(1) $v = \frac{2\pi r}{t}$

$v = \frac{2\pi (165 \times 10^9)}{4.5 \times 10^9}$

$= 230.1$

$a_c = \frac{v^2}{r} = \frac{230.1 \text{ m/s}^2}{4.5 \times 10^9}$

$= 53.1 \times 10^8 \text{ m/s}^2$

(2) $C = 2\pi r$

$2\pi r = 341 \text{ m}$

$r = 50 \text{ m}$

Given, $v = 15.7 \text{ m/s}$

a) distance moved $= \pi r$

$= 3.14 \times 50$

$= 157 \text{ m}$

b) displacement = diameter

$= 2r$

$r = 50 \text{ m}$

$2r = 100 \text{ m}$

c) Avg. velocity = $\frac{\text{displacement}}{\text{time}}$

$= \frac{100}{10} \left( \frac{157}{15.7} = 10 \text{s} \right)$

$= 10 \text{ m/s}$

3> When a body changes its direction but not magnitude of velocity in a circular path, is circular motion.

b> Radius = 42,250 km

Circumference = $2\pi r$

$2\pi r = 2 \times \pi \times 42250$

$= 265571.4$ km

Time taken = 24 hr.

Speed = $\frac{265571.4}{24}$

$= 11065.4$ km/h.