13. Adsorption of a gas on a surface follows Freundlich adsorption isotherm. Plot of $\log\frac{x}{m}$ versus $\log p$ gives a straight line with slope equal to 0.5, then :

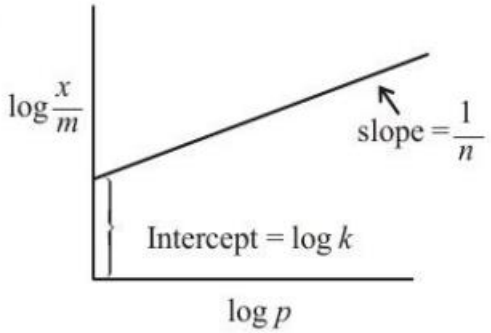
($\frac{x}{m}$ is the mass of the gas adsorbed per gram of adsorbent)

[Online April 9, 2017]

(a) Adsorption is independent of pressure.
(b) Adsorption is proportional to the pressure.
(c) Adsorption is proportional to the square root of pressure.
(d) Adsorption is proportional to the square of pressure.

Ans. (c)

13. (c)



According to Freundlich adsorption isotherm

$$\log\frac{x}{m} = \log k + \frac{1}{n}\log p$$

$$\log\frac{x}{m} = \log(k \cdot p^{1/n})$$

$$\frac{x}{m} = k \cdot p^{1/n}$$

$$\boxed{\frac{x}{m} \propto p^{1/2}} \qquad \left(\text{given } \frac{1}{n} = \frac{1}{2}\right)$$