DAA Quiz 3

Total points 4/4

Allotted Time: 12 mins

Note: All log functions are in base 2

✓ Q1. Arrange the following functions in the increasing order of their rate of growth: 1/1

$\sqrt{n},\ n^2,\ 1\ ,\ n$

$1 < \sqrt{n} < n < n^2$

(●) A ✓

$1 < \sqrt{n} = n < n^2$

( ) B

( ) None of the above

$\sqrt{n} < 1 < n < n^2$

( ) C

✓ Q2. Arrange the following functions in the increasing order of their rate of growth: * 1/1

$$(\log n)^{10}, \log(n^{10}), \log n, \ n$$

$\log\ n\ <\ \log(n^{10})\ <(\log n)^{10}\ <n$

A

$\log\ n\ <\ \log(n^{10})\ =(\log n)^{10}\ <n$

B

$\log\ n\ =\ \log(n^{10})\ <(\log n)^{10}\ <n$

C ✓

$\log\ n\ =\ \log(n^{10})\ =(\log n)^{10}\ <n$

D

✓ Q3. Arrange the following functions in the increasing order of their rate of growth: * 1/1

$$2^n, \left(\frac{1}{2}\right)^n, 3^n, n, 1$$

$1 < \left(\frac{1}{2}\right)^n < n < 2^n = 3^n$

A

$\left(\frac{1}{2}\right)^n = 1 < n < 2^n < 3^n$

B

$\left(\frac{1}{2}\right)^n < 1 < n < 2^n = 3^n$

C

$\left(\frac{1}{2}\right)^n < 1 < n < 2^n < 3^n$

D ✓

✓ Q4. Arrange the following functions in the increasing order of their rate of growth: * 1/1

$2^{\log n}$, $2^{\log n^2}$, $3^{\log n}$, $3^{\log n^2}$, $2^{\log \sqrt{n}}$

A. $2^{\log \sqrt{n}} < 2^{\log n} < 2^{\log n^2} < 3^{\log n} < 3^{\log n^2}$

B. $2^{\log \sqrt{n}} < 2^{\log n} = 2^{\log n^2} < 3^{\log n} < 3^{\log n^2}$

C. $2^{\log \sqrt{n}} < 2^{\log n} = 2^{\log n^2} < 3^{\log n} = 3^{\log n^2}$

D. $2^{\log \sqrt{n}} < 2^{\log n} < 3^{\log n} < 2^{\log n^2} < 3^{\log n^2}$ ✓