Q1. Let A and B be two sets, then $(A \cup B)' \cup (A' \cap B)$ is equal to
a) A' b) A c) B' d) $None\ of\ these$

Solution:

Q2. $A = \{1, 2, 3, 4\}$, $B = \{1, 2, 3, 4, 5, 6\}$ are two sets and function $f : A \to B$ is defined by $f(x) = x + 2$ for all $x \in A$, then the function f is
a) $Bijective$ b) $Onto$ c) $one - one$ d) $many - one$

Q3. On the set of integers $\mathbb{Z}$, define $f : \mathbb{Z} \to \mathbb{Z}$ as $f(n) = \begin{cases} \frac{n}{2}, & \text{n is even} \\ 0, & \text{n is odd} \end{cases}$, then f is
a) one-one but not onto
b) neither one-one nor onto
c) onto but not one-one
d) bizective

Q4. The complex number $\frac{(-\sqrt{3}+3i)(1-i)}{(3+\sqrt{3}i)(i)(\sqrt{3}+\sqrt{3}i)}$ when represented in the argand diagram is
a) in 2nd quadrant b) in 1st quadrant c) on $imaginary$ axis d) on $real$ axis

Q5. If $z = \frac{4}{1-i}$, then $\overline{z}$ is
a) $2(1 + i)$ b) $(1 + i)$ c) $\frac{2}{1-i}$ d) $\frac{4}{1+i}$

Q6. If $f : [0, \infty) \to [0, \infty)$ and $f(x) = \frac{x}{1+x}$, then f is
a) one-one and onto
b) one-one but not onto
c) onto but not one-one
d) neither one-one nor onto

Q7. If $z = r(cos\theta + isin\theta)$, then the value of $\frac{z}{\overline{z}} + \frac{\overline{z}}{z}$ is
a) $cos2\theta$ b) $2cos2\theta$ c) $2cos\theta$ d) $2sin\theta$ e) $2sin2\theta$

Q8. For real x , let $f(x) = x^3 + 5x + 1$, then
a) f is one-one but not onto $\mathbb{R}$
b) f is onto $\mathbb{R}$ but not one-one
c) f is one-one and onto $\mathbb{R}$
d) f is neither one-one nor onto $\mathbb{R}$

Q9. If $(3 + i)z = (3 - i)\overline{z}$, then z is
a) $a(3 - i)$; $a \in \mathbb{R}$ b) $\frac{a}{3+i}$; $a \in \mathbb{R}$ c) $a(3 + i)$; $a \in \mathbb{R}$ d) $a(-3 + i)$; $a \in \mathbb{R}$

Q10. $\{n(n + 1)(2n + 1) : n \in \mathbb{Z}\} \subset \underline{?}$
a) $\{6k : k \in \mathbb{Z}\}$ b) $\{12k : k \in \mathbb{Z}\}$ c) $\{18k : k \in \mathbb{Z}\}$ d) $\{24k : k \in \mathbb{Z}\}$