

MONTHLY TEST - 2019

PART - I

Total Marks :- 50 m

TIME : 1 hr 30 min

STD :- XI

SUB :- PHYSICS

10 X 1 = 10 m

Choose the correct answer:-

- 1) If " $\pi = 3.14$ ", then the value of " π^2 " is
- a) 9.8596 b) 9.860
c) 9.86 d) 9.9

- 2) The dimensional formula for Torque (τ) is
- a) $[M L^3 T^{-2}]$ b) $[M^{-1} L^3 T^{-2}]$
c) $[M^{-1} L^{-3} T^{-2}]$ d) $[M L^2 T^{-2}]$

- 3) An object is dropped in an unknown planet from height 50 m. It reaches the ground in 2s. The acceleration due to gravity in this unknown planet is
- a) $g = 20 \text{ ms}^{-2}$ b) $g = 25 \text{ ms}^{-2}$
c) $g = 15 \text{ ms}^{-2}$ d) $g = 30 \text{ ms}^{-2}$

- 4) Given the vector " $\vec{A} = 2\hat{i} + 3\hat{j}$ ", what is $3\vec{A}$?
- a) $6\hat{i} + 9\hat{j}$ b) $6\hat{i} - 9\hat{j}$
c) $9\hat{i} + 12\hat{j}$ d) $3\hat{j} + 2\hat{j} + 6\hat{k}$

Fill In The Blanks

- 5) The "triple point" temperature of water is ----- ?
- 6) The "uncertainty" in a measurement is called ----- ?
- 7) An athlete running on a "straight" track in ----- motion ?
- 8) "Average acceleration" is a ----- quantity ?

match the following

- a) "gravitational" constant - $[L^2]$
- b) "planck's" constant - $[T^{-1}]$
- c) "frequency" - $[ML^2T^{-2}]$
- d) "work" - $[ML^2T^{-1}]$
- e) "area" - $[M^{-1}L^3T^{-2}]$

10) match the following

- a) one dimension - "norm"
- b) two dimension - swing
- c) Three dimension - train
- d) Vibratory motion - carrom board
- e) Magnitude of a vector - Gas molecule.

PART - II

$$4 \times 2 = 8$$

Answer any four Questions
(Q. NO (14) compulsory) :-

- 11) Briefly explain the types of physical quantities
- 12) state the number of significant figures in the following
 - a) 0.007 m^2
 - b) $2.64 \times 10^{24} \text{ kg}$
 - c) 0.0006032 m^2
 - d) 6.3200 J
 - e) 0.0000153 km

- 13) what do you mean by "percentage error"?
- 14) convert the vector " $\vec{r} = 3\hat{i} + 2\hat{j}$ " into a unit vector
- 15) write down the "kinematic equations for angular motion"
- 16) define a "vector." give examples
- 17) check whether the following vectors are "orthogonal"
- i) $\vec{A} = 2\hat{i} + 3\hat{j}$ and $\vec{B} = 4\hat{i} - 5\hat{j}$
- ii) $\vec{C} = 5\hat{i} + 2\hat{j}$ and $\vec{D} = 2\hat{i} - 5\hat{j}$

PART - III

$4 \times 3 = 12m$

Answer any four Questions
(Q. NO (24) compulsory): -

- 18) Two resistance $R_1 = (100 \pm 3)\Omega$,
 $R_2 = (150 \pm 2)\Omega$ are connected
in "series." what is their
equivalent resistance?

- 19) A physical quantity x is given by

$$x = \frac{a^2 b^3}{c \sqrt{d}}$$
 If the percentage errors of measurement in a , b , c and d are 4%, 2%, 3% and 1% respectively. Then calculate the "percentage error" in the calculation of x .
- 20) What are its "uses" of dimension analysis.
- 21) What is "Relative velocity".
- 22) An athlete covers 3 rounds on a circular track of radius 50m. Calculate the total "distance" and "displacement" travelled by him.
- 23) Discuss the "properties" of "scalar".
- 24) Calculate the "area" of the "triangle" for which two of its sides are given by the vectors $\vec{A} = 5\hat{i} - 3\hat{j}$, $\vec{B} = 4\hat{i} + 6\hat{j}$.

