**LEARNINGFIELD SECONDARY SCHOOL**

**CLOSE 30, SATELLITE TOWN, LAGOS**

**1ST TERM EXAMINATION 2012**

**SUBJECT: PHYSICS CLASS: SS2 TIME: 2½ HRS**

1. An example of scalar quantity is

(a) Velocity (b) weight (c) electric charge (d) gravity

2. Which of the following physical quantities is not a vector

(a) Velocity (b) work (c) force (d) electric field intensity

3. A stream is flowing at 0.75mls and a boat heading perpendicular for the stream landed at the opposite bank at an angle 300c. Calculate the velocity of the boat?

(a) 1.50m/s (b)1m/s (c)0.86m/s (d)0.65m/s

4. Two forces 3N and 4N act on a body in directions due north and due east respectively. Calculate their equilibrant (a) 5N (b) 6N (c)7N (d) 8N

5. Find the direction of the equilibrant in question4 above

(a ) 530 east of north (b) 530 west of south (c) 370 north of east (d) 370 west of north

6. Two forces whose resultant is 100N are at right angles to each other. If one of them makes an angle of 300 with the resultant, determine its magnitude.

(a)8.66N (b) 50N (c) 57.7N (d) 86.6N

7. A small trolley is set in motion on a horizontal surface by a force of 250N applied by means of a rope inclined at an angle of 20o to the horizontal. What horizontal force maybe used instead

(a) 235N (b) 325N (c) 120N (d) 125N

8. A body which is uniformly retarded comes to rest in 10s after travelling a distance of 200m. Calculate its initial velocity (a)0.5m/s (b) 2m/s (c) 4m/s (d) 20m/s

9. A mango fruit drops to the ground from the top of its tree which is 5m high. How long does it take to reach the ground? (a) 1s (b) 2s (c) 3s (d) 5s

10. Calculate the height from to which a body is released from the rest if its velocity just before hitting the ground is 30m/s. Take g = 10m/s2  (a)35m (b) 40m (c)45m (d)54m

At tennis ball is projected horizontally from the top of a vertical cliff 50m high with a velocity of 10m/s. Using this information to answer to answer question 11-12

11. Calculate the time taken to reach the ground (a) 316sec (b) 31.6sec (c) 3.16sec (d) 0.316sec

12. Find the distance from the foot of the cliff where the ball hits the ground (a)316m (b)31.6 (c)3.16m (d) 0.316m

13. A ball is projected horizontally from the top of a hill with a velocity of 30m/s. If tit reaches the ground 5secs later, the height of the hill is (a) 200m (b) 125m (c) 250m (d) 100m

14. A stone is projected at an angle of 600 and an initial velocity of 20m/s. Determine the time of flight

(a) 34.6s (b) 3.46s (c) 1.73s (d) 17.3s

15. For a projectile the maximum range is obtained when the angle of projection is

(a) 600 (b)300 (c) 450 (d) 900

16. The range of a projectile projected atθ0 to the horizontal with a velocity U is given by

(a) U²Sin ϴ/g (b) U²Sin²ϴ/g (c) U²Cos²ϴ/g (d) U²Sin2ϴ/g

17. An object is projected with a velocity 80m/s at an angle of 300 to the horizontal. The maximum height reached is (a) 20m (b) 80m (c) 160m (d) 320m

18. The term torque means

(a) the moment of a couple about an axis (b) the resultant of several forces acting on a body in equilibrium (c0 two equal and opposite forces whose lines of action do not coincide (d) two coplanar forces at right angles to each other.

19. Which of the following types of motion is produced by a couple?

(a) oscillatory (b)rotational (c) random (d0 translational

20. Two masses 40g and 60g respectively are attached firmly to the ends of a light meter rule. The center of gravity of the system is

(a) at the mid point of the metre rule(b)40cm from the lighter mass (c) 40cm from the heavier mass (d) 60cm from the heavier mass

21. Weight of 0.2N and 0.5N are placed at the 30cm and 80cm mark respectively on a uniform meter rule. If the meter rule balances horizontally on a knife edge at the 60cm mark, the weight of the meter is

(a )0.1N (b)0.3N (c0 0.4N (d) 0.7N

22. A uniform meter rod of mass 1.5kg is pivoted at one end. A weight of 7N is placed at the centre of the rod. The vertical force which should be applied at the other end to maintain the rod in equilibrium in the horizontal position is

