Subject: Phyiscs

Name: _____ Class/ Sec: 9A   Admission #: _____ Date: _____

Objective

Note: -Four possible answers A, B C and D to each question are given. The choice which you think is correct fill that circle in front of that question with marker or pen in the answer-book. Cutting or filling two or more circles will result in zero mark in that question. (10)

A	B	C	D		A	B	C	D		A	B	C	D
1. Ⓐ Ⓑ Ⓒ Ⓓ					8. Ⓐ Ⓑ Ⓒ Ⓓ					15. Ⓐ Ⓑ Ⓒ Ⓓ			
2. Ⓐ Ⓑ Ⓒ Ⓓ					9. Ⓐ Ⓑ Ⓒ Ⓓ					16. Ⓐ Ⓑ Ⓒ Ⓓ			
3. Ⓐ Ⓑ Ⓒ Ⓓ					10. Ⓐ Ⓑ Ⓒ Ⓓ					17. Ⓐ Ⓑ Ⓒ Ⓓ			
4. Ⓐ Ⓑ Ⓒ Ⓓ					11. Ⓐ Ⓑ Ⓒ Ⓓ					18. Ⓐ Ⓑ Ⓒ Ⓓ			
5. Ⓐ Ⓑ Ⓒ Ⓓ					12. Ⓐ Ⓑ Ⓒ Ⓓ					19. Ⓐ Ⓑ Ⓒ Ⓓ			
6. Ⓐ Ⓑ Ⓒ Ⓓ					13. Ⓐ Ⓑ Ⓒ Ⓓ					20. Ⓐ Ⓑ Ⓒ Ⓓ			
7. Ⓐ Ⓑ Ⓒ Ⓓ					14. Ⓐ Ⓑ Ⓒ Ⓓ					21. Ⓐ Ⓑ Ⓒ Ⓓ			

(D)	(C)	(B)	(A)	Questions	Q.1
10^{15} m	109m	10^{-15} m	10^{-9} m	One peta metre is equal to	1
speed	distance	time	light	A light year is a unit of:	2
force	density	colour	temperature	Which one is a non-physical quantity?	3
1440 m	1400 m	400 m	100 m	A body accelerates from rest to a velocity of 144 km h-1in 20 seconds. Then the distance covered by it is:	4
Tension in the string	Electrostatic force	Air resistance	Friction	Which of the following is a non-contact force?	5
cubic metre	kilogram	litre	Millilitre	water consumed by you per day is estimated in:	6
always less than one	always greater than one	Equal to or less than one	always equal to one	Volume The numerical ratio of displacement to distance is:	7
-15N	-12N	-10N	5N	An object with a mass of 5 kg moves at constant velocity of 10 m s^{-1}. A constant force then acts for 5 seconds on the object	8

				and gives it a velocity of 2 m s^{-1} in the opposite direction. The force acting on the object is:	
100 m	50 m	10 m	5 m	A ball is dropped from the top of a tower, the distance covered by it in the first second is	9
take severalreadings by looking from more than one direction	look at the meniscus from below the level of the water surface	position the eye in line with the bottom of the meniscus	check forthe zero error	When using a measuring cylinder, one precaution to take is to:	10

Section II   (2 x 5 = 10)

Give short answers to any five questions

1. A cricket ball of mass 160 g is hit by a bat. The ball leaves the bat with a velocity of 52 m s^{-1}. If the ball strikes the bat with a velocity of -28 m s^{-1} (opposite direction) before hitting, find the average force exerted on the ball by the bat. The ball remains in contact with the bat for 4×10^{-3} s.

2. Write the name of 3 base quantities and 3 derived quantities.

3. For a complete trip, average velocity was calculated. Its value came out to be positive. Is it possible that its instantaneous velocity at any time during the trip had the negative value? Give justification of your answer.

4. State head-to-tail rule for addition of vectors.

5. A body is moving with uniform speed. Will its velocity be uniform? Give reason.

6. Explain the effect of friction on the motion of vehicles in context of tyre surface and braking force.

7. Define terminal velocity of an object.

8. Define impulse of force.

Section III

Give short answers to any five questions   **(2 x 5 = 10)**

1. Explain the difference between distance and displacement.

2. What do gradients of distance-time graph and speed-time graph represent? Explain it by drawing diagrams.

3. A force of 7500 N is applied to move a truck of mass 3000 kg. Find the acceleration produced in the truck. How long will it take to accelerate the truck from 36 km h^{-1} to 72 km h^{-1} speed?

4. Calculate the following and state your answer in scientific notation.

(a) 5.123×10^4 m $+ 3.28 \times 10^5$ m

5. State the similarities and differences between Vernier Callipers and micrometer screw gauge.
6. Give 5 examples of contact forces.
7. Differentiate between precision and accuracy of a measurement with examples.
8. A stone is dropped from a height of 45 m. How long will it take to reach the ground? What will be its velocity just before hitting the ground?

Section IV

Give short answers to any five questions $\qquad$ **(2 x 5 = 10)**

1. Why has not Newton's firstlaw been proved on the Earth?
2. When sitting in a car which suddenly accelerates from rest, you are pushed back into the seat, why?
3. The force expressed in Newton's second law is a net force. Why is it so?
4. How can you show that rolling friction is lesser than the sliding friction?
5. A plane starts running from rest on a run-way as shown in the figure below. It accelerates down the run-way and after 20 seconds attains a velocity of 252 km h^{-1}. Determine the average acceleration of the plane.$v_i = 0$ t $= 0$ vf t $= 20$ s
6. Light year is a unit of distance used in Astronomy. It is the distance covered by light in one year. Taking the speed of light as 3.0×10^8 m s^{-1}, calculate the distance.
7. Can a non-physical quantity be measured? If yes, then how?
8. A car passes a green traffic signal while moving with a velocity of 5 m s^{-1}. It then accelerates to 1.5 m s^{-2}. What is the velocity of car after 5 seconds?

Section V

Answer to only Two questions $\qquad$ **(4 x 5 = 20)**

Question 1

A) Two balls of masses 0.2 kg and 0.4 kg are moving towards each other with velocities 20 m s^{-1}and 5 m s^{-1}respectively. After collision, the velocity of0.2 kg ball becomes 6 m s^{-1}. What will be the velocity of 0.4 kg ball?

B) Write a detailed note on the representation of vectors

Question 2

A) . Write a detailed note on Newton's second law of motion. Also derive its formula.

B) Write the equations of solving problems for motion under gravity.

Question 3

A) Define momentum and express Newton's 2nd law of motion in terms of change in momentum.

B) State and explain the principle of conservation of momentum.