PART - IV

4X5 = 20 M.

Answer all the questions

- 25) a) Explain the propagation of errors in "addition", "difference", and "multiplication"

(or)

- b) If the value of "universal gravitational constant" in SI is $6.6 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$, then find its value in cgs system?

- 26) a) obtain an expression for the time period T of a simple pendulum. The time period T depends on (i) mass " m " of the bob (ii) Length " L " of the pendulum and (iii) acceleration due to gravity (g) at the place where the pendulum is suspended, (constant $K=2\pi$)

(or)

- b) one of the combinations from the fundamental physical constant is " $\frac{hc}{\lambda}$ ". The unit of this expression,

97) a)

Derive the "kinematic" equations of motion for "constant acceleration"

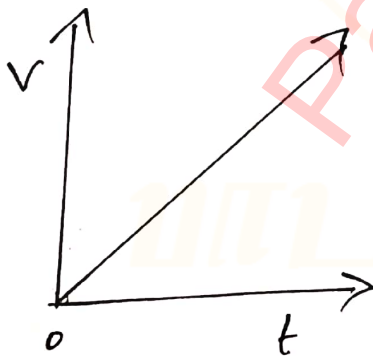
(or)

b) Explain in detail the "triangle law of addition"

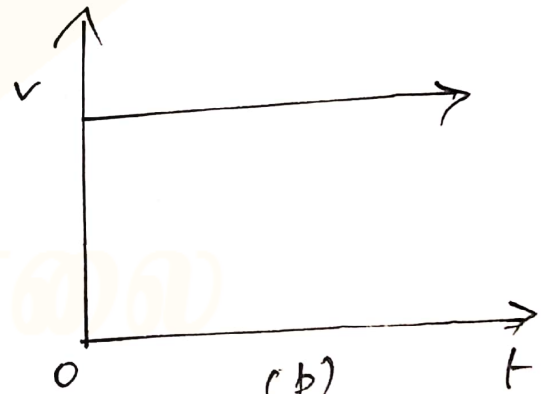
28) a) Derive the equation of motion, range and "maximum height" reached by the particle thrown at an oblique angle (θ) with respect to the horizontal direction

(or)

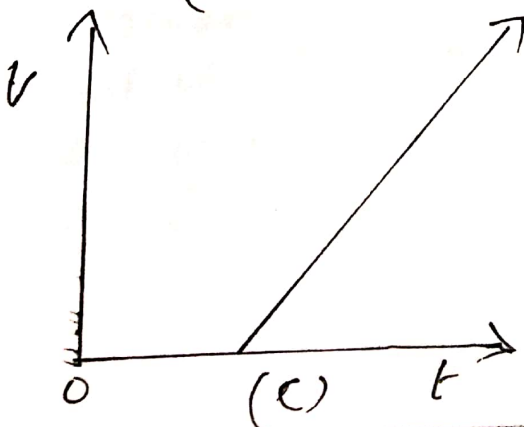
b) The following graphs represent velocity-time graphs. Identify what kind of motion a particle under goes in each graph.



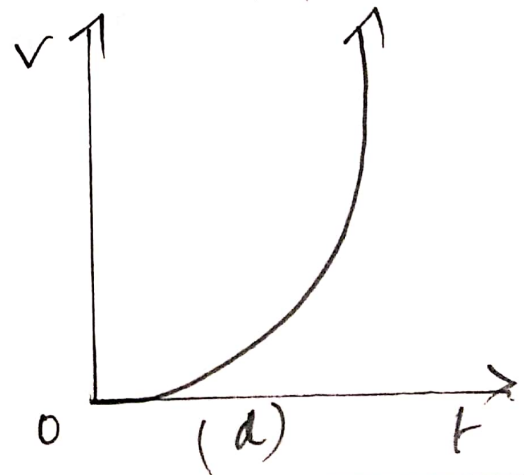
(a)



(b)



(c)



(d)

All the best -