



TEST CODE **02238020**

**FORM TP 2009243**

MAY/JUNE 2009

**CARIBBEAN EXAMINATIONS COUNCIL**

**ADVANCED PROFICIENCY EXAMINATION**

**PHYSICS**

**UNIT 2 – Paper 02**

*2 hours 30 minutes*

**READ THE FOLLOWING INSTRUCTIONS CAREFULLY**

1. This paper consists of **SIX** questions.
2. Section A consists of **THREE** questions. Candidates must attempt **ALL** questions in this section. Answers for this section must be written in the spaces provided in this question paper.
3. Section B consists of **THREE** questions. Candidates must attempt **ALL** questions in this section. Answers for this section must be written in the separate answer booklet provided.
4. All working **MUST** be **CLEARLY** shown.
5. The use of non-programmable calculators is permitted, but candidates should note that the use of an inappropriate number of figures in answers will be penalised.

**LIST OF PHYSICAL CONSTANTS**

Speed of light in free space	$c$	=	$3.00 \times 10^8 \text{ m s}^{-1}$
Permeability of free space	$\mu_0$	=	$4\pi \times 10^{-7} \text{ H m}^{-1}$
Permittivity of free space	$\epsilon_0$	=	$8.85 \times 10^{-12} \text{ F m}^{-1}$
	$\frac{1}{4\pi\epsilon_0}$	=	$9.0 \times 10^9 \text{ m F}^{-1}$
Elementary charge	$e$	=	$1.60 \times 10^{-19} \text{ C}$
Planck's constant	$h$	=	$6.63 \times 10^{-34} \text{ J s}$
Unified atomic mass constant	$u$	=	$1.66 \times 10^{-27} \text{ kg}$
Rest mass of electron	$m_e$	=	$9.11 \times 10^{-31} \text{ kg}$
Rest mass of proton	$m_p$	=	$1.67 \times 10^{-27} \text{ kg}$
Acceleration due to gravity	$g$	=	$9.81 \text{ m s}^{-2}$
1 Atmosphere	Atm	=	$1.00 \times 10^5 \text{ N m}^{-2}$
Avogadro's constant	$N_A$	=	$6.02 \times 10^{23} \text{ per mole}$

