Q.3

$f_1(n) = n^{2.5}$ polynomial function, it is $O(n^{2.5})$

$f_2(n) = \sqrt{2n}$ sublinear function, it is $O(\sqrt{n})$

$f_3(n) = n+10$ Linear function, it is $O(n)$

$f_4(n) = 10^n$ exponentinal function. it is $O(10^n)$

$f_5(n) = 100^n$ exponential function, it is $O(100^n)$

$f_6(n) = n^2 \log n$ Logarithmic function, it is $O(n^2 \log n)$

$$\boxed{O(\sqrt{n}) < O(n) < O(n^2 \mathrm{Log}\, n) < O(n^{2.5}) < O(10^n) < O(100^n)}$$

by this statement

$f_2(n) = \sqrt{2n}$, polynomial functiona which grows the slowest

$f_3(n) = n+10$, linear function is faster than square root but slower than

$f_6(n) = n^2 \mathrm{Log}\, n$, is slightly faster than linear function, it being Logarithmic

$f_1(n) = n^{2.5}$, is polynomial faster than Logarithmic & Linear

$f_4(n) = 10^n$, is an exponential function where base is 10 much faster than n^2

$f_5(n) = 100^n$, also an exponential function with larger base 100 is fastest

Ascending order in terms of growth Rate

$$\boxed{\begin{array}{c} f_2 < f_3 < f_6 < f_1 < f_4 < f_5 \\ \sqrt{2n} < n+10 < n^2 \mathrm{Log}\, n < n^{2.5} < 10^n < 100^n \end{array}}$$