(a) 22N (b) 11N (c) 10.5N (d) 8.5N

23. The force required to just make a 6kg object move along a horizontal surface where the coefficient of friction is 0.25 is

(a) 150N (b) 24N (c) 15N (d)1.5N

24. Which one of the following is not a type of equilibrium?

(a) Stable equilibrium (b) unstable equilibrium (c) neutral equilibrium (d) balanced equilibrium

25. Which instrument is used to measure the relative density of a liquid?

(a) Hydrometer (b) hygrometer (c) millimeter (d) galvanometer

26. If the pulley system has three pulleys in the fixed block and two in the movable block. Its velocity ratio is? (a) 5 (b) 4 (c) 3 (d) 2

27. A spring o natural length 20cm extends to 24cm when it supports a weight of 50N. Tenergy stored in the spring is (a) 10J (b) 5J (c) 2J (d) 1J

28. The following are examples of simple harmonic motion except

(a) Motion of a pendulum (b) the motion of a loaded test tube (c) the prongs of a sounding tuning fork (d) the motion of a child

29. A ball of mass 0.5kg moving at 10m/s collides with another ball of equal mass at rest. If the two balls move off together after the impact, calculate their common velocity

(a) 0.2m/s (b) 0.5m/s (c) 5.0m/s (d)10m/s

30. Which of the following is not a vector quantity? (a)momentum (b) force (c) velocity (d) temperature

31. A boy pulls a nail from the wall with a string tied to the nail. The string is inclined at an angle of 600 to the wall. If the tension in the string is 4N, what is the effective force used in pulling the nail?

(a)2N (b) 2√3 (c) 4N (d)4√4

32. The motion of the prongs of a sounding tuning fork is (a) random (b) translational (c) rotational (d) vibratory

33. The property of a body to remain at rest, or to continue to move in a straight line is known as

(a) force (b) impulse (c) inertia (d) momentum

34. In an elastic collusion (i) energy is conserved 9ii) energy is decreased (iii) energy is increased (iv) linear momentum is conserved

(a) I only (b) ii only (c) iii only (d) ii and iv only

35. A body of mass 10kg, moving with velocity of 10m/s, hit a stationary body and had direction reversed and velocity changed to 7.5m/s in 5secs. Calculate the force of impact

(a) 3.5N (b) 35N (c) 175N (d)875N

36. Calculate the period of oscillation of a body that makes 50 complete cyclesin 1second.

(a) 50s (b) 5s (c) 2s (d) 0.02s

37. The path of the motion of a body undergoing simple harmonic motion is

(a) linear or curved(b) sinusoidal (c) elliptical (d)hyperbola

38. A body executing a simple harmonic motion has an angular velocity of 44rad/s, if it has a maximum displacement of 5cm, what is its linear velocity

(a) 220m/s 9b0 2.20m/s (c0 44m/s (d) 22m/s

39. A 4m uniform board AB is placed on a fulcrum half a meter from A. The board balances horizontally when a bodyweighing 400N sits at A. Calculate then weight of the board.

(a) 10N (b) 100N (c) 110N (d) 133N

40. A uniform beam PQ of length 4m and weight 10N is supported at P and Q. It carries a load of 4N at a point 1m from P. What is the reaction of Q

(a) 4N (b) 6N (c) 7N (d) 10N

THEORY

Answer any three questions

1a. Using a suitable diagram, explain how the following can be obtained from a velocity time graph

(i) acceleration (b) deceleration (iii) total distance covered.

b. A body at rest is given an initial uniform acceleration of 6m/s² for 20secs after which the acceleration is reduced to 4m/s2 for the next 10secs. The body maintains the speed attained for 30secs. Draw the velocity-time graph of the motion using the information given above. From the graph, calculate

i. maximum speed attained during the motion

ii. the total distance travelled during the first 30secs.

2a. A stone was propelled from a catapault with a speed of 100m/s at 600 to the horizontal. Calculate

i. the time of flight

ii. the maximum height attained

iii. the range.

3a. Two forces of 5N and 12N are acting at a point with an angle of 30° between them,the 12N force lies on the horizontal. Find the resultant force of the two forces.

b. Sketch a diagram of a simple pendulum performing simple harmonic motion and indicate positions of maximum potential energy and kinetic energy

4a. State the law of conservation of linear momemtum (ii) differentiate between elastic and non –elastic collision, equation necessary.

b. A ball of mass 0.5kg moving at 10m/s collides with another ball of equal mass at rest. If two balls move off together after the impact, calculate their common velocity.