

MARTHOMA RESIDENTIAL SCHOOL, TIRUVALLA
SECOND TERM INEL EXAMINATION 2017-2018

CLASS IX

PHYSICS

TIME: 2 Hrs

MARKS: 80

SECTION - A (40 MARKS)

QUESTION-1

- a. i. Name two non contact force
- ii. Give the general characters of non- contact forces (2)
- b. A spring is compressed against a rigid wall .Draw a labeled diagram to show the forces acting on the spring (2)
- c. i. What is meant by the term inertia?
- ii. Give two examples exhibiting inertia(inertia of rest) in our daily life (2)
- d. i. State Newton's second law of motion
- ii. Write the mathematical form of Newton's second law of motion (2)
- e. A cricket ball of mass 100gm moving with a speed of 30 m/s is brought to rest by a player in 0.03 s. Find
 - i. the change in momentum of ball
 - ii. the average force applied by the player (2)

QUESTION-2

- a. i. Define gravitational constant 'G'
- II. Write the numerical value of gravitational constant G with its SI unit (2)
- b. i. What do you mean by the term free fall?
- ii. During a free fall, what will be the weight of a body? Justify your answer (2)
- c. Give the importance of Newton's Universal law of gravitation (2)
- d. i. Write an expression for the force due to gravity on a body of mass 'm'
- ii. With what force will a body of mass 1 kg get attracted to the earth (2)
- e. How long will be a stone take to fall on ground from the top of a building 80m high

and what will be the velocity of the stone on reaching the ground (2)

QUESTION -3

- a. i. Name a device that helps to maintain a potential difference across the conductor
ii. What is meant by saying that the potential difference between two points is 1vol. (2)
- b. State the function of the following components in an electric circuit
i. Rheostat ii. Galvanometer (2)
- c. How is the resistance of a wire affected if:
i. length of the wire is doubled
ii. radius of the wire is halved (2)
- d. What amount of work is needed in moving $2c$ charge through a potential difference of $8V$ (2)
- e. An ammeter must have a very low resistance and a voltmeter have a very high resistance.
Explain the reason (2)

QUESTION-4

- a. i. State factors on which direction of turning force depends
ii. When is the direction of turning force taken as positive and negative? (2)
- b. State and define the type of equilibrium in the following cases
i. A rain drop reaches the earth
ii. A book lying on a table (2)
- c. It is easier to turn the steering wheel of a large diameter than that of a small diameter.
Give reason (2)
- d. Give ^{with} SI unit and CGS unit of moment of force (2)
- e. A uniform metre rule rests horizontally on a knife edge at the 60cm mark, when a mass of 10gm is suspended from one end
i. At which end must 10g mass be suspended
ii. What is the mass of the rule? (2)

SECTION- B(40 MARKS)

QUESTION -5

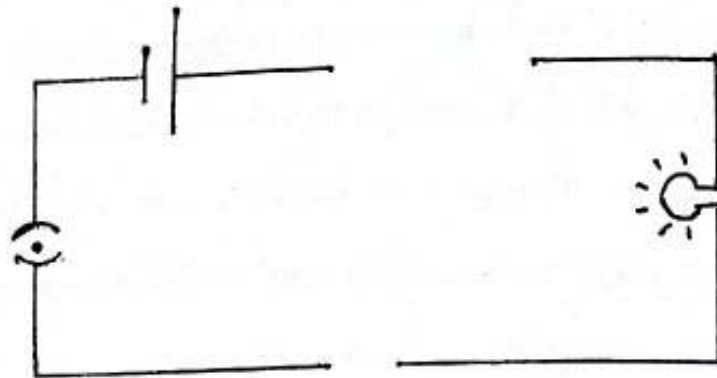
- a. Name the action and reaction in the following cases
- (i). A moving rocket (ii). Firing a bullet from a gun (iii). Catching a ball (3)
- b. A ball is moving on a perfectly smooth horizontal surface.
- i. Explain the state of the ball on the basis of Newton's first law of motion
- ii. Give qualitative definition of force on the basis of Newton's first law (3)
- c. A bullet of mass 50g moving with an initial velocity 100 m/s, strikes a wooden block and comes to rest after penetrating a distance 2 cm in it. Calculate:
- i. Initial momentum of the bullet
- ii. Final momentum of bullet
- iii. Retardation caused by the wooden block
- iv. Resistive force exerted by the wooden block (4)

QUESTION-6

- a. i. Does the acceleration of a freely falling body depend on the mass of the body
- ii. Write down the average value of 'g' on earth's surface
- iii. How are 'G' and 'g' related (3)
- b. A body is thrown vertically upwards with an initial velocity 'u' to a height 'h'.
- Write expression for;
- i. Maximum height attained by the body
- ii. Total time of journey
- iii. Total distance travelled by the body (3)
- c. A pebble is dropped freely in a well from its top. It takes 20 s for the pebble to reach the water surface in the well ($g = 10 \text{ m/s}^2$, speed of sound = 330 m/s). Find:
- i. The depth of water surface
- ii. The time when echo is heard after the pebble is dropped (4)

QUESTION-7

- a. Name and state the law which explains the relation of potential difference, current and resistance in an electric circuit (3)
- b. i. Does a metal wire when connected to a cell offer resistance to the flow of current
 ii. Justify your answer (3)
- c. Complete the circuit given below by inserting ammeter, voltmeter and rheostat



- ii. Mark the polarity of each component and show the direction of current (4)

QUESTION-8

- a. i. What do you understand by the term couple
 ii. State its effect and give two examples of couple action in our daily life (3)
- b. Differentiate between translational motion and rotational motion with one example each (2 points) (3)
- c. Two forces each of magnitude 5N acting at the points A and B at a separation of 100 cm. in opposite direction. Calculate the resultant moment of two forces about the point
 i. A ii. B iii. O (4)

