## SS2 PHYSICS HOME WORK

| TOPICS | CONTENTS | OBJECTIVES |
| :---: | :---: | :---: |
| SCALARS AND VECTORS | -concept of vectors <br> -concept of scalars <br> -vector representation <br> -addition of vectors <br> -resolution of vectors, components -resultant of more than two vectors | At the end of the lesson, the students should be able to <br> -explain the concept of vectors <br> -explain the concept of scalar <br> -explain addition of vectors <br> -explain the resolution of vectors and its components |
| MOTION | -speed velocity and acceleration -equations of uniformly accelerated motion -motion under gravity | At the end of the lesson, the students should be able to -differentiate between the speed and acceleration <br> -define instantaneous speed and velocity <br> -explain distance from velocity-time graph <br> -explain other types of velocity-time graph <br> -explain motion under gravity |

## REVISON QUESTIONS FOR SCALARS AND VECTORS

1. Which of the following is not a vector quantity
A. Speed
B. velocity
C. force
D. acceleration
2. Which of the following is not a scalar quantity
A. weight
B. density
C. mass
D. speed
3. A body of mass 20 kg is set in motion by two forces 3 N and 4 N acting at right angles to each other. Determine the magnitude of its acceleration
A. $0.15 \mathrm{~m} / \mathrm{s}^{2}$
B. $2.25 \mathrm{~m} / \mathrm{s}^{2}$
C. $1.15 \mathrm{~m} / \mathrm{s}^{2}$
D. $0.25 \mathrm{~m} / \mathrm{s}^{2}$
4. A man walks 8 km North and then 5 km in a direction $60^{\circ}$ East of North. Find the distance from its starting point
A. 11.36 km
B. 12.36 km
C. 13.00 km
D. 14.36 km
5. What is the magnitude of the resultant of the resultant of two forces 20 N and 15 N inclined at $90^{\circ}$ to each other?
A. 15 N
B. 25 N
C. 40 N
D. 10 N
6. The resultant of two forces $X$ and $Y$ will be greatest when the angle between $X$ and $Y$ is
A. $0^{0}$
B. $90^{\circ}$
C. $45^{\circ}$
D. $180^{\circ}$
7. A boat travels due East at a speed of $40 \mathrm{~m} / \mathrm{s}$ across a river flowing due south at $30 \mathrm{~m} / \mathrm{s}$. What is the resultant speed of the boat.
A. $1.3 \mathrm{~m} / \mathrm{s}$
B. $10.0 \mathrm{~m} / \mathrm{s}$
C. $50.0 \mathrm{~m} / \mathrm{s}$
D. $70.0 \mathrm{~m} / \mathrm{s}$
8. Two forces 6 N and 8 N act eastwards and northwards respectively on a body. Calculate the magnitude of their equilibrant.
A. 1 N
B. 0.1 N
C. 10 N
D.100N
9. Two forces of magnitude 8 N and 4 N act at right angle to each other. What is the angle between the resultant and the $8 N$ force?
A. $12.6^{0}$
B. $266^{\circ}$
C. $26.6^{0}$
D. $0.126^{\circ}$
10. The resultant of two forces 12 N and 5 N is 13 N . What is the angle between the two forces?
A. $0^{0}$
B. $45^{\circ}$
C. $90^{\circ}$
D. $180^{\circ}$

ESSAY
1(a) Differentiate between scalar quantities and vector quantities and give five examples each
(b) Briefly explain the resultant of more than two vectors with examples
(c) Two forces 3 N and 4 N act on a body in directions due North and due East respectively. Calculate their equilibrant.

2(a) State the principle of the parallelogram of forces. Describe an experiment to demonstrate it in the laboratory
(b) What is meant by the component of a vector? Illustrate with a diagram
(c) A man walks 1 km due East and then 1 km due North. What is his displacement.

## REVISON QUESTIONS FOR MOTION

1. A particle starts from rest and moves with a constant velocity of $0.5 \mathrm{~m} / \mathrm{s} 2$. The distance covered by the particles are
A. 2.5 m
B. 5.0 m
C. 25.0 m
D. 50.0 m
2. A body starts from rest and accelerates uniformly at $5 \mathrm{~m} / \mathrm{s} 2$. Calculate the time taken by the body to cover a distance of 1 km
A. 10 s
B. 20 s
C. 30 s
D. 5 s
3. A body accelerates uniformly from rest at $2 \mathrm{~m} / \mathrm{s} 2$. Calculate its velocity after travelling 9 m .
A. $6 \mathrm{~m} / \mathrm{s}$
B. $8 \mathrm{~m} / \mathrm{s}$
C. $9 \mathrm{~m} / \mathrm{s}$
D. $5 \mathrm{~m} / \mathrm{s}$
4. A boy moving with a velocity of $3 \mathrm{~m} / \mathrm{s}$ is brought to rest by a constant force after travelling 15 m . Calculate the retardation.
A. $0.5 \mathrm{~m} / \mathrm{s}^{2}$
B. $0.3 \mathrm{~m} / \mathrm{s}^{2}$
C. $0.6 \mathrm{~m} / \mathrm{s}^{2}$
D. $3 \mathrm{~m} / \mathrm{s}^{2}$
5. The rate of change of displacement with time is called
A. acceleration
B. speed
C. velocity
D. retardation
6. A motor vehicle is brought to rest from a speed of $15 \mathrm{~m} / \mathrm{s}$ in 20 seconds. Calculate the retardation
A. $0.75 \mathrm{~m} / \mathrm{s}^{2}$
B. $1.33 \mathrm{~m} / \mathrm{s}^{2}$
C. $5.00 \mathrm{~m} / \mathrm{s}^{2}$
D. $7.50 \mathrm{~m} / \mathrm{s}^{2}$
7. Increase in velocity with time is called
A. retardation
B. acceleration
C. instantaneous velocity
D. Speed
8. In motion under gravity, at maximum height, the final velocity is
A.one
B. two
C. zero
D. infinite
9. A moving body accelerates when it
A. changes its direction at constant speed
B. maintains a constant linear speed
C. covers equal distances in equal times in a straight-line
D. is acted upon by balanced force
10. the slope of a linear distance-time graph represent
A. acceleration
B. displacement
C. speed
D. velocity

ESSAY
1(a) write down the equation of motion for a body falling freely under gravity.
(b) Show how from the velocity-time graph for a body:
(i) the acceleration at any instant
(ii) the average velocity, can be calculated

2(a). A particle moving in a straight line with uniform deceleration has a velocity of $40 \mathrm{~m} / \mathrm{s}$ at a point $P, 20 \mathrm{~m} / \mathrm{s}$ at a point $Q$ and comes to rest at a point $R$ where $Q R=50 \mathrm{~m}$. Calculate the:
(i) distance PQ
(ii) time taken to cover PQ
(iii) time taken to cover PR
(b) Explain the terms uniform acceleration, uniform velocity and instantaneous velocity.

PHYSICS TEACHERS' CONTACTS FOR ASSISTANCE

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NOTE
-Students should feel free to interact with the above physics teacher for assistance through phone calls or WhatsApp or Email.
-Students should answer questions in their test and assignment exercise book.
-please submit to your teachers email address. Handwritten solution to essay questions can be photographed and uploaded.

