

**PHYSICS**

**30/06/2021**

**8:30 am – 11:30 am**

**SENIOR TWO END OF YEAR EXAMINATIONS, 2021**

**SUBJECT: PHYSICS THEORY**

|  |
| --- |
|  **/100** **Marks:** |

**DURATION: 3 HOURS**

**INSTRUCTIONS:**

1. Do not open this question paper until you are told to do so.
2. Answer all questions: **100 marks**

 3) Use only a **blue** or **black** pen.

**PART I: MULTIPLE CHOICE QUESTIONS (20 MARKS)**

 Choose the letter that corresponds to the correct answer

**1)** The number of significant figures in value 9.00825 are

 a) four b)six c) five d) three **(2 marks)**

**2)** What is the initial velocity of an object which travels a distance given

 by x=10t2+15t+5 along a straight line in time t?

 All physical quantities are in SI units

 a)5m/s b)10 m/s c)15 m/s d) 30 m/s **(2 marks)**

**3)** A 40 Nblock exerts 20 Pa of pressure on a table.

 What is the area of the block that is touching the table?

 a)40 m2 b)20 m2 c)800 m2 d)2 m2 **(2 marks)**

**4)** A stone weights 450 N in air and 200 N when it is in water.

 What is the weight of displaced water?

 a)450 N b)200 N c) 650 N d) 250 N **(2 marks)**

**5)** A small piston of a hydraulic press has an area of 20 cm2.If the applied

 force to the piston is 75 N, what must the area of the connected large

 piston be to exert a force of 6000 N ?

 a)25 cm2 b)1600 cm2  c)40 cm2 d)22 500 cm2 **(2 marks)**

**6)** Magnetic keepers are used to

 a) amplify magnetic flux

 b) restore lost magnetic flux

 c) demagnetize magnet

 d) provide a closed path for magnetic flux and hence help magnet to retain its magnetism **(2 marks)**

**7)** The electric field intensity at a point situated 4 m from a point charge is

 270 N/C. The coulomb constant k=9x109 Nm2/C2.

 The electric charge of the point charge is

 a) 480 x10-9 C b) 1080 C c) 67.5 C d) 9 720 x109C **(2 marks)**

**8)** The symbol of ordinary diode is

a)  b) 

 c)  d) 

 **(2 marks)**

**9)**The density of water is 1 g/cm3 .The table below shows the masses and

 volumes of 4 substances

|  |  |
| --- | --- |
| **Substance**  | **Density/gcm-3**  |
| Substance 1  | 2  |
| Substance 2 | 1.5 |
| Substance 3 | 5 |
| Substance 4 | 0.5 |

 Which of the following substances will float on water?

 a)Substance 1 b)substance 2 c)substance 3 d)substance 4

 **(2 marks)**

**10)**A feather and an iron bar are dropped from the same height and at the

 same time in a vacuum room without any resistance.

 Which object(s)will reach the floor first?

 a)both at the same time b)feather c)Iron bar d)they will not fall

 **(2 marks)**

**PART II: ATTEMPT ALL QUESTIONS (80 MARKS)**

**11)** a) What do you understand by the following terms used in electricity?

 (i) Battery **(2 marks)**

 (ii) Voltmeter **(2 marks)**

 b) Analyze the following electrical circuit.

 Assume that the internal resistance of the battery is negligible

 

 Find

 (i)the equivalent resistance of the circuit. **(3 marks)**

 (ii) the electric current in the circuit. **(3 marks)**

c)(i)Name any two effects of electricity **(2 marks)**

 (ii) A 2.4 kW kettle is used for 30 minutes.

 Determine the energy used by the kettle in joules **(3 marks)**

**12)**a)(i)What do you understand by the term reflection as applied to mirrors? **(1mark)**

 (ii) Differentiate between a concave mirror and a convex mirror**(2 marks)**

 (iii) Give any one use of convex mirrors in daily life. **(2 marks)**

 b) (i) Copy the diagram below and complete it to show the path taken by

 light to form an image of the given object.

 The diagram is not drawn to scale

 

 **(3 marks)**

 (ii) Give any three properties of the image formed **(3 marks)**

 (c) A convex spherical mirror has a focal length of 10 cm.

