QUES 07:-

Two engines pass each other moving in opposite directions with uniform speed of 30 m/s. One of them is blowing a whistle of frequency 540 Hz. Calculate the frequency heard by driver of second engine before they pass each other. Speed of sound is 330 m/sec: [Main Online April 9, 2016]

(a) 450 Hz (b) 540 Hz (c) 270 Hz (d) 648 Hz

(d) We know that the apperent frequency

$$f' = \left(\frac{v - v_0}{v - v_s}\right) f \quad \text{from Doppler's effect}$$

where $v_0 = v_s = 30$ m/s, velocity of observer and source

Speed of sound $v = 330$ m/s

$$\therefore\ f' = \frac{330 + 30}{330 - 30} \times 540 = 648 \text{ Hz.}$$

$\because$ Frequency of whistle (f) = 540 Hz.