

MAR THOMA RESIDENTIAL SCHOOL, TIRUVALLA  
FIRST TERMINAL EXAMINATION, AUGUST 2019

Class: IX

PHYSICS

Maximum Marks: 80  
Time: 2 hours

PART- A (40 Marks)  
(Answer all questions)

Question 1

- a) Define: (i) fundamental unit (ii) atomic mass unit
- b) Complete the following:
- (i)  $1\text{\AA} = \underline{\hspace{2cm}} \text{ m}$  (2)
- (ii)  $1 \text{ micron} = \underline{\hspace{2cm}} \text{ m}$  (2)
- (iii)  $1 \text{ nano second} = \underline{\hspace{2cm}} \text{ s}$
- (iv)  $1 \text{ quintal} = \underline{\hspace{2cm}} \text{ kg}$
- c) (i) What is meant by the term least count of an instrument? (2)
- (ii) What is backlash error? (2)
- d) (i) Define pitch of a screw (2)
- (ii) Write any one use of a screw gauge (2)
- e) (i) What is seconds' pendulum? (2)
- (ii) What is the frequency of a seconds' pendulum? (2)

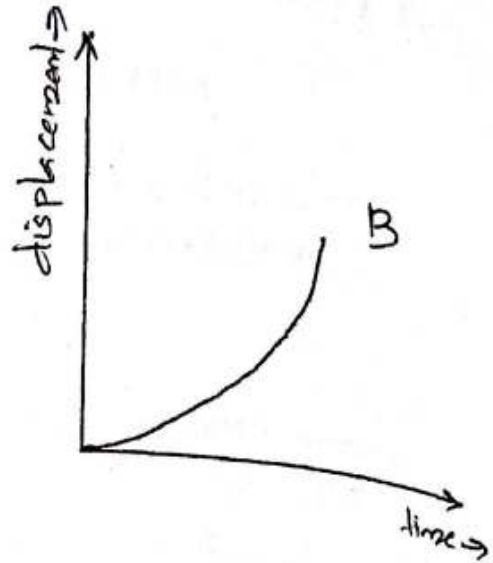
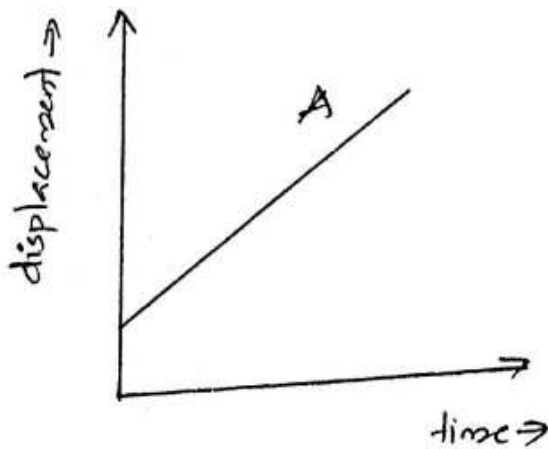
Question 2

- a) Differentiate between vector quantities and scalar quantities (2)
- b) (i) Define instantaneous speed (2)
- (ii) Name the device used to measure instantaneous speed
- c) (i) Define the term acceleration due to gravity (2)
- (ii) State its average value
- d) Express each of the following in m/s (i)  $1\text{ km/hr}$  (ii)  $18\text{ km/min}$  (2)
- e) Distinguish between average speed and average velocity (2)

Question 3

- a) What can you say about the nature of motion of a body if its displacement-time graph is
- (i) A straight line parallel to time axis (2)
- (ii) A curve

b) What information do you get about acceleration from the given displacement-time graphs of bodies A and B



- c) (i) Define the term inertia  
(ii) Name a factor on which inertia of a body depends
- d) (i) State Newton's second law of motion  
(ii) Under what condition does it take the form  $F=ma$ ?
- f) A force of 10N acts on a body of mass 2kg for 3s, initially at rest. Calculate  
(i) calculate the velocity acquired by the body  
(ii) change in momentum of the body

