Q1.

A)

$$\pi_{sname}(\pi_{sid}(\sigma_{grade=10}Enrolled) \bowtie Students)$$

B)

$$\pi_{age}(\pi_{sid}(\pi_{cid}(\sigma_{credits=3}Courses) \bowtie Enrolled) \bowtie Students)$$

C)

$$\pi_{sname}(\pi_{sid}(\pi_{cid}(\sigma_{cname='Calculus'}Courses) \bowtie Enrolled) \bowtie Students)$$

D)

$$\pi_{sname}(\pi_{sid}(\pi_{cid}(\sigma_{credits<4}Courses) \bowtie \sigma_{grade\geq 8}Enrolled) \bowtie Students)$$

E)

$$\pi_{sname}(\left(\pi_{sid}(Enrolled) - \pi_{sid}(\sigma_{grade<>10}Enrolled)\right) \bowtie Students)$$

F)

$$\pi_{sname}\left((\pi_{sid}(\pi_{cid}(\sigma_{credits=3}Courses) \bowtie Enrolled) \cup \pi_{sid}(\sigma_{grade=10}Enrolled)) \bowtie Students\right)$$

G)

$$\pi_{age}\left(\left(\pi_{sid}(Enrolled \bowtie \sigma_{cname="Calculus"}Courses) - \pi_{sid}(Enrolled \bowtie \sigma_{credits=4}Courses)\right) \bowtie Students\right)$$

H)

$$\rho(Std1, Students)$$

$$\rho(Std2, Students)$$

$$\pi_{sname}(\left(\pi_{sid}(Students) - \pi_{Std1.sid}(Std1 \bowtie_{Std1.age>Std2.age} Std2)\right) \bowtie Students)$$

I)

$$\rho(Enr1, Enrolled)$$

$$\rho(Enr2, Enrolled)$$

$$\pi_{sname}(\left(\pi_{sid}(Enrolled) - \pi_{Enr1.sid}(Enr1 \bowtie_{(Enr1.sid=Enr2.sid)\wedge(Enr1.cid<>Enr2.cid)} Enr2)\right) \bowtie Students)$$

J)

$$\rho(TMP1, Courses)$$

$$\rho(TMP2, Courses)$$

$$\rho(TMP3, \pi_{cid} Courses - \pi_{TMP1.cid}(TMP1 \bowtie_{TMP1.credits<TMP2.credits} TMP2))$$

$$\pi_{grade}(TMP3 \bowtie Enrolled)$$

Q2.

A)

$$\pi_{title}(\sigma_{studio="Universal"} Movies)$$

B)

$$\pi_{name}((\pi_{actor\_id}(\sigma_{character="Forrest\ Gump"} StarsIn)) \bowtie Actors)$$

C)

$$\pi_{name}(\sigma_{nationality="German"} Actors)$$

D)

$$\pi_{nationality}((\pi_{actor\_id}(\sigma_{character="Forrest\ Gump"} StarsIn)) \bowtie Actors)$$

$$\cup$$

$$\pi_{nationality}((\pi_{movie\_id}(\sigma_{year=1980} Movies)) \bowtie StarsIn \bowtie Actors)$$

E)

$$\rho(Str1, StarsIn)$$

$$\rho(Str2, StarsIn)$$

$$\pi_{name}((\pi_{actor_{id}}(StarsIn) - \pi_{Str1.actor_{id}}(Str1 \bowtie_{(Str1.actor\_id=Str2.actor\_id)\wedge(Str1.movie\_id<>Str2.movie\_id)} Str2)) \bowtie Actors)$$

F)

$$\rho(TMP1, \pi_{actor_{id}}(StarsIn \bowtie \sigma_{year \geq 1980} Movies))$$

$$\rho(TMP2, \pi_{actor_{id}}(StarsIn \bowtie \sigma_{studio='Universal'} Movies))$$

$$\pi_{name}((TMP1 - TMP2) \bowtie Actors)$$