Sahaj Adhyayan (सहज अध्ययन)

जर हे Practice Question Papers तुम्हाला खरंच फायदेशीर वाटत असतील तर तुमच्या सर्व मित्र मैत्रिणींना पाठवा.

त्यांना देखील ह्या सर्वांचा अभ्यासासाठी फायदा होऊ द्या.

For more study material connect with us on

Instagram: www.instagram.com/sahajadhyayan

YouTube (मराठी माध्यम): www.youtube.com/sahajadhyayan

YouTube (Semi/English):
www.youtube.com/SahajAdhyayanSemiEnglish

Telegram (for PDF): t.me/sahajadhyayan

Facebook: www.facebook.com/sahajadhyayan

WhatsApp (only Message, No calls): **855 289 2890**

For more study material register here
www.sahajadhyayan.in/register

जर तुमच्या जवळ कोणत्याही इयत्तेच्या, कोणत्याही परीक्षेच्या, कोणत्याही विषयाचे, Question Papers असतील

तर ते आम्हाला WhatsApp वर पाठवा,

इतर विद्यार्थी मित्रांना त्या सर्वांचा उपयोग होईल.

First Term Examination - 2021-22

Std. 11th (Sci.) | Sub : Physics | Marks - 50
Date - 6/1/2022 | Time - 12.00 To 2.30

General Instructions :

The question paper is divided into four sections.

1) Section A : Q.No. 1 contains seven multiple choice type of questions carrying one mark each.
   Q.No. 2 contains seven very short answer type of questions carrying one mark each.
2) Section B : Q.No. 3 to Q.No. 13 contains eleven short answer type of questions carrying two marks each.
3) Section C : Q.No. 14 to Q.No. 19 contains six short answer type of questions carrying Three mark each.
4) Section D : Q.No. 20 to Q.No. 23 contains four long answer type of questions carrying Four mark each.
5) Use of log table is allowed. Use of calculator is not allowed.
6) Figures to the right indicates full marks.
7) For each MCQ, correct answer must be written along with its alphabet.
   e.g. a) ..... / b) ..... / c) ..... / d) .....

Section - A

Q.1 **Select and write the correct answer.** 7

i) The radius of the earth is 6371 km. The order of magnitude of the Earth's radius is .....
   a) 10^3m b) 10^4m c) 10^6m d) 10^7m

ii) The magnitude of the scalar product of two unit vectors perpendicular to each other is .....
   a) zero b) one c) infinity d) two

iii) A particle moves in a circular path of radius 10cm with a constant speed of 10 cm/s. It's acceleration is .....
   a) 100 cm/s^2 b) 10cm/s^2 c) 1 cm/s^2 d) 0.1 cm/s^2

iv) The value of acceleration due to gravity is maximum at .....
   a) the equator of the earth
   b) the centre of the earth
   c) the pole of the earth
   d) slightly above the surface of the earth

(P.T.O.)

v) The SI unit of electric flux is the same as that of .....

a) $q\varepsilon_0$ b) $\frac{q}{\varepsilon_0}$ c) $\frac{\varepsilon_0}{q}$ d) ε_0

vi) For an inelastic collision the value of e is .....

a) greater than 1 b) less than 1 c) equal to 1 d) zero

vii) SI unit of e.m.f. of a cell is .....

a) V/m b) V/c c) J/c d) J/m

Q.2 **Answer the following.** 7

i) State the dimensions of universal gravitational constant.

ii) If $\vec{A} = \hat{i} + 2\hat{j} + \hat{k}$, what is the unit vector in the direction of $\vec{A}$?

iii) Define uniform circular motion.

iv) What is the variation in acceleration due to gravity with altitude ?

v) On what factors does the binding energy of satellite depends ?

vi) What is mean by thermal equilibrium ?

vii) Calculate the critical angle between glass and air $\left(\mu g = \frac{3}{2}\right)$

Section : B

Attempt any Eight. 16

Q.3 Define : a) plane angle b) solid angle

Q.4 Define impulse of force. Give its SI unit & dimension.

Q.5 State : a) Kepler's Law of equal area
b) Kepler's Law of period

Q.6 Explain deviation through a thin prism.

Q.7 State and explain Coulomb's Law.

Q.8 A conductor has resistance of 15Ω at 10° c and 18Ω at 400° C. Find the temperature coefficient of resistance of the material.

Q.9 How many electrons would have to be removed from a coin to leave it with charge of 10^{-7} C ?

(P.T.O.)

Q.10 State advantages of optical fibre communication.

Q.11 What do you mean by real force and psuedo force.

Q.12 Given $\vec{V_1} = 5\hat{i} + 2\hat{j}$ and $\vec{V_2} = x\hat{i} - 6\hat{j}$ are perpendicular to each other, determine the value of "x".

Q.13 A body is projected with the velocity of 60 m/s at an angle of 30° with the horizontal. Calculate time of flight.

Section : C

Attempt any Four. 12

Q.14 Define temperature coefficient of resistivity. What are advantages of cells in series.

Q.15 Define dielectric constant. State the characteristics of electric lines of force.

Q.16 Define a) Torque b) Centre of mass
c) Centre of gravity

Q.17 An Object is travelling in a horizontal circle with uniform speed. At t = 0, the velocity is given by $\vec{u} = 20\hat{i} + 35\hat{j}$ km/s. After one minute the velocity becomes $\vec{V} = -20\hat{i} - 35\hat{j}$. What is the magnitude of the acceleration ?

Q.18 Two vectors $\vec{P}$ and $\vec{Q}$ have magnitude 3 units and 4 units respectively. $\vec{R}$ is the resultant of $\vec{P}$ and $\vec{Q}$. Find the magnitude & direction of $\vec{R}$ when the angle θ between $\vec{P}$ & $\vec{Q}$ is 30°.

Q.19 An object was weighted by a physical balance and following readings were obtained 5.04 g, 5.06 g , 4.97 g, 5.00 g, 4.93 g find
a) mean value b) Absolute error c) Percentage error

Section : D

Attempt any Two. 8

Q.20 A) State : (i) Triangle Law of vector
(ii) Law of parallelogram of vector

B) The angular momentum $\vec{L} = \vec{r} \times \vec{p}$ where $\vec{r}$ is a position vector & $\vec{P}$ is linear momentum of a body if $\vec{r} = 4\hat{i} + 6\hat{j} - 3\hat{k}$ & $\vec{P} = 2\hat{i} + 4\hat{j} - 5\hat{k}$. Find $\vec{L}$.

(P.T.O.)

Q.21 A) Using dimensions, show that $1J = 10^7$ erg

B) An object of mass 50g moves uniformly along a circular orbit with an angular speed of 5 rad/s. If the linear speed of the particle is 25m/s. Calculate centripetal force acting on the particle.

Q.22 Define (i) critical velocity (ii) escape velocity.
Obtain an expression for period of satellite.

Q.23 A) Define a) Angular dispersion
c) Total internal reflection.
A ray of light incident at an angle of 50° on one face of an equilateral prism gets deviated through 37° . Find its angle of emergence.

*****