#### Question 4

- a) (i) State the law of action and reaction  
(ii) Give the action and reaction in the case of the motion of rocket
- b) (i) Define induced magnetism  
(ii) 'Induction precedes attraction' - Comment on the statement
- c) (i) What is an electromagnet?  
(ii) Name a device that uses an electromagnet
- d) State 2 ways through which the strength of an electromagnet can be increased
- e) State any two evidences of the existence of earth's magnetic field

**PART-B (Answer any 4)**

**Question 5**

- a) State three uses of vernier callipers
- b) (i) What are the factors affecting the time period of a simple pendulum (3)  
(ii) Write an expression for time period based on the above factors  
(iii) Compare the time periods of two simple pendulums of length 1m and 16m at a place
- c) A second's pendulum is taken to a place where acceleration due to gravity falls to one-fourth. (4)  
(i) How is the time period of the pendulum is affected, if at all.  
(ii) What will be its new time period?  
(iii) What will be the time period if the effective length of the pendulum is doubled (3)

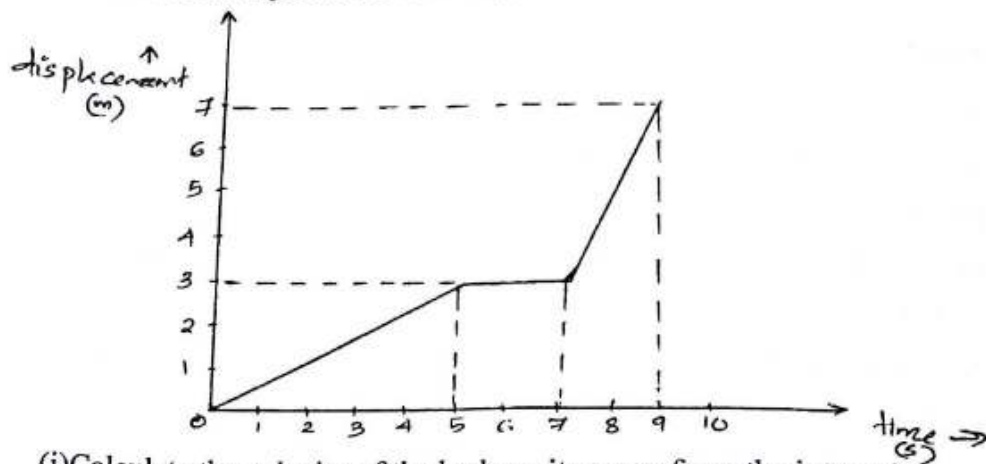
**Question 6**

- a) Differentiate between distance and displacement (4)
- b) A travels first 30km with a uniform speed of 60km/h and then next 30km with a uniform speed of 40km/h. Calculate (2)  
(i) the total time of the journey (ii) average speed of the car
- c) (i) Define retardation and state its SI unit  
(ii) State and define the standard unit of force (4)

**Question 7**

- a) (i) What does the slope of a displacement-time graph represent? (3)  
(ii) Can displacement-time sketch be parallel to the displacement axis? Give reason  
(iii) What will be the displacement-time graph of a body moving with uniform velocity

b) Figure shows the displacement of a body at different times



(i) Calculate the velocity of the body as it moves from the interval

(a) 0 to 5s (b) 5s to 7s (c) 7s to 9s

(ii) Calculate the average velocity during the time interval 5s to 9s

c) Give any three differences between speed and velocity

### Question 8

- Draw a labelled diagram to make an electromagnet from a soft iron bar AB. Mark the polarity at its ends.
- State the differences between electromagnet and permanent magnet
- List any 3 uses of electromagnet

### Question 9

- What do you understand by the term magnetic field lines?
  - Can two magnetic field lines intersect each other? Give reason.
- Differentiate between magnetic poles and magnetic equator.
  - Draw the magnetic field lines for a bar magnet
- State the universal law of gravitation
  - How is the acceleration due to gravity on the surface of the earth related to its mass and radius?
  - How are  $g$  and  $G$  related?

### Question 10

- Name the MKS and CGS gravitational units of force
  - How are they related?
- State Newton's first law of motion
  - It is advantageous to run before taking a long jump. Explain
  - Define electrostatic force
- Define vernier constant
  - Name and define any two non metric units of length