 (i)Find the image position of the pencil placed at 30 cm from the mirror. The sign of the focal length of convex mirror is taken as negative. **(2 marks)**

 (ii)Determine the magnification of the image **(2 marks)**

 (iii) Calculate the image size if the object size is 3 cm **(2 marks)**

 (iv)State any three properties of the image **(3 marks)**

**13)** a)For each of the statements below, indicate true if it is correct and

false if it is wrong.

 (i) The volume of a fixed mass of a gas is inversely proportional to the

pressure when the temperature is kept constant. **(2 marks)**

 (ii) The volume of a fixed mass of a gas at a constant pressure is inversely proportional to the absolute temperature. **(2 marks)**

 (iii)The pressure of a fixed mass of a gas at a constant volume is

 directly proportional to the absolute temperature. **(2 marks)**

 (iv)Isobaric process is a thermodynamic process in which the

 the pressure of the system remains constant. **(2 marks)**

 (v)Isochoric process is a thermodynamic process in which the

 temperature of the system remains constant. **(2 marks)**

 b) At constant pressure and 27˚C, a sample of gas occupies 4.5 liters.

 (i)Convert 27 ˚C into kelvin. **(2 marks)**

 (ii)At what temperature will the gas occupy 9.0 liters? **(3 marks)**

 **14)** a)List any two measuring instruments of pressure **(2 marks)**

 b) Analyze the following figures (a) and (b).

 Why are the levels of water in all branches like that after opening

 the tap?

 

 **(2 marks)**

 c) The figure below shows a measuring instrument containing mercury

 (density 13 600 kg/m3) connected to a tank with methane liquid and

 methane gas. Acceleration due to gravity g =10m/s2. Atmospheric

 pressure Patm=76 cmHg)

 

(i)Identify the name of this measuring instrument **(2 marks)**

(ii)Find the pressure of the gas supply in the units below

 1)cmHg **(2 marks)**

 Hg is the symbol of mercury,

 2)Pa **(2 marks)**

**15)** a)What is meant by the following terms as used in Physics ?

 (i) Energy **(1 mark)**

 (ii) Work **(1 mark)**

 (iii) Power **(1 mark)**

 b) A person pushes a 10 kg cart a distance of 20 m by exerting a 60 N

 constant horizontal force. The frictional force is 50 N

 (i)Determine the net force/resultant force applied on the cart.

  **(2 marks)**

 (ii) Find the acceleration of the cart **(2 marks)**

 (iii)How much work is done by each of the force below?

1)60 N horizontal force **(2 marks)**

2) 50 N Frictional force **(1mark)**

 c) A 60 g tennis ball from rest at point A, completes the following

 course on a frictionless surface as shown on the figure

 Air resistance and friction force are negligible.

 Acceleration due to gravity g=10 m/s2

 

 Calculate

 (i) The gravitational potential energy of the ball at point A **(2marks)**

 (ii)The total mechanical energy of the ball at point A just before

 moving **(2 marks)**

 (iii)The gravitational potential energy at B **(2marks)**

 (iv)The kinetic energy of the tennis ball at B **(2marks)**

 (v)The speed of the tennis ball at point B **(2 marks)**

**S2 MARKING GUIDE OF PHYSICS 2021**

**PART I**

**1)b)(2marks) 2)c)(2marks) 3)d) (2marks) 4) d) (2marks)**

 **the weight of the water displaced is equal to buoyant force**

**5)b) (2marks) 6)d) (2marks) 7)a) (2marks) 8)c)** **(2marks)** **9)d) (2marks) 10)a) (2marks)**

**PART II**

**11)**a)(i)Battery is a container consisting of two or more cells in which chemical energy is converted into electricity **(2marks)** or source of electric power

 (ii)Voltmeter is a measuring instrument used for measuring electrical potential difference or voltage between two points in an electric circuit**(2marks)**

 b) (i)Resistors are in series then equivalent resistance

 R=R1+R2+R3**(1mark)** or

 =2Ω+3Ω+5Ω

 =10Ω **(2marks)** value+ unit

 (ii)The electric current **(1 mark)** or

 ****

 I=0.9A **(2marks)** value+ unit

 c) (i) magnetic effect **(1mark)** chemical effect **(1mark)** heat effect

 (ii)1) Energy in Joules E=Pt **(1mark)**

=2.4x1000x30x60J **(1 mark)**

 =4 320 000 J **(1 mark)**

Note that electric energy can be expressed in kWh

 Energy in kWh 

 E=1.2kWh

 Or 1kWh=1000 W x3600 s =3 600 000 J

 ****

**12)** a) (i) Reflection is the bouncing back of light when it falls on a reflecting surface**(1mark)**

like glass ,water or polished metal**.** Accept the diagram showing that angle of incidence is equal to the angle or reflection

