Integrating factor helps to converts the equation into exact form. So take option D

$$(x\,dy + y\,dx) \times \frac{1}{xy} = 0$$

$$\Rightarrow \quad \frac{1}{x}\,dx + \frac{1}{y}\,dy = 0$$

Compairing with $M\,dx + N\,dy = 0$ we get

$$M = \frac{1}{x} \quad ; \quad N = \frac{1}{y}$$

So $$\frac{\partial M}{\partial y} = 0 \quad ; \quad \frac{\partial N}{\partial x} = 0$$

So it is an exact diff equation hence

$\left(\frac{1}{xy}\right)$ is an integrating factor now for option a

take $n = 2$ then it becomes $\frac{1}{x^2y^2}$

so $(x\,dy + y\,dx) \times \frac{1}{x^2y^2} = 0 \Rightarrow \frac{1}{x^2y}\,dx + \frac{1}{xy^2}\,dy = 0$

$M = \frac{1}{x^2y}$; $N = \frac{1}{xy^2}$

$\frac{\partial M}{\partial y} = -\frac{1}{x^2y^2}$; $\frac{\partial N}{\partial x} = -\frac{1}{x^2y^2}$

$\Rightarrow \frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$ so eq^n is an exact form

$\Rightarrow \frac{1}{(xy)^n}$, $n > 1$ is also an integrating facto