PROFESSORS ACADEMY TIBBA SULTANPUR

PARAGON SCHOOL WARD NUMBER 3 BEHIND GOVT HIGHER SECONDARY SCHOOL (BOYS) TIBBA SULTANPUR

Student Name	Roll Number	Class Name	Paper Code
		INTER-I	1572

Subject Name	Time Allowed	Total Marks	Exam Date
Physics		76	05-Feb-2026

Q1. Choose the correct answer. **(1 x 76 = 76)**

1. The angle at which dot product becomes equal to cross product:
   (A) 65^o (B) 45^o (C) 76^o (D) 30^o
2. The scalar product of two vectors is maximum if they are:
   (A) Perpendicular (B) Parallel (C) At 30^o (D) At 45^o
3. Dot product of a vector with itself is:
   (A) Zero (B) 2A (C) A^2 (D) A
4. If the angles between two vectors with the magnitude 12 and 6 is 60^o, then their scalar product is:
   (A) 6 (B) 12 (C) 24 (D) None of these
5. The scalar product of two vectors is maximum when they are:
   (A) Parallel (B) Perpendicular (C) Null vector (D) Antiparallel
6. Scalar product of force and velocity is called:
   (A) Work (B) Power (C) Energy (D) Acceleration
7. Dot product of two antiparallel vectors A and B is:
   (A) Ab cos (B) AB (C) 0 (D) -AB
8. The vector product (AxA) is:
   (A) 2 (B) 1 (C) A (D) 0
9. The magnitude of vector product of two non zero vector A and B making an angle θ with each other is:
   (A) AB sin θ (B) A+B sin θ (C) AB cos θ (D) AB
10. The magnitude of dot and cross product of two vectors are $6\sqrt{3}$ and 6 respectively. The angle between them is:
    (A) 0^o (B) 30^o (C) 45^o (D) 60^o
11. The magnitude of dot and cross product of two vectors are equal when angle between them is:
    (A) Zero (B) 45^o (C) 90^o (D) 270^o
12. The cross product of a vector A with itself has the magnitude:
    (A) A (B) 1 (C) A^2 (D) Zero
13. An area of parallelogram formed by A and B two adjacent sides is given as:
    (A) AB sin θ (B) AB cos θ (C) Ab tan θ (D) A. B
14. If $\vec{A} \times \vec{B} = 0$ then angle between the vectors is:
    (A) 90^o (B) 450^o (C) 0^o (D) None of these
15. Three vectors $\vec{A} \cdot \vec{B}$ and $\vec{c}$ satisfy the relation $\vec{A} \cdot \vec{B} = 0$ and $\vec{A} \cdot \vec{c} = 0$ the vector $\vec{A}$ is parallel to:
    (A) $\vec{B}$ (B) $\vec{c}$ (C) $\vec{B} \cdot \vec{c}$ (D) $\vec{B} \times \vec{c}$
16. If cross product of two vectors $\vec{A} \times \vec{B}$ points along positive z-axis, then the vectors $\vec{A}$ and $\vec{B}$ must lie in:
    (A) yz-plane (B) xz-plane (C) zy-plane (D) No plane
17. If the magnitude of scaler products and vectors product of two vectors are $2\sqrt{3}$ and 2 respectively , the angle between the vectors is:
    (A) 30^o (B) 60^o (C) 120^o (D) 180^o

18. A bullet shot straight up returns to its starting point in 10s, its initial speed was:

(A) 9.8 ms^{-1} (B) 24 ms^{-1} (C) 49 ms^{1} (D) 98 ms^{1}

19. A cricket ball is hit that so hard that it travel straight up in air and it requires 3 s to reach the maximum height. Its initial velocity is:

(A) 10 ms^{-1} (B) 15 ms^{-1} (C) 29.4 ms^{-1} (D) 12.2 ms^{-1}

20. The distance covered by a freely falling body in two seconds is:

(A) 9.8m (B) 19.6 m (C) 44.4 m (D) 49 m

21. The velocity of a free falling body just before hitting the ground is 9.8ms^{-1} the height through which it has fallen will be:

(A) 98m (B) 19.6m (C) 4.9m (D) 9.8m

22. A body having uniform acceleration of 10ms^{-2} has the velocity of 100ms^{-1}. In what time its velocity will be double?

