical drawing board, two Z pulleys, three sets of slotted weights

     (5 x 50g) and twine thread.

3. COPLANAR PARALLEL FORCES

     Two iron stands with clamps, two tubular spring balances (0-100g), knife

     edge, half metre scale and two slotted weight hangers (5 x 10g) and

     thread loops.

4. PRINCIPLE OF MOMENTS.

     Knife edge, metre scale, slotted weights (5 x 50g) and given body.

5. UNIFORM BENDING METHOD.

     Travelling microscope, two knife edges, two slotted weight hangers

     (5 x 50g), metre scale, pin, digital vernier calipers and digital screw gauge.

6. NON - UNIFORM BENDING METHOD.

     Travelling microscope, two knife edges, two slotted weight hangers

     (5 x 50g), metre scale, pin, digital vernier calipers and digital screw gauge.

7. TORSION PENDULUM.

     Torsion pendulum arrangement with heavy disc, Digital stopwatch, two symmetrical known masses (100g each) and screw gauge.

8. POISEUILLE'S METHOD.

> Burette stand, graduated burette without stopper, rubber tube, capillary

> tube, beaker, digital stop watch and funnel.

9. STOKES' METHOD.

> Stokes' Apparatus, high viscous liquid (castrol oil), glass beads of

> different radii, digital stop watch and screw gauge.

10. SURFACE TENSION.

> Beaker with water, capillary tube, iron stand with clamp, pointer, travelling

> microscope and hydro static bench.

11. SONOMETER.

> Sonometer, screw gauge, tuning fork, rubber hammer, slotted weight

> hanger set (5 x 0.5kg) and paper rider.

12. DEFLECTION MAGNETOMETER

> Deflection Magnetometer, metre scale and two bar magnets.

Note : While conducting practical classes a batch of 30 students may be divided into 5 groups, each group with 6 students. Every group of students may be allotted different experiments in a cyclic order. By this only 6 students will be doing a particular experiment at a time in the practical class. In order to provide separate experimental arrangement for every two students, a minimum of 3 sets of instruments/apparatus are required. To meet any unexpected events like mal functioning or non-working condition of the apparatus, a buffer stock of two sets of instruments/apparatus are required. Hence for every experiment, a minimum of 5 sets of instruments /apparatus should be available in the laboratory.

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I SEMESTER

1007 ENGINEERING PHYSICS - I PRACTICAL
MODEL QUESTION PAPER

1. Measure the thickness of the given glass plate using micrometer. Also measure the length and external diameter of the given solid cylinder using vernier calipers and then calculate the volume of the solid cylinder.

2. Verify the parallelogram law of forces and Lami's theorem using concurrent forces.

3. Verify the conditions of equilibrium of coplanar parallel forces.

4. Determine the mass of the given metre scale and the mass of the given body using principle of moments.

5. Determine the Young's modulus of the material of the given metre scale by uniform bending method.

6. Determine the Young's modulus of the material of the given metre scale by Non - uniform bending method.

7. Determine the rigidity modulus of the material of the given thin wire with two symmetrical masses, using torsion pendulum.

8. Determine the coefficient of viscosity of water by capillary flow method, using variable pressure head arrangement.

9. Determine the coefficient of viscosity of a high viscous liquid by Stokes' method.

10. Determine the surface tension of water by capillary rise method.

11. Determine the frequency of the given tuning fork using sonometer.

12. Compare the magnetic moments of the two bar magnets using deflection magnetometer in

    Tan-A position, by

    a) Equal distance method   and b) Null deflection method

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