Practice Question Set For A-Level
Subject : Physics
Paper-1 Topic: Measurement And Their Errors

Name of the Student:_____
Max. Marks : 15 Marks **Time : 15 Minutes**

Q1.

What is a correct unit for the area under a force−time graph?

A N m ⬭

B kg m s^{-1} ⬭

C kg m s^{-2} ⬭

D N s^{-1} ⬭

(Total 1 mark)

Q2.

A student carries out an experiment to determine the resistivity of a metal wire.
She determines the resistance from measurements of potential difference between the ends of the wire and the corresponding current. She measures the length of the wire with a ruler and the diameter of the wire using a micrometer. Each measurement is made with an uncertainty of 1%

Which measurement gives the largest uncertainty in the calculated value of the resistivity?

A current ⬭

B diameter ⬭

C length ⬭

D potential difference ⬭

(Total 1 mark)

Q3.

A mobile phone operates at a constant power of 200 mW
It has a 3.7 V lithium-ion battery that has a charge capacity of 9400 C

What is the time taken for the battery to discharge completely?

A 2 hours ⬭

B 48 hours ⬭

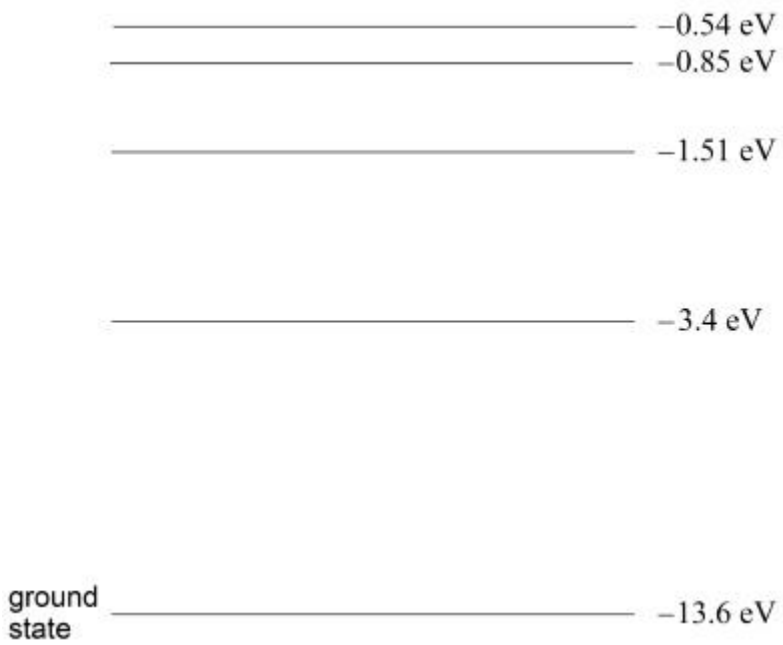
C 120 hours ⬭

D 140 hours ⬭

(Total 1 mark)

Q4.

The diagram shows an energy-level diagram for a hydrogen atom.



Electrons, each having a kinetic energy of 2.0×10^{-18} J, collide with atoms of hydrogen in their ground state. Photons are emitted when the atoms de-excite.

How many different wavelengths can be observed with incident electrons of this energy?

A 1 ⬭

B 3 ⬭

C 6 ⬭

D 7 ⬭

(Total 1 mark)

Q5.

What **cannot** be used as a unit for the Young modulus?

A $N\ m^{-2}$ ⬭

B Pa ⬭

C $kg\ m^{-2}\ s^{-2}$ ⬭

D $kg\ m^{-1}\ s^{-2}$ ⬭

(Total 1 mark)

Q6.

The units of physical quantities can be expressed in terms of the fundamental (base) units of the SI system. In which line in the table are the fundamental units correctly matched to the physical quantity?

	Physical quantity	Fundamental units	
A	charge	A s^{-1}	⬭
B	power	kg m^2 s^{-3}	⬭
C	potential difference	kg m^2 s A^{-1}	⬭
D	energy	kg m^2 s^{-1}	⬭

(Total 1 mark)

Q7.

In which of the following do both quantities have the same unit?

A Electrical resistivity and electrical resistance. ⬭

B Work function Planck constant ⬭

C Pressure and the Young modulus. ⬭

D Acceleration and rate of change of momentum. ⬭

(Total 1 mark)

Q8.

Which of the following is **not** a unit of power?

A N m s^{-1} ⬭

B kg m^2 s^{-3} ⬭

C J s^{-1} ⬭

D kg m^{-1} s^{-1} ⬭

(Total 1 mark)

Q9.

Which of the following gives a correct unit for $\left(\frac{g^2}{G}\right)$?

A N ⬭

B N kg^{-1} ⬭

C N m ⬭

D N m^{-2} ⬭

(Total 1 mark)

Q10.

Which of the following is **not** a unit of power?

A N m s^{-1} ⬭

B J s ⬭

C W ⬭

D kg m^2 s^{-3} ⬭

(Total 1 mark)

Q11.

Which of the following is a possible unit for rate of change of momentum?

A N s

B N s^{-1}

C kg ms^{-1}

D kg ms^{-2}

(Total 1 mark)

Q12.

Which one of the following is a possible unit of impulse?

A Ns^{-1}

B kg ms^{-1}

C kg ms^{-2}

D sN^{-1}

(Total 1 mark)

Q13.

In parts (i) and (ii) circle the letter that corresponds to the correct answer.

(i) The resistance of a negative temperature coefficient (ntc) thermistor

A increases as temperature increases.

B is constant at temperatures below 0 °C.

C increases as temperature decreases.

D falls to zero when a critical temperature is reached.

(1)

(ii) The unit of potential difference can be expressed as

A $C\ s^{-1}$

B $J\ C^{-1}$

C $V\ A^{-1}$

D $J\ A^{-1}$

(1)

(Total 2 marks)

Q14.

The fission of one nucleus of uranium 235 releases 200 MeV of energy. What is the value of this energy in J?

A 3.2×10^{-25} J

B 3.2×10^{-17} J

C 3.2×10^{-11} J

D 2.0×10^{6} J

(Total 1 mark)