$$\sum \frac{(x-4)^n}{n \ln^2 n}$$

$$\frac{1}{R} = \lim_{n\to\infty} \left|\frac{a_{n+1}}{a_n}\right| = \lim_{n\to\infty} \left|\frac{n \ln^2(n)}{(n+1)(\ln(n+1))^2}\right| \Rightarrow \lim_{n\to\infty} \left(\frac{1}{1+\frac{1}{n}}\right) \times \left|\left(\frac{\ln n}{\ln(n+1)}\right)^2\right|$$

$$\Rightarrow \boxed{1}$$

$\boxed{R=1}$

absolutely convergent for $-1 \leq x-4 \leq 1$

$$\Rightarrow \boxed{3 \leq x < 5}$$

Now to check end points

at $x=3$

$$\sum \frac{(3-4)^n}{n \ln^2 n} = \sum \frac{(-1)^n}{n \ln^2 n}$$

here let $a_n = \frac{1}{n \ln n^2}$ is monotonically decreasing

also $\lim_{n\to\infty} a_n = 0$

So, by leibnitz test, convergent

at $x=5$

$$\sum \frac{(5-4)^n}{n \ln n^2} = \sum \frac{1}{n(\ln n)^2} \rightarrow$$ convergent by cauchy condensation test.

Thus above series is absolutely convergent on $[3,5]$

and divergent on $R-[3,5]$

So, option (A) & (D) are correct