



PHYSICS

A1. Make a comparative study between <sup>various</sup> three exoplanets discovered in 2019 and discuss their habitability for future human race.

A2. Record local temperature and humidity of your native place from internet for 15 days, ~~record~~ mark each day with a number between 1 and 10 (including) about how hot you feel ~~about~~ on that date on average. Finally draw a graph ~~between~~ by considering the ratio  $(Temp^2) / (Humidity)$  along X axis and the hotness feeling value (which is in the range 1-10) along Y axis. Finally give your inference.

A3. As there have been some asteroids which passed by the earth very closely in the past few months, make a study on how we can save our earth from such a collision with an asteroid in future and discuss the preventive measures pointwise.





**Give Proper Reasoning why ?**

(a) Atmosphere on a planet is possible only if  $v_{rms} < v_e$  where  $v_{rms}$  = rms speed of gas molecular constituting atmosphere.

(b) Time period of satellite is independent of mass of satellite.

(c) If gravitation force,  $F \propto r^n$ , time period  $T \propto r^{(1-n)/2}$ .

(d) If orbital velocity of any satellite increases by 41.4%. The body will escape to infinity.

(e) If angular velocity of earth is increased 17 times the object placed at equator fly off.

(f) In moving from pole to equator, gravity decreases by 0.35%.

**Example**

An asteroid, headed directly towards earth, has a speed of  $14 \text{ km s}^{-1}$  relative to the planet when it is at a distance of 12 earth radii from the centre of the earth. Ignoring the effects of the terrestrial atmosphere on the asteroid, find the asteroid's speed when it reaches the surface of earth.

Nelson Mandela was in isolation for 27 years, no family, no luxury, no phone .... Yes, we all can do it ...

#StayHome #StaySafe

On behalf of Dept. of Physics  
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