Singapore Secondary School GCE OLEVEL
Physics 6091 Cheatsheet: Chapters 1 to 5
With answers for factual recall questions

Chapter 1: Physical Quantities, Units and Measurement

Base quantities and their units
Mass (kg), Length (m), Time (s), Electric current (A), Temperature (K), Amount of substance (mol)

Scalar quantity
A physical quantity with magnitude only (e.g. mass, temperature, speed).

Vector quantity
A physical quantity with both magnitude and direction (e.g. force, velocity, acceleration).

Chapter 2: Kinematics

Speed
Rate of change of distance with time.

Velocity
Rate of change of displacement with time; a vector quantity.

Uniform acceleration
Constant rate of change of velocity.

Acceleration of free fall
Approximately 10 m/s^2 near Earth's surface, constant for all objects regardless of mass.

Chapter 3: Dynamics

Mass
The amount of matter in a body; a scalar quantity.

Gravitational field
A region where a mass experiences a gravitational force.

Gravitational field strength (g)
The gravitational force per unit mass at a point.

Weight = mass × gravitational field strength
Weight is the force acting on a mass in a gravitational field.

Resultant force = mass × acceleration
From Newton's Second Law, this determines the net effect of all forces on a body.

Inertia
The tendency of a body to resist changes in its state of motion.

Newton's First Law
A body remains at rest or in uniform motion in a straight line unless acted on by a net external force.

Newton's Second Law
The acceleration of a body is directly proportional to the net force acting on it and inversely proportional to its mass. F = ma

Newton's Third Law
For every action, there is an equal and opposite reaction.

Chapter 4: Turning Effect of Forces

Moment of a force = force × perpendicular distance from pivot
Moment (or torque) measures the turning effect of a force.

Principle of moments
For a body in equilibrium, the sum of clockwise moments equals the sum of anticlockwise moments about the same pivot.

Centre of gravity
The point through which the entire weight of a body may be considered to act, regardless of its orientation.

Chapter 5: Pressure

Pressure = force / area
Force exerted per unit area.

Density = mass / volume
A measure of how much mass is contained in a unit volume.

Pressure due to a liquid column = height × density × g
Used to find the pressure exerted by a liquid at a specific depth.