



PHYSICS

BOOKS - HC VERMA

FORCE AND ACCELERATION

Question Bank

1. Find the values of F_1 and F_2 in example 3.3.



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2. A cube of edge length 5 cm is placed inside a liquid, The pressure at the centre of a face is 12Pa. Find the force exerted by the liquid on this face.



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3. A bullet of mass 20 g moving with a speed of 120 m/s hits a thick muddy wall and penetrates into it. It takes 0.03 s to stop in the

wall find the force exerted by the bullet on the wall,



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4. An unbalanced force acts on a body. The body

- A. must remain at rest
- B. must move with uniform velocity
- C. must be accelerated
- D. must move along a circle

Answer: C



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5. If a body is not accelerated.

- A. no force acts on it
- B. no unbalanced force acts on it
- C. the resultant force is not zero
- D. a single force acts on it

Answer: B



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6. If no force acts on a body, it will

A. get deshaped

B. move with increasing speed

C. either remain at rest or move in a
straight line

D. break

Answer: C



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7. By applying a force of 1N, one can hold a body whose mass is approximately equal to

A. 100 mg

B. 100 g

C. 1 kg

D. 10 kg

Answer: B



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8. The force of friction between two bodies is

A. parallel to the contact surface

B. perpendicular to the contact surface

C. inclined at 30° to the contact surface

D. inclined at 60° to the contact surface

Answer: A



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9. A coin flicked across a table stops because

A. no force acts on it

B. it is very heavy

C. the table exerts a frictional force on it

D. the earth attracts it

Answer: C



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10. The speed of a falling body increases continuously. This is because

A. no force acts on it

B. it is very light

C. the air exerts a frictional force on it

D. the earth attracts it

Answer: D



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11. Which of the following has the largest inertia ?

A. A pin

B. An inkpot

C. Your physics book

D. Your body

Answer: D



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12. When a bus starts suddenly, the passengers standing on it lean backwards in the bus. This is an example of

- A. Newton's first law
- B. Newton's second law
- C. Newton's third law
- D. none of Newton's laws

Answer: A



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13. A force of a given magnitude acts on a body . The acceleration of the body depends on the

- A. mass of the body
- B. volume of the body
- C. density of the body
- D. shape of the body

Answer: A



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14. If a constant force acts on a body initially kept at rest, the distance moved by the body in time is proportional to

A. t

B. t^2

C. t^3

D. t^4

Answer: B



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15. The momentum of a body of given mass is proportional to its

A. volume

B. shape

C. speed

D. colour

Answer: C



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16. The mass and speed of four bookies are :

Body	Mass	Speed
A	1 kg	10 m/s
B	2 kg	9 m/s
C	3 kg	8 m/s
D	4 kg	7 m/s

The body with the largest magnitude of momentum is

A. A

B. B

C. C

D. D

Answer: D



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17. The principle of conservation of linear momentum states that the linear momentum of a system

A. cannot be changed

B. cannot remain constant

C. can be changed only if internal forces
act

D. can be changed only if external forces
act

Answer: D



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18. Action-reaction forces

- A. act on the same body
- B. act on different bodies
- C. act along different lines

D. act in the same direction

Answer: B



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19. Consider a porter standing on a platform with a suitcase which presses his head with a force of 200 N. take this force as action. The reaction force is exerted by

A. the head on the suitcase

B. the earth on the suitcase

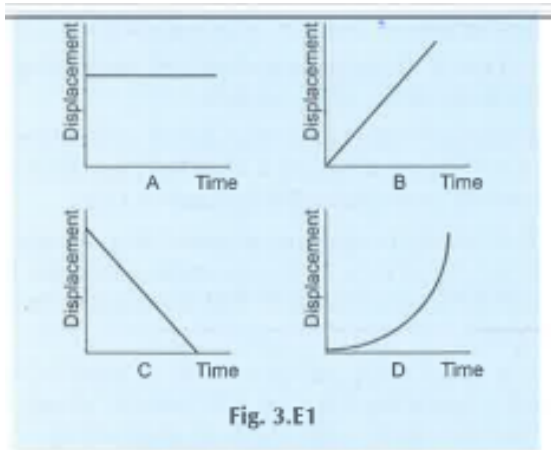
C. the earth on the potter

D. the suitcase on the earth

Answer: A



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20.

figure 3.E1 shows the displacement -time graphs for the four particles, A, B,C and D. An unbalanced force is acting on the particle

A. A

B. B

C. C

D. D

Answer: D



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21. Pascal is a unit of

A. pressure

B. force

C. linear momentum

D. energy

Answer: A



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22. The buoyant force on a body acts in a

A. vertically downward direction

B. vertically upward direction

C. horizontal direction

D. direction between the horizontal and
the vertical

Answer: B



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23. A body floats in a liquid if the buoyant force is

- A. zero
- B. greater than its weight
- C. less than its weight
- D. equal to its weight

Answer: D



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24. Mark the statement true (T) or false (F):The speed of a particle remains constant. This means that no unbalanced force acts on it.