 (ii)

|  |  |  |
| --- | --- | --- |
| Differentiating properties  | Concave mirror | Convex mirror  |
| Meaning  | It is converging mirrors **(1mark)** | It is diverging mirror **(1mark)** |
| Image properties  | It can produces image which is real or virtual, erect or inverted and magnified ,diminished or of the same size as that of the object, all depending on the position of the object  | It produces always erect, virtual image and smaller than the object  |
| Structure  | The mirror coating is on the outside of the spherical surface.The centre of curvature and the reflecting surface fall on the same side of the mirror  | The mirror coating is on the inside of the spherical surface.The centre of curvature and the reflecting surface fall on opposite side of the mirror |
| Position of the focus  | Focus lies in front of the mirror i.e. focal length is positive  | Focus lies in behind the mirror i.e. focal length is negative  |
| Image projection  | Images can be projected on a screen as they are real  | Images cannot be projected on a screen as they are virtual  |
| Usage  | They are used in reflecting telescopes ,shaving mirrors torchlights etc. as they give a magnified image of the objects  | They are used as side view or rearview mirrors in vehicles as they cover a wider area of view  |

(iii)Car driving mirrors (**2marks)** or passenger side mirror of car or side view

 mirror of car or rear-view mirrors in vehicles

 Security mirrors in shops and offices **,** sunglasses, and street

 light reflectors , etc.

 b) (i)

 

 (ii) Real **(1mark),** inverted **(1mark)**; diminished (**1mark)** and positioned

 between C(centre of curvature) and F(focal point)

c) (i) Image position  **(1mark)**

  Note that f=-10 cm (convex mirror

 P’=-7. 5cm **(1 mark)**

 (ii) Magnification

  **(1mark)**

=7.5/30=0.25 **(1mark)** or ****

(iii)Image size **(1mark)**

 **(1mark)**

 (iv)Virtual image **(1mark)** because p’ is negative,

 Erect/upright **(1mark)** because m is positive , Smaller than the object **(1mark)**

m is smaller than1, placed between the pole of the convex mirror and focal point

**13)**a)(i)True **(2 marks)**

(ii)False **(2marks)**

(iii)True **(2marks)**

 (iv)True **(2marks)**

(v)False **(2marks)**

 b)(i) 27˚C=(27+273)K**(1mark)**

 =300K **(1mark)** don’t accept ˚K

 (ii)**(1mark)** **(1mark) (1mark)**

**14)**a)Manometer **(1mark)** and Barometer **(1mark)**

 b) They are subjected to the same atmospheric pressureso the gravity**(1mark)** and the hydrostatic pressure are constant in each branch**(1mark).**

These are independent of the shape of the branch of the vessel.

 c) (i)Manometer **(2marks)**

 (ii) 1)The mercury falls in the leg connected to the gas supply and rise in the leg where there is atmospheric pressure,

 This shows that the gas pressure is given by

 Pgas =PHg+Patm **(1mark)**

 =76cmHg +20 cm Hg

 =96 cmHg **(1mark)**

2)Pgas =

 =0.96 x 13 600 x10 Pa **(1mark)**

=130 560 Pa**(1mark)**

**15)**a)(i)Energy is the capacity/ability to do work**(1mark)**

 (ii)Work is the measure of energy transfer that occurs when an object is moved over a distance by an external force at least part of which

 is applied in the direction of the direction **(1mark)**

 (iii)Power is the rate of doing work or transferring heat **(1mark) or**

 the amount of energy transferred or converted per unit time

 b) (i)Net force F=60 N-50N=10N **(2marks)**

 (ii)The acceleration of the cart F=ma **(1mark)**

 **(1mark)**

(iii)1)Work done by 60 N

 W=Fd **(1mark)**

 =60 x20 J=1200 J **(1mark)**

2) Work done by 50 N friction force (it is negative)

