Answer on Question 49993, Physics, Mechanics — Kinematics — Dynamics A man is riding on a cycle with velocity 7.2 km/hr up a hill having a slope 1 in 20. The total mass of the man and cycle is 100kg. The power of the man is (1)200 (2)175 (3)125 (4)98 All are in W.

Solution

Power of the man is equal to changes in potential energy per s. Hence,

$$P = mgv_h$$

where $v_h = v/20$ is speed of changing the height.

$$v_h = \frac{1}{20}v = \frac{1}{20}7.2/3.6\,m/s = 0.1\,m/s$$

So, power of the man is

$$P = 100 \cdot 9.8 \cdot 0.1 = 98\,W$$

Answer is (4)98 W.