(A) 8s (B) 10s (C) 12s (D) 14s

23. The value of 'g' at the centre of the Earth is:

(A) Infinite (B) 2g (C) 3g (D) Zero

24. Acceleration of bodies of different masses allowed to fall freely is (air friction is negligible):

(A) Same in magnitude and direction (B) Same in magnitude only (C) Same in direction only (D) Different for different bodies

25. If a body is moving with constant velocity of 10ms^{-1} towards west, then its acceleration is:

(A) 1ms^{2} (B) 10ms^{-2} (C) 30ms^{-2} (D) Zero

26. A car starts from rest and covers a distance of 100m in one second with uniform acceleration. Its acceleration is:

(A) 50ms^{-2} (B) 100ms^{-2} (C) 200ms^{-2} (D) 300ms^{-2}

27. When a body is thrown straight up, its velocity becomes zero at the highest point and its acceleration will be:

(A) Zero (B) +9.8 ms^{-2} (C) -9.8 ms^{2} (D) Undetermined

28. The distance covered by a freely falling body in first 2 seconds, when its initial velocity was zero will be:

(A) 9.8m (B) 39.2m (C) 19.6m (D) 4.9m

29. Distance travelled by free falling object in first second is:

(A) 4.9m (B) 9.8m (C) 16.6m (D) 10m

30. Which of the given variable is present in all the equations of motion?

(A) Acceleration (B) Distance (C) Time (D) Torque

31. An object is projected vertically upward. At what point its acceleration is zero?

(A) At the starting point (B) At the starting point (C) Never (D) When it comes down

32. When an object is in free fall, what force is acting on it (Neglecting air resistance)?

(A) Frictional force (B) Magnetic force (C) Gravitational force (D) Electric force

33. An object thrown vertically upward returns to the same point. Its final velocity at the point of return is:

(A) Zero (B) Equal Initial velocity but in opposite direction

(C) Greater than initial velocity (D) Less than initial velocity

34. The projectile gains its maximum height at an angle of:

(A) 0^{o} (B) 45^{o} (C) 60^{o} (D) 90^{o}

35. The range of projectile is same for two angles which are mutually:

(A) Perpendicular (B) Supplementary (C) Complementary (D) 270^{o}

36. The acceleration at the top of a trajectory of projectile is:

(A) Maximum (B) Minimum (C) Zero (D) g

37. If the body of mass 2kg moving with $15m^{-1}$ collides with stationary body of same mass, then after elastic collision the 2nd body will move with the velocity of:

(A) $15ms^{-1}$ (B) $30ms^{-1}$ (C) Zero (D) None of these

38. Rocket objects that are burnt go at a speed of over (consuming fuel at rate of $1000kgs^{-1}$).

(A) $4000\ ms^{-1}$ (B) $400\ ms^{-1}$ (C) $40000\ cms^{-1}$ (D) $400\ cms^{-1}$

39. If a shell explodes in midair, its fragments fly off in different directions. The total momentum of fragments:

(A) Decrease (B) Increase (C) Becomes zero (D) Remains the same

40. A typical rocket consumes fuel at rate of (ejecting gas at speed of $4000ms^{-1}$).

(A) $10000\ kgs^{-1}$ (B) $1000\ kgs^{-1}$ (C) $100\ kgs^{-1}$ (D) None

41. A 1500 kg has its velocity reduced from $20m^{-1}$ in 3.0 s. How large was the retarding force?

(A) 500 N (B) 2500 N (C) 1500 N (D) 10000 N

42. A ball is dropped from a height of 4.2 metres. To what height, it will rise if there is no loss after rebounding?

(A) 4.2 m (B) 8.4 m (C) 12.6 m (D) 2.4 m

43. Two masses m_1 and m_2 will interchange their velocities after collision if:

(A) $m_1 >> m_2$ (B) $m_1 = m_2$ (C) $m_2 >> m_1$ (D) m_2 is at rest

44. Motion of projectiles is:

(A) One dimensional (B) Two dimensional (C) Three dimensional (D) Four dimensional

45. The horizontal range is maximum when it is projected at an angle of:

(A) 0^o (B) 30^o (C) 45^o (D) 60^o

46. The horizontal component of velocity of a projectile.

(A) Increases (B) Decreases (C) Remains the same (D) Decreases then increases

47. The horizontal range or projectile at 30^o with horizontal is the same as that at an angle of:

(A) 45^o (B) 60^o (C) 90^o (D) 120^o

48. In projectile motion, the component of velocity:

(A) Remains constant (B) Varies point ot point (C) Becomes zero (D) Increases with time

49. The angle of projection for which its maximum height and horizontal range are equal:

(A) 46^o (B) 56^o (C) 66^o (D) 76^o

50. A ball is thrown up with $20ms^{-1}$ at an angle of 60 deg with x-axis, the velocity of at the top position:

(A) $0ms^{-1}$ (B) $10ms^{-1}$ (C) $20ms^{-1}$ (D) $16ms^{-1}$

51. The shape of trajectory of short range projectile is:

(A) Circular (B) Parabola (C) Ellipse (D) Hyperbole

52. The path followed by a projectile is known as its:

(A) Range (B) Trajectory (C) Cycle (D) Height

53. For a rocket, the change in momentum per second of the ejecting gases is equal:

(A) Acceleration of the rocket (B) Momentum of rocket (C) Velocity of the rocket (D) Thrust acting on rocket

