HSEIT1LKGJ17

13411
PHYSICS
(Term-1st)

Time : 2½ Hours]   [Maximum Marks : 25

Note :–   *In case of failure/re-appear and fresh private cases; i.e. candidates*

appearing for the first time after having passed the Secondary

School Examination, marks ~~secured~~ *out of 25 shall be raised*

proportionately as if obtained but of 35.

(Long Answer Type Questions)

1.   Explain vector product of two vectors. Mention its any *two* properties.

.   *Or*

Derive the following equations of motion by calculus approach :

(a) $v^2 - u^2 = 2as$

(b) $S = ut + \dfrac{1}{2}at^2$

2. Show that Newton's second law of motion is the real law.

Or

What is friction ? What are the various method of reducing friction ?

(Short Answer Type Questions)   3 each

3. Differentiate e^{ax} from Ist principle.

4. Define work, power and energy. Mention their units in S.I. System.

(Very Short Answer Type Questions)   2 each

5. Check the accuracy of equation $v = u + at$ with dimensional analysis.

6. What do you understand by relative velocity and instantaneous velocity ?

7. State law of conservation of angular momentum and write the relation between torque and angular momentum.

8. What is the dimension and unit of moment of inertia ?

(Multiple Choice Questions)   1 each

9. Choose the correct/most appropriate answer and write it in your answer-sheet :

(i) How many significant figures are there in these numbers ?

(a) 2·0059

(b) 0·0545

(ii) If a force $\vec{F} = 3\hat{i} + 2\hat{j} - 5\hat{k}$ Newton acts on a body to attain an acceleration of 1 m/s^2, then the mass of the body is :

(a) $\sqrt{35}$ kg

(b) $\sqrt{38}$ kg

(c) 1 kg

(d) Information is incomplete

(iii) A ball of mass 50 gm is thrown upwards it rises to a maximum height of 100 m. At what height its K.E. will be reduced to 70% :

(a) 30 m

(b) 40 m

(c) 60 m

(d) 70 m