



# St. Michael Polytechnic College



St. Santhiyagappar Nagar

Kalayarkoil-630 551.

**DEPT: BASIC ENGG YEAR/SEMESTER: I / I**

**SUB.NAME: ENGG PHYSICS -I**

*Each question carries 1(one) mark in PART-A and 6(SIX) marks in PART-B*

## **ENGINEERING PHYSICS-I**

### **UNIT-I -S.I UNITS AND STATICS**

#### **PART-A**

1. Define fundamental quantities with an example.
2. Define derived quantities with an example.
3. Write any two merits of S.I system.
4. Define scalar quantities with an example.
5. Define vector quantities with an example.
6. Define concurrent forces.
7. Define coplanar forces.
8. Define resultant.
9. Define equilibrant.
10. State parallelogram law of forces.
11. State lami's theorem.
12. Define moment of a force.
13. State the principle of moments.
14. What is couple?
15. Define moment (or) torque of the couple.

#### **PART-B**

1. State the conventions to be followed in writing S.I units. (6),
2. Explain how a vector can be resolved into rectangular components. (6),
3. Derive expressions for the magnitude and directions of the resultant of two forces. (12),

4. Describe an experiment to verify parallelogram law of forces. (6),
5. Describe an experiment to verify lami's theorem. (6),
6. Describe an experiment to determine the mass of the given body using principle of moments. (6),

## **UNIT-II-PROPERTIES OF MATTER**

### **PART-A**

1. Define elasticity.
2. Define stress with S.I unit.
3. Define strain.
4. What are the three types of strain?
5. State hooks law.
6. What are three module of elasticity?
7. Define poison's ratio.
8. Define viscosity.
9. Define co-efficient of viscosity.
10. What is streamline motion?
11. What is turbulent motion?
12. What is reynold's number?
13. Define angle of contact.
14. What is capillarity?

### **PART-B**

1. Explain the elastic behavior of a material with the help of stress-strain graph.
2. Describe an experiment to determine the young's modulus of a beam by uniform bending.
3. Derive the poiseuille's formula for the co-efficient of viscosity of a liquid by dimensional method.
4. Describe an experiment to determine the co-efficient of viscosity by capillary flow method.

5. Describe an experiment to determine the co-efficient of viscosity of a high viscous liquid by stoke's method.
6. Derive an expression for surface tension of a liquid by capillary rise method.

### **UNIT –III -DYNAMICS-I**

#### **PART-A**

1. What is a projectile?
2. Define the maximum height of a projectile.
3. Define time of flight of a projectile.
4. Define range of a projectile.
5. What is circular motion?
6. Define angular velocity.
7. What is relation between linear velocity and angular velocity?
8. Define centripetal force.
9. Define centrifugal force.
10. Define angle of banking.
11. Define simple harmonic motion.
12. Define amplitude.
13. Define phase.

#### **PART-B**

1. Derive the expression for maximum height, time of flight and range of a projectile.
2. Derive expression for normal acceleration and centripetal force of a body in circular motion.
3. Explain the banking of curved roads and railway tracks.
4. Derive an expression for the angle of banking of a curved railway track.