54. The acceleration along x-axis direction in case of projectile is:

(A) Zero (B) Equal to gravity (C) Maximum (D) Constant

55. If the initial velocity of a projectile becomes doubled, the time of flight will become:

(A) Double (B) Remains the same (C) 3 times (D) 4 times

56. If the angle of projection is greater that 45^o then:

(A) Height attained is more but range is less (B) Height attained is less but range is more (C) Range and height attained is less (D) Both height attained and range are more

57. The horizontal component acceleration of projectile is equal to:

(A) 0 ms^{-2} (B) 4.9 ms^{-2} (C) 9.8 ms^{-2} (D) -9.8 ms^{-2}

58. The range of projectile becomes of the maximum range at angle of projection.

(A) 15^o (B) 25^o (C) 45^o (D) 72^2

59. Rocket equation is given as:

(A) $a = \frac{m}{mv}$ (B) $a = \frac{mv}{m}$ (C) $a = \frac{mv}{M}$ (D) $a = \frac{m}{MV}$

60. Which hurt you maximum when the time of collision is:

(A) $\frac{1}{10}s$ (B) $\frac{1}{100}s$ (C) $\frac{1}{1000}s$ (D) 1 s

61. A projectile is thrown upwards with the velocity v_i making an angle θ with the horizontal, the maximum horizontal range is:

(A) $\frac{v_i^2}{2}$ (B) $\frac{v_i^2}{2g}$ (C) $\frac{v_i^2}{g}$ (D) $\frac{v_i^2}{g}\sin 2\theta$

62. Which shows correct relation between H and T of projectile?

(A) $H = \frac{gt^2}{8}$ (B) $H = \frac{8T^2}{g}$ (C) $H = \frac{8g}{T^2}$ (D) $H = \frac{8g}{gt^2}$

63. SI unit of impulse is:

(A) kg ms^{-2} (B) N m (C) N s (D) N m^2

64. The rate of change of momentum is:

(A) Force (B) Impulse (C) Acceleration (D) Power

65. The rate of change in momentum of a body is equal to:

(A) Displacement (B) Velocity (C) Acceleration (D) Applied force

66. Impulse can be defined as:

(A) 1=f x d (B) 1= f x t (C) 1 = f x v (D) None

67. If force of 10N acts on a body of mass 5kg for one second, then its rate of change of momentum will be:

(A) 10 kg ms^{-2} (B) 50 kg ms^{-2} (C) 5 kg ms^{-2} (D) 2 kg ms^{-2}

68. Total change in momentum of a moving body is equal to its:

(A) K.E (B) Impulse (C) Force (D) Inertia

69. An alternate unit to kg ms^{-1} is:

(A) J s (B) N s (C) Nm (D) N

70. The SI unit of impulses is:

(A) $Kgms^{-1}$ (B) Nm (C) Ns (D) Nm^2

71. At what speed the momentum and kinetic energy of a body having the same value?

(A) 1ms (B) $1ms^{-1}$ (C) $4ms^{-1}$ (D) $8ms^{-1}$

72. Impulse has same unit as that of:

(A) Force (B) Energy (C) Mass (D) Linear momentum

73. Rate of change of momentum of a freely falling object is equal to:

(A) K.E (B) Momentum (C) Acceleration (D) Weight

74. Two object collide in an isolated system. The total momentum after the collision is:

(A) Equal to total K.E (B) Zero (C) Equal to total momentum before collision (D) Greater than total momentum before collision

75. A truck and car has the same momentum. Which of the following is true?

(A) The car has more velocity than the truck (B) The truck has more velocity than the car (C) Both have the same velocity (D) It is not possible to have same momentum

76. Elastic collision involves:

(A) Loss of energy

(B) Gain of energy

(C) No gain, no loss of energy

(D) No relation between energy and elastic collision

Multiple Choice Correct Answers

1	(B)	2	(B)	3	(C)	4	(C)	5	(A)	6	(A)	7	(D)	8	(D)	9	(A)	10	(B)
11	(B)	12	(D)	13	(A)	14	(C)	15	(D)	16	(C)	17	(A)	18	(C)	19	(C)	20	(B)
21	(C)	22	(B)	23	(D)	24	(A)	25	(D)	26	(C)	27	(C)	28	(C)	29	(A)	30	(A)
31	(C)	32	(C)	33	(B)	34	(D)	35	(C)	36	(D)	37	(A)	38	(A)	39	(D)	40	(A)
41	(D)	42	(A)	43	(B)	44	(B)	45	(C)	46	(C)	47	(B)	48	(B)	49	(D)	50	(D)
51	(B)	52	(B)	53	(D)	54	(A)	55	(A)	56	(A)	57	(A)	58	(A)	59	(C)	60	(C)
61	(A)	62	(A)	63	(C)	64	(A)	65	(D)	66	(B)	67	(A)	68	(B)	69	(B)	70	(C)
71	(B)	72	(D)	73	(D)	74	(C)	75	(A)	76	(C)								