Multiple Choice Questions & Answers :

Problem 1 : Every binary Operation on a set S is both commutative & associative if and only if S has exactly
i) 4 –elements ii) 3- elements iii) 2 –elements iv) 1-element

Answer: 1-element

Problem 2 : The number of binary non- commutative operations on a set with 5 elements is
$i) \ 5^{25}$ ii) 5^{15} iii) $5^{15}\ (5^{10}-1)$ iv) 5^{10}

Answer : $5^{15}\ (5^{10}-1)$

Problem 3 : The number of binary commutative operations on a set with 5 elements is
i) 5^{25} ii) 5^{15} iii) $5^{15}\ (5^{10}-1)$ iv) $5^{15}\ (5^{10}+1)$

Answer : 5^{15}

Problem 4 : The number of binary operations on a set with 5 elements is
i) 5^{25} ii) 5^{15} iii) $5^{15}\ (5^{10}+1)$ iv) None of these

Answer : 5^{25}

Problem 5 : The composition o defined on the set $\mathbb{N}$ by a o b = Lcm of a & b $\forall a, b \in \mathbb{N}$ is
i) Commutative ii) associative ii) both commutative & associative iv) commutative but not associative

Answer : Both Commuative & associative

Problem 6 : The composition o defined on the set $\mathbb{R}$ by a o b = 2^{ab} $\forall a, b \in \mathbb{R}$ is i) Commutative ii) associative iii) commutative but not associative iv) both commutative & associative.

Answer : Commutative but not associative

Problem 7 : The composition o defined on the set $\mathbb{Z}$ by a o b = a+ b – ab $\forall a, b \in \mathbb{Z}$ is i) Commutative ii) associative

iii) commutative but not associative iv) both commutative & associative.

Answer : Both commutative & associative

Problem 8 : The composition o defined on the set $\mathbb{N}$ by a o b = a^b $\forall a, b \in \mathbb{N}$ is i) Commutative ii) associative associative but not commutative iv) neither commutative nor associative

Answer : Neither commutative nor associative

Problem 9 : The composition o defined on the set $\mathbb{R}$ by a o b = |a| +| b| $\forall a, b \in \mathbb{R}$ is i) Commutative ii) associative iii) commutative but not associative iv) both commutative & associative.

Answer : Both commutative & associative

Problem 10 : The composition o defined on the set $\mathbb{Z}$ by a o b = b $\forall a, b \in \mathbb{Z}$ is i) Commutative ii) associative iii) commutative but not associative iv) not commutative but associative.

Answer : Not commutative but associative on $\mathbb{Z}$.