 W=-50x20 J=-1000 J **(1mark)**

 c)(i) Potential energy at A: PE=mgh**(1mark)**

 =60x10-3 x10x30J=18J **(1mark)**

(ii)Total mechanical energy E=PE+KE **(1mark)**

 =18 J+0 =18 J**(1mark)**

 (iii)Potential energy at B: PE =mgh **(1mark)**

 =60x10-3 x10x10J=6J **(1mark)**

 (iv)Kinetic energy at B : KE=E-PE **(1mark)**

Mechanical energy is constant

=18J-6J=12 J**(1mark)**

 (iv)The speed is given by **(1mark)**

 **(1mark)**



**PHYSICS**

**30/06/2021**

**8:30 am – 11:30 am**

**SENIOR TWO END OF YEAR EXAMINATIONS, 2021**

**SUBJECT: PHYSICS THEORY FOR VISUALLY IMPAIRED LEARNERS**

|  |
| --- |
|  **/100** **Marks:** |

**DURATION: 3 HOURS**

**INSTRUCTIONS:**

1. Do not open this question paper until you are told to do so.
2. Answer all questions: **100 marks**

 3) Use only a **blue** or **black** pen.

**PART I: MULTIPLE CHOICE QUESTIONS (30 MARKS)**

 Choose the letter that corresponds to the correct answer

**1)** The number of significant figures in value 9.12825 are

 a) four

 b)six

 c) five

 d) three

 **(3 marks)**

**2)** What is the initial velocity of an object which travels a distance given

 by x=15t+5 along a straight line in time t?

 All physical quantities are in SI units

 a)5m/s

 b) 10 m/s

 c) 15 m/s

 d) 30 m/s

 **(3 marks)**

**3)** A 40 Nblock exerts 20 Pa of pressure on a table.

 What is the area of the block that is touching the table?

 a)40 m2

 b)20 m2

 c)800 m2

 d)2 m2

 **(3 marks)**

**4)** A stone weights 450 N in air and 200 N when it is in water.

 Calculate the weight of displaced water.

a)450N

b)200 N

c) 650 N

d) 250 N

 **(3 marks)**

**5)** A machine which works on Pascal's law is known as

 a)Vernier caliper

 b) Hydraulic press

 c) barometer

 d) gauge

 **(3 marks)**

**6)** Magnetic keepers are used to

 a)amplify magnetic flux

 b)restore lost magnetic flux

 c) demagnetize magnet

 d)provide a closed path for magnetic flux and hence help magnet to

 retain its magnetism

 **(3 marks)**

**7)** The region around an electric charge q in which it exerts a force

 on a test charge is called

 a) electric field

 b)electric force

 c) electric field intensity

 d)Coulomb's force

 **(3 marks)**

**8)** Which of the following is used to amplify electric current?

a) Inductor

 b) Resistor

 c) Transistor

 d) Ordinary diode

 **(3 marks)**

**9)**The density of water is 1 g/cm3 .The table below shows the densities

 of 4 different substances.

|  |  |
| --- | --- |
| **Substance**  | **Density/g cm-3** |
| Substance 1  | 2  |
| Substance 2 | 1.5  |
| Substance 3 | 5 |
| Substance 4 | 0.5 |

 Which of the following substances will float on water?

 a)Substance 1

 b)substance 2

 c)substance 3

 d)substance 4

 **(3 marks)**

**10)**A feather and an iron bar are dropped from the same height and at the

 same time in a vacuum room without any resistance.

 Which objct(s)will reach the floor first?

 a)both at the same time

 b)feather

 c)Iron bar

 d)they will not fall

 **(3 marks)**

**PART II: ATTEMPT ALL QUESTIONS (70 MARKS)**

**11)** a) What do you understand by the following terms used in electricity ?

 (i) Battery **(2 marks)**

 (ii) Voltmeter **(2 marks)**

 b) Three resistors of 3Ω, 2Ω and 5Ω are connected in series circuit to

 a 9V battery with negligible internal resistance .

 Find

 (i)the equivalent resistance of the electric circuit **(3 marks)**

(ii) the current in the circuit **(3 marks)**

c)(i)State any two effects of electricity **(2 marks)**

 (ii) A 2.4 kW kettle is used for 30 minutes.

