Task 1

Q1: Find the SIDs of students who attend some course of the first or second class.
A1:πSID(σClass=1∨Class=2(Courses)⋈(πSID,CID(Gradebook))⋈Students)

Q2: Find the SIDs of students who attend some course of the first class or have the surname Valdez.
A2: (πSID(σSurname='Valdez'(Students)))∪(πCID(σClass=1(Courses))⋈(πSID, CID(Gradebook)))

Q3: Find the SIDs of students who attend some course of the first and second class.
A3:(πSID(σClass=1(Courses)⋈(πSID,CID(Gradebook)) ⋈ Students)) ∩ (πSID(σ Class=2(Courses) ⋈ (πSID,CID(Gradebook)) ⋈ Students))

Q4: Find the SIDs of students who attend all courses.
A4:πSID(((πSID,CID(Gradebook)) / (πCID(Courses))) ⋈ Students)

Q5: Find the SIDs of students who attend some course of the first or second class.
A5:πSID(((πSID,CID(Gradebook))/(πCIDσClass=3(Courses)))⋈Students)

Q6: Find the SIDs of students who attend some course of the first or second class.
A6:

ρ(R1, Gradebook)
ρ(R2, Gradebook)
πR1.SID,R2.SID(σR1.CID=R2.CID∧(σR1.Mark>R2.Mark(R1)×R2))

Q7: Find the SIDs of students who attend some course of the first or second class.
A7:

ρ(R1, Gradebook)
ρ(R2, Gradebook)
πR1.SID,R2.SID(σR1.CID=R2.CID∧(σR1.Mark≠R2.Mark(R1)×R2))

Task 2

Q1: πName(πSID((σClass=2(Courses)) ⋈ σMark='A' or Mark='B'(Gradebook)) ⋈ Students)
A1: Name : “Warrent”

Q2: (π Name(π SID((σClass = 1(Courses)) ⋈ σ Mark='A' or Mark='B'(Gradebook)) ⋈ Students))∩ (π Name(π SID((σClass = 2(Courses)) ⋈ σ Mark='A' or Mark='B'(Gradebook)) ⋈ Students))
A2: Name : “Warrent”

Q3: (π SID(π SID((σClass = 3(Courses)) ⋈ (σ Mark='A' or Mark='C'(Gradebook))) ⋈ Students))∩ (π SID(π SID((σClass = 4(Courses)) ⋈ (σ Mark='A' or Mark='C'(Gradebook))) ⋈ Students))

A3: SID : -(empty)

Q4: π Name((π SID,Name((σClass = 2(Courses)) ⋈ (σ Mark='A' or Mark='B'(Gradebook))) ⋈ Students)∩(π SID,Name((σClass = 3(Courses)) ⋈ (σ Mark='A' or Mark='B'(Gradebook))) ⋈ Students))
A4: Name : -(empty)