Model guess paper-1 - March - 2019
INTERMEDIATE I -YEAR

Time: 3hours   **PHYSICS-1**   Max.Marks:100

INSTRUCTIONS:
1. Q.Nos: 1 - 10 are Very Short Answer Type. Each question carries 2 marks.
2. Q. Nos: 11 - 18 are Short Answer Type. Each question carries 4 marks.
3. Q.Nos: 19 - 21 are Long Answer Type. Each question carries 7 marks.

I.   Answer ALL questions in 2 or 3 lines each.   **[10 x 2 = 20]**

1.   What is the contribution of S. Chandra Sekhar to Physics?
2.   A vehicle travel half distance L with speed V_1 and other half speed V_2 what is the average speed ?
3.   Give an example where the velocity of an object is zero but its acceleration is not zero.
4.   What is the acceleration of a projectile at the top of its trajectory?
5.   A = **i** + **j** what is the angle between the vector and x-axis.
6.   If the vectors $\vec{A}$ and $\vec{B}$ have same magnitude. Their resultant $\vec{C}$ has the magnitude same as that of either $\vec{A}$ or $\vec{B}$. Find the angle between $\vec{A}$ and $\vec{B}$.
7.   If a bomb at rest explodes into two pieces, the pieces must travel in opposite directions. Explain?
8.   Can the coefficient of friction be greater than one?
9.   Why does the car with flattened type stop sooner than the one with inflated tyres?
10. What happens to the coefficient of friction if the weight of the body is doubled ?

II.   Answer any SIX of the following questions in about 75 words each.   **[6 x 4 = 24]**

11. A particle moves in a straight line with uniform acceleration. Its velocity at time t = 0 is V_1 and at time t = t is V_2 the average velocity of the particle in this time interval is $(V_1 + V_2)/2$ is this correct? Substantiate your answer.
12. Show that the trajectory of an object thrown at certain angle with the horizontal is a parabola.
13. Show that the maximum height and range of a projectile are $\dfrac{u^2 \sin^2 \theta}{2g}$ and $\dfrac{u^2 \sin 2\theta}{g}$ respectively were the terms have their regular meaning
14. Why is pulling the lawn roller preferred to pushing it? Explain in detail
15. State the laws of rolling friction .
16. A motorist drives north for 30 min at 85 kmph and then stops for 15 min. He continues travelling north and covers 130 km in 2 hours. What is his total displacemetn and average velocity.
17. Define the terms momentum and impulse. State and explain the law of conservation of linear momentum. Give examples.
18. Explain the terms the average velocity and instantaneous velocity. When are they equal ?

III.   Answer any TWO of the following questions in about 300 words each.   **[2 x 8 = 16]**

19. a) State Newton's second law of motion. Hence derive the equation of motion F = ma from it.
     b) A body is moving along a circular path such that its speed always remains constant. Should there be force acting on the body?
20. Define Angle of friction and Angle of repose. Show that angle of friction is equal to angle of repose for a rough inclined plane. A block of mass 4 kg is resting on a rough horizontal plane and is about to move when a horizontal force of 30 N is applied on it. g =10ms^2. Find the total contact force exerted by the plane on the block.
21. a) State parallelogram law of vectors. Derive an expression for the magnitude and direction of the resultant vector.
     b) Two forces of magnitudes 3 units and 5 units act at 60^0 with each other. What is the magnitude of their resultant ?

All the Best***