 Determine the energy used by the kettle in joules **(3 marks)**

**12)** a) (i)What do you understand by the term reflection as applied to

 mirrors? **(1mark)**

 (ii)Differentiate between a concave mirror and a convex mirror.

 **(2 marks)**

 (iii) Give any one use of convex mirrors in daily life. **(2 marks)**

 b) (i)How do the following rays of light reflect on a concave mirror?

 1. Incident ray of light travelling parallel to the principal axis.

 **(2marks)**

 2. Incident ray of light passing through the focal point. **(2marks)**

 (ii) An object is placed between the infinity and the centre of curvature

 of a concave mirror .State any two properties of the image of this

 object. **(2 marks)**

 (c) A convex spherical mirror has a focal length of -10 cm.

 (i)Find the image position of the pencil placed at 30 cm from the

 mirror. **(2 marks)**

 (ii)Determine the magnification of the image **(2 marks)**

 (iii) Calculate image size if the object size is 3 cm **(2 marks)**

 (iv)State any three properties of the image **(3 marks)**

**13)** a)For each of the statements below, indicate true if it is correct and

 false if it is wrong.

 (i) The volume of a fixed mass of a gas is inversely proportional to the

 pressure when the temperature is kept constant. **(2 marks)**

 (ii) The volume of a fixed mass of a gas at a constant pressure is

 inversely proportional to the absolute temperature. **(2 marks)**

 (iii)The pressure of a fixed mass of a gas at a constant volume is

 directly proportional to the absolute temperature. **(2 marks)**

 (iv)Isobaric process is a thermodynamic process in which the

 the pressure of the system remains constant. **(2 marks)**

 (v)Isochoric process is a thermodynamic process in which the

 temperature of the system remains constant. **(2 marks)**

 b) At constant pressure and 27˚C, a sample of gas occupies 4.5 liters.

 (i)Convert 27 ˚C into kelvin **(2 marks)**

 (ii)At what temperature will the gas occupy 9.0 liters? **(3 marks)**

 **14)** a)List a measuring instrument of pressure **(2 marks)**

 b) The weight of a stone in air is 1 N. When it is completely

 submerged in water, its weight is 0.5 N.

 (i)What is the buoyant force acting on the stone when it is

 completely submerged in the water? **(2marks)**

(ii)What is the weight of water displaced by the stone? **(1mark)**

**15)** a)What is meant by the following terms as used in Physics ?

 (i) Energy **(1 mark)**

 (ii) Work **(1 mark)**

 (iii) Power **(1 mark)**

 b) A person pushes a 10 kg cart a distance of 20 m by exerting a 60 N

 constant horizontal force. The frictional force is 50 N

 (i) What is the effect of friction forceon object in motion? **(2 marks)**

 (ii) Find the acceleration of the cart **(2 marks)**

 (iii)How much work is done by each of the force below?

1)60 N horizontal force **(2 marks)**

2) 50 N Frictional force **(1mark)**

 c) A stone of 2 kg is dropped from a height of 10 m.

 Take acceleration due to gravity g=10 m/s2 and ignore air resistance

 (i)Determine the potential energy of the stone when it is at 10 m from

 the ground **(2marks)**

 (ii)Find the kinetic energy of the stone just before falling down.

 **(1mark)**

 (iii)Use the principle of conservation of mechanical energy to

 determine the kinetic energy of the stone when it hits the

 ground. **(2marks)**

**S2 MARKING GUIDE OF PHYSICS 2021 FOR BLIND LEARNERS**

**PART I(30 MARKS)**

**1)b)(3marks) 2)c)(3marks) 3)d) (3marks) 4) d) (3marks)**

 **the weight of the water displaced is equal to buoyant force**

**5)b) (3marks) 6)d) (3marks) 7)a) (3marks) 8)c)** **(3marks)** **9)d) (3marks) 10)a) (3marks)**

**PART II(70 MARKS)**

**11)**a)(i)Battery is a container consisting of two or more cells in which

 chemical energy is converted into electricity **(2 marks)**

or source of electric power

 (ii)Voltmeter is a measuring instrument used for measuring

 electrical potential difference between two points in an

 electric circuit**(2 marks)**

 b) (i)Resistors are in series then equivalent resistance

 R=2Ω+3Ω+5Ω **(2marks)** or R=R1+R2+R3

 =10Ω **(1mark)**

 (ii)The electric current **(2 marks)  (1mark)**

 c) (i) magnetic effect **(1mark)** chemical effect **(1mark)** heat effect

 (ii)1) Energy in Joules E=Pt **(1mark)**

=2.4x1000x30x60J **(1 mark)**

 =4 320 000 J**(1 mark)**

**12)** a) (i) Reflection is the bouncing back of light when it falls on a reflecting

 surface**(1mark)**like glass ,water or polished metal

 (ii)

