

Important Questions 8

Question 1 : Let $A = \{1,2,3,4\}$ and $R = \{(1,1), (2,2), (1,2)\}$.

[1] The reflexive closures of R is :

[a] $\omega_1 = \{(1,1), (2,2), (1,2), (2,1)\}$. [b] $w_2 = \{(1,1), (2,2), (1,2), (3,3)\}$.

[c] $w_3 = \{(1,1), (2,2), (1,2), (3,3), (2,1), (4,4)\}$.

[d] $w_4 = \{(1,1), (2,2), (1,2), (3,3), (4,4)\}$.

[2] The symmetric closure of R is :

[a] $w_1 = \{(1,1), (2,2), (1,2), (2,1), (3,3)\}$. [b] $w_2 = \{(1,1), (2,2), (1,2), (2,1)\}$.

[c] $w_3 = \{(1,1), (2,2), (1,2), (2,1), (3,1), (1,3), (2,3), (3,2)\}$.

[d] $w_4 = \{(1,1), (2,2), (1,2), (2,1), (3,3), (4,4)\}$.

Question 2: Let $A = \{b, 1, 3, c, 5\}$, $R = \{(b, 1), (5, c), (c, 3), (3, b)\}$ and

$D = \{(3, b), (c, 5), (c, c), (5, 3)\}$

[1] The transitive closure of R is :

[a] $w_1 = \{(b, 1), (5, c), (c, 3), (3, b), (5, 3), (c, b)\}$.

[b] $w_2 = \{(b, 1), (5, c), (c, 3), (3, b), (5, 3), (c, b), (3, 1)\}$.

[c] $w_3 = \{(b, 1), (5, c), (c, 3), (3, b), (5, 3), (c, b), (3, 1), (c, 1), (5, 1), (5, b)\}$.

[2] The symmetric closure of D is :

[a] $\dot{D} = \{(3, b), (c, 5), (c, c), (5, 3), (5, c)\}$.

[b] $\dot{D} = \{(3, b), (c, 5), (c, c), (5, 3), (3, 5), (5, c), (b, 3)\}$.

[c] $\dot{D} = \{(b, 3), (c, 5), (c, c), (5, 3), (5, c), (3, 5), (3, 3), (5, 5)\}$.

[3] The transitive closure of D is :

[a] $M = \{(3, b), (c, 5), (c, c), (5, 3), (c, 3), (5, b)\}$.

[b] $S = \{(3, b), (c, 5), (c, c), (5, 3), (5, 5), (3, 5), (3, 3)\}$.

[c] $Y = \{(3, b), (c, 5), (c, c), (5, 3), (c, 3), (c, b), (5, b)\}$.