A message signal of frequency $100MHz$ and peak voltage $100V$ is used to execute amplitude modulation on a carrier wave of frequency $300GHz$ and peak voltage 400 V. The modulation index and difference between the two side band frequencies are :

[10 April 2019 II]

- $4;\ 1 \times 10^{8} Hz$
- $4;\ 2 \times 10^{8} Hz$
- $0.25;\ 2 \times 10^{8} Hz$
- $0.25;\ 1 \times 10^{-8} T$

Range of frequency $= (f_c - f_m)$ to $(f_c + f_m)$

$\therefore$ Band width $= 2f_m = 2 \times 100 \times 10^6 Hz$

$= 2 \times 10^8 Hz$

and Modulation index $= \frac{A_m}{A_c} = \frac{100}{400} = 0.25$