|  |  |  |
| --- | --- | --- |
| Differentiating properties  | Concave mirror | Convex mirror  |
| Meaning  | It is converging mirrors **(1mark)** | It is diverging mirror **(1mark)** |
| Image properties  | It can produces image which is real or virtual, erect or inverted and magnified ,diminished or of the same size as that of the object, all depending on the position of the object  | It produces always erect, virtual image and smaller than the object  |
| Structure  | The mirror coating is on the outside of the spherical surface.The centre of curvature and the reflecting surface fall on the same side of the mirror  | The mirror coating is on the inside of the spherical surface.The centre of curvature and the reflecting surface fall on opposite side of the mirror |
| Position of the focus  | Focus lies in front of the mirror i.e. focal length is positive  | Focus lies in behind the mirror i.e. focal length is negative  |
| Image projection  | Images can be projected on a screen as they are real  | Images cannot be projected on a screen as they are virtual  |
| Usage  | They are used in reflecting telescopes ,shaving mirrors torchlights etc. as they give a magnified image of the objects  | They are used as side view or rearview mirrors in vehicles as they cover a wider area of view  |

(iii)Car driving mirrors (**2marks)** or passenger side mirror of car or side view

 mirror of car or rear-view mirrors in vehicles

 Security mirrors in shops and offices, sunglasses, and street

 light reflectors , etc.

 b) (i) 1.Incident ray of light travelling parallel to the principal axis

 on the way to the concave mirror will pass through the focal point

 upon reflection **(2marks)**

2. Incident ray of light passing through the focal point on the way to

 the concave mirror will travel parallel to the principal axis upon

 reflection.**(2marks)**

 (ii) Real **(1mark),** inverted **(1mark)**, diminished and located

 between C(centre of curvature) and F(focal point)

c) (i) Image position  **(1mark)**

  Note that f=-10 cm(convex mirror

 P’=-7. 5cm **(1 mark)**

 (ii) Magnification

  **(1mark)**

=7.5/30=0.25 **(1mark) or **

(iii)Image size **(1mark)**

 **(1mark)**

 (iv)Virtual image **(1mark)** because p’ is negative, erect/upright **(1mark)**

because m is positive , smaller than the object **(1mark)** m is smaller

 than1,placed between the pole of the convex mirror and focal point

**13)**a)(i)True **(2 marks)**

(ii)False **(2marks)**

(iii)True **(2marks)**

 (iv)True **(2marks)**

 (v)False **(2marks)**

 b)(i) 27˚C=(27+273)K**(1mark)**

 =300K **(1mark)** don’t accept ˚K

 (ii)**( 1 mark)** **(1mark) (1mark)**

**14)**a)Manometer **(2marks)** ,barometer

 b)(i)The buoyant force Fb = 1N-0.5N**(1mark)**

=0.5N **(1mark)**

 (ii)Weight of displaced water W=0.5N **(1mark)** Archimedesprinciple

 states that the buoyant force is the weight of the fluid displaced

**15)**a)(i)Energy is the capacity/ability to do work**(1mark)**

 (ii)Work is the measure of energy transfer that occurs when an object

 is moved over a distance by an external force at least part of which

 is applied in the direction of the direction **(1mark)**

 (iii)Power is the rate of doing work or transferring heat **(1mark)** or

 the amount of energy transferred or converted per unit time

 b) (i)Net force F=60 N-50N=10N **(2marks)**

 (ii)The acceleration of the cart **(1mark)**

 **(1mark)**

(iii)1)Work done by 60 N

 W=Fd **(1mark)**

 =60 x20 J=1200 J**(1mark)**

2) Work done by 50 N friction force (it is negative)

