Question 1:

Answer:

R1=

Rfoam =

Rbrick =

Rbrick =

1/Rtotal-parallel =

R2=

RPlaster3 = RPlaster4 =

Rwall,total =R1.conv + Rfoam +Rplaster1 + Rparallel + Rplaster2 + R2.conv

=0.4 + 4.615 + 0.363 + 1.94 + 0.363 +0.1 = 7.781 C/W

=

Rwall total(thickness of the brick 16mm) =6.81 C/W

=

Conclusion: The heat transfer rate remains the same as the thermal resistance is not affected by the thickness of the brick.

Question 2:

Answer:

|  |  |  |
| --- | --- | --- |
|  | Wood | Insulation |
| Outside Air | 0.03 | 0.03 |
| Wood bevel | 0.14 | 0.14 |
| Polywood | 0.11 | 0.11 |
| Urethane rigid foam insulation | No | 3.528 |
| Wood studs | 0.63 | None |
| Gypsum board | 0.079 | 0.079 |
| Inside surface | 0.12 | 0.12 |

Urethane rigid foam insulation: = 3.528

R’with wood = (0.12+0.079+0.63+0.11+0.14+0.03) m2  = 1.11

R’with insulation = (0.12+0.079+3.528+0.11+0.14+0.03) m2  = 4.007