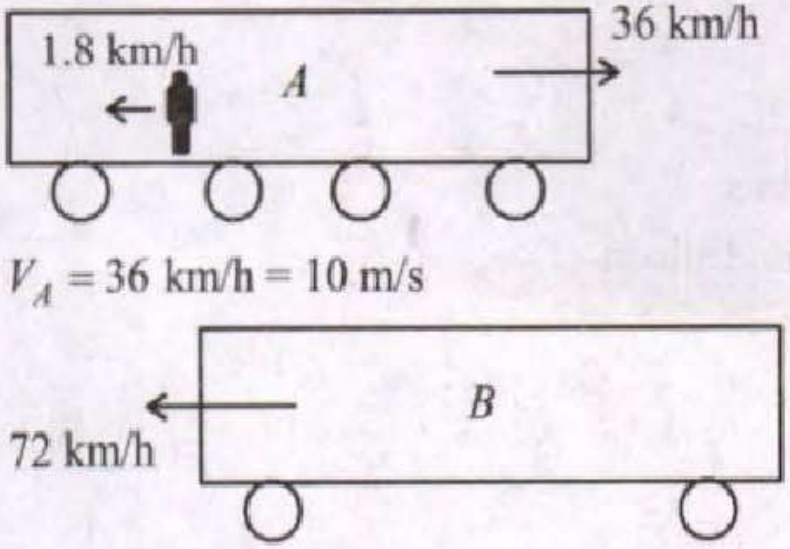
Q 4.

Train A and train B are running on parallel tracks in the opposite directions with speeds of 36 km/hour and 72 km/hour, respectively. A person is walking in train A in the direction opposite to its motion with a speed of 1.8 km/hour. Speed (in ms^{-1}) of this person as observed from train B will be close to : (take the distance between the tracks as negligible) **[Main 2 Sep. 2020 (I)]**

(a) 29.5 ms^{-1} (b) 28.5 ms^{-1} (c) 31.5 ms^{-1} (d) 30.5 ms^{-1}

ans

(a) According to question, train A and B are running on parallel tracks in the opposite direction.



$V_A = 36 \text{ km/h} = 10 \text{ m/s}$

$V_B = -72 \text{ km/h} = -20 \text{ m/s}$

$V_{MA} = -1.8 \text{ km/h} = -0.5 \text{ m/s}$

$V_{\text{man, } B} = V_{\text{man, } A} + V_{A, B} = V_{\text{man, } A} + V_A - V_B$

$= -0.5 + 10 - (-20) = -0.5 + 30 = 29.5 \text{ m/s}.$