 W=-50x20 J=-1000 J **(1mark)**

 c)(i)Potential energy Ep=mgh**(1mark)**

=2kgx10mx10m/s2 =200 J **(1 mark)**

 (ii) Note that before falling freely, the stone hasn’t kinetic energy

 Ek=0 J **(1mark)** the speed is zero

 (ii)Air friction is negligible then the mechanical energy is conserved

 E=Ep+ Ek **(1mark)**

 At ground level Ep=0, thus 200 J=0+Ek

 Ek=200 J (Kinetic energy at ground level)**(1mark)**

**S2 ALTERNATIVE TO PHYSICS PRACTICAL EXAM 2021**

**MARKING SCHEME (25 MARKS)**

1. Graph

 Uniform scale 2 x 1mark=**2 marks**

 Labelled axes with arrows 2x1 mark=**2 marks**

 Plotted points 6x1mark=**6 marks**

 Best fit straight line **2 marks**

 

 b)(i)Slope ( don’t accept the table values)

 **(1mark)** **(2marks)**

 (ii)Speed **(3 marks)** or velocity

 (iii) d=0m **(1mark)** t=0 s **(1mark)**

 (iv)The motion is rectilinear motion **(2marks)** with constant velocity **(1mark)**

 or uniform rectilinear motion

 (v)All points are not aligned **(2 marks)**so the experiment was subjected to

 random error.



**PHYSICS**

**23/06/2021**

**8:30 am – 11:30 am**

**SENIOR TWO END OF YEAR EXAMINATIONS, 2021**

**SUBJECT: ALTERNATIVE TO PHYSICS PRACTICAL EXAM**

|  |
| --- |
|  **/100** **Marks:** |

**DURATION: 1HOUR 30 MINUTES**

**INSTRUCTIONS:**

1. Do not open this question paper until you are told to do so.
2. Answer all questions: **100 marks**

 3) Use only a **blue** or **black** pen and pencil.

**ATTEMPT ALL QUESTIONS /25 MARKS**

In experiment to determine the change in position of an object with time, the following results were obtained.

 The object is moving on frictionless surface

|  |  |
| --- | --- |
| Time t/s  | Distance d/m  |
| 5 | 6 |
| 15 | 21 |
| 25 | 30 |
| 30 | 36 |
| 35 | 39 |
| 40 | 48 |

 a) On a graph paper, plot a graph of travelled distance d (along vertical axis) against time t(horizontal axis). Draw a best fit straight line **(12 marks)**

 b) Use your graph to answer the sub questions below

 (i)find the slope/gradient S of the graph **(3 marks)**

(ii)What physical quantity does the obtained slope S represent? **(3 marks)**

 (iii)Determine intercepts of the graph with axes **(2 marks)**

 (iv)Explain the type of motion shown on your graph. **(3 marks)**

 (v) Show that the experiment was subjected to errors. **(2 marks)**

 

**PHYSICS**

**23/06/2021**

**8:30 am – 11:30 am**

**SENIOR TWO END OF YEAR EXAMINATIONS, 2021**

**SUBJECT: ALTERNATIVE TO PHYSICS PRACTICAL EXAM**

|  |
| --- |
|  **/100** **Marks:** |

**DURATION: 1HOUR 30 MINUTES**

**INSTRUCTIONS:**

1. Do not open this question paper until you are told to do so.
2. Answer all questions: **100 marks**

 3) Use only a **blue** or **black** pen and pencil.

**ATTEMPT ALL QUESTIONS /25 MARKS**

In experiment to determine the change in position of an object with time, the following results were obtained.

 The object is moving on frictionless surface

|  |  |
| --- | --- |
| Time t/s  | Distance d/m  |
| 5 | 6 |
| 15 | 21 |
| 25 | 30 |
| 30 | 36 |
| 35 | 39 |
| 40 | 48 |

 a) On a graph paper, plot a graph of travelled distance d (along vertical axis)against time t (horizontal axis). Draw a best fit straight line **(12 marks)**

 b) Use your graph to answer the sub questions below

 (i)find the slope/gradient S of the graph **(3 marks)**

(ii)What physical quantity does the obtained slope S represent? **(3 marks)**

 (iii)Determine intercepts of the graph with axes **(2 marks)**

 (iv)Explain the type of motion shown on your graph. **(3 marks)**

 (v) Show that the experiment was subjected to errors. **(2 marks)**