

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය , 2023 අගෝස්තු
කல்විප් பொதுத் தராதரப் பத்திர(உயர் தர)ப் பரீட்சை, 2023 ஓகஸ்தர்
General Certificate of Education (Adv. Level) Examination, August 2023

භෞතික විද්‍යාව I
பௌதிகவியல் I
Physics I

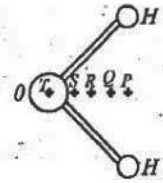
Advanced Level Physics
Amith Pussella

PHT6210 2023Th 2021-12-07

Multiple Choice Questions

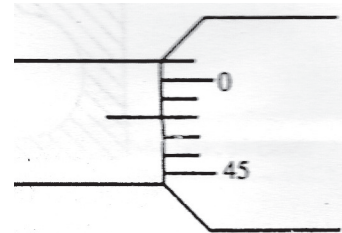
1. The water (H₂O) molecule has the shape shown in the figure. The centre of gravity of the molecule is most likely to be found at

- (1) P.
- (2) Q.
- (3) R.
- (4) S.
- (5) T.



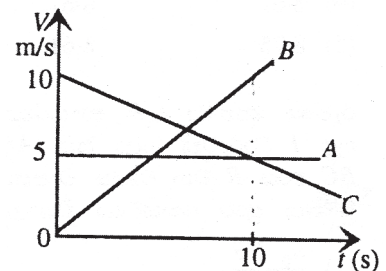
2. The figure shows a part of the micrometer screw gauge at an instance when its two jaws are in contact. The zero error of the instrument is,

- (1) 0.48 mm and it should be added to the final reading.
- (2) 0.48 mm and it should be subtracted from the final reading.
- (3) 0.02 mm and it should be added to the final reading.
- (4) 0.02 mm and it should be subtracted from the final reading.
- (5) 0.03 mm and it should be added to the final reading.



3. The figure shows the velocity (V) - time (t) graphs of particles A,B and C which are traveling in a straight line. At t = 0 all the particles could be seen at the same point on the straight line. At t = t₀,

- (1) Particles A and B meet again.
- (2) Particles C and B meet again.
- (3) Particles C and A meet again.
- (4) All the particles A,B and C meet again.
- (5) None of the particles meet again.



4. Angular momentum of a system is

- (A) conserved only when the resultant force on it is zero.
- (B) in the same direction as its angular velocity.
- (C) independent of the mass distribution of the system.

Of the above statements

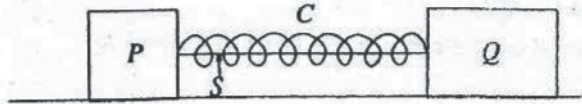
- (1) only (A) is true.
- (2) only (B) is true.
- (3) only (C) is true.
- (4) only (B) and (C) are true.
- (5) all (A), (B) and (C) are true.

5. Two particles A and B have equal kinetic energies, but the velocity of the particle B is four times that of A .

The ratio $\frac{\text{momentum of } A}{\text{momentum of } B}$ is

- (1) 1 (2) 2 (3) 4 (4) 8 (5) 16

6. Two blocks P and Q of masses m_1 and m_2 ($m_2 > m_1$) are kept on a smooth horizontal table. The blocks are attached to the ends of a compressed light spring C , and are held stationary by a string S as shown in the figure.



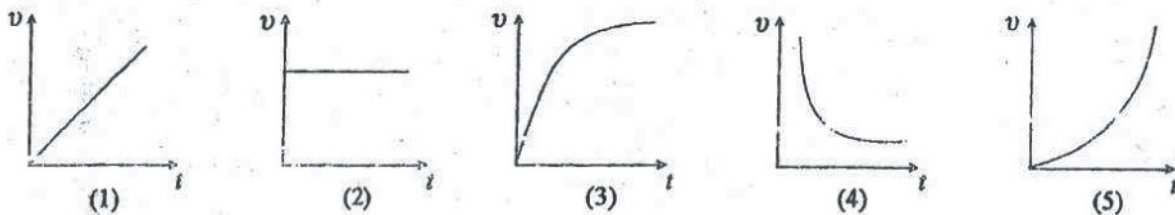
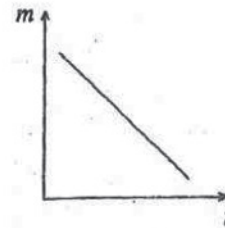
When the string is cut,

- (A) the total momentum of the blocks remains zero.
 (B) the forces on the blocks exerted by the spring are equal in magnitude.
 (C) initially the block P moves faster than Q .

Of the above statements,

- (1) only (A) is true. (2) only (B) is true.
 (3) only (A) and (B) are true. (4) only (B) and (C) are true.
 (5) all (A), (B) and (C) are true.

7. Figure shows how the mass (m) of fuel in a rocket decreases with time (t) when it moves away from the earth perpendicular to the earth surface. If the atmospheric resistance is disregarded and the thrust produced by the fuel is constant throughout, which of the following graphs best represents the variation of the velocity (v) of the rocket with time (t)?



8. A cricket ball is hit for a six. It leaves the bat at an upward angle of 45° to the horizontal with kinetic energy k . Kinetic energy of the ball at the top of its flight is (neglect air resistance)

- (1) 0 (2) $\frac{k}{4}$ (3) $\frac{k}{2}$ (4) $\frac{k}{\sqrt{2}}$ (5) k

9. A railway wagon of mass 1000 kg and length 11 m is at rest on a frictionless straight horizontal track. A man of mass 100 kg staying in the wagon walks straight from one end of the wagon to the other. If the wagon is free to move the distance through which it will move is

- (1) 0. (2) $\frac{1}{10}$ m. (3) $\frac{1}{11}$ m. (4) 1 m. (5) 11 m.

10. Particle A traveling in a smooth horizontal surface collides with particle B which is at rest on the surface. Magnitude of the initial momentum of A is P_0 . Which of the following curves shows the correct variation of momenta of particles (P) with time (t)?