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25. Mark the statement true (T) or false (F):No unbalanced force acts on a particle. The speed

of the particle must remain constant.



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26. Mark the statement true (T) or false (F): A spring can pull an object as well as push an object.



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27. Mark the statement true (T) or false (F): A string can pull an object as well as push an

object.



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28. Mark the statement true (T) or false (F): A particle attracts the earth with a force equal to the weight of the particle.



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29. Mark the statement true (T) or false (F): A ball moving on a horizontal surface stops

because on the force of friction.



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30. Mark the statement true (T) or false (F): It is easier to catch a fast-moving ball with the arms kept nearly still.



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31. Mark the statement true (T) or false (F): A particle starts from rest under the action of a

constant force. The graph of distance versus time is a straight line.



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32. Mark the statement true (T) or false (F): Action and reaction forces act on the same object.



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33. Mark the statement true (T) or false (F): Any pair of equal and opposite forces forms an action-reaction pair.



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34. Mark the statement true (T) or false (F): The pressures at all points in a liquid at the same horizontal plane are equal.



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35. Mark the statement true (T) or false (F):

After diving into a swimming pool, as one moves up, the pressure of water increases.



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36. Mark the statement true (T) or false (F):

Pascal and $\frac{N}{m^2}$ represent the same unit.



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37. Mark the statement true (T) or false (F):

Pressure has magnitude as well as direction.



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38. A boy is wearing a shirt of mass 150 g. How much force is he exerting on the dress ? Do not forget to state the direction.



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39. Your physics book has a mass of 400 g. It is kept on a horizontal table. Taking $g = 10 \text{ m/s}^2$, find the force (both magnitude and direction) exerted by the table on the physics book



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40. Your physics book has a mass of 400 g. It is kept on a horizontal table. Taking $g = 10 \text{ m/s}^2$, find the force (both magnitude

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41. Your physics book has a mass of 400 g. It is kept on a horizontal table. Taking $g = 10 \text{ m/s}^2$, find the force (both magnitude and direction)exerted by, the earth on the physics book.

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42. Your physics book has a mass of 400 g. It is kept on a horizontal table. Taking $g = 10 \text{ m/s}^2$, find the force (both magnitude and direction) exerted by the physics book on the earth.



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43. A force of 10 N acts on a particle of mass 0.4 kg. Find the acceleration of the particle.



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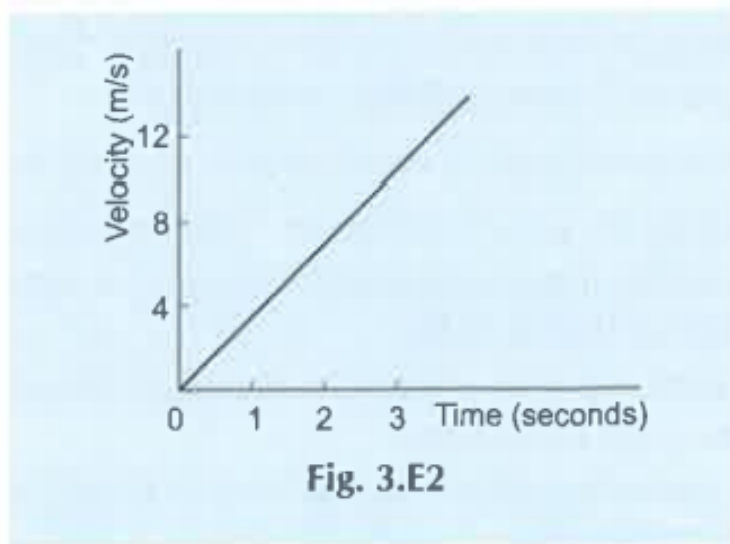
44. When a body is dropped from a height , it falls with an acceleration of $10m/s^2$. If its mass is 250 g, how much force is exerted on it downwards ? Who exerts this force on the body ?



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45. Figure 3.E2 shows the velocity -time graph for a particle moving in a fixed direction. Find

the acceleration of the particle.



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46. A force produces an acceleration of $1.5m/s^2$ in a disk. Three such disks are tied

together and the same force is applied on the combination. What will be the acceleration ?



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47. A constant force of 12 N acts on a body for 4s. Find the change in the linear momentum of the body.



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48. Two particles A and B of masses 20 g and 10 g and 20 g respectively fall vertically. At a given time, the speed of particle A is 12 m/s and that of B is 15 m/s. Find the total linear momentum of the system of the two particles.



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49. Two bodies A and B of mass 150 g and 250 g respectively are approaching each other.

Both of the total linear momentum of the system of the two particles.



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50. A boy weighing 30 kg is riding a bicycle weighing 50 kg. If the bicycle is moving at a speed of 9 km/h towards the west, Find the linear momentum of the bicycle -buoy system in SI units.



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51. A force of 12 N is uniformly distributed over an area of 120cm^2 . Find the pressure in pascals.

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52. How much force should be applied on an area of 1cm^2 to get a pressure of 12 Pa ?

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