

—:

$$(1) R_1 = \Pi_{sno, cname, score}(SC \bowtie Course)$$

$$R_1 = \begin{pmatrix} 1 & DB & 91 \\ 2 & ML & 84 \\ 2 & EN & 90 \\ 3 & ML & 78 \\ 4 & DB & 88 \end{pmatrix}$$

$$(2) R_2 = \Pi_{sno, sage, sdept}(\sigma_{\neg(sage > 19 \vee sdept = 'CS')}(Student))$$

$$R_2 = \begin{pmatrix} 3 & 19 & Math \end{pmatrix}$$

$$(3) R_3 = \Pi_{sno, sage}(Student) - \Pi_{sno, sage}(\sigma_{cno=1001}(Student \bowtie SC))$$

$$R_3 = \begin{pmatrix} 2 & 21 \\ 3 & 19 \end{pmatrix}$$

$$(4) R_4 = \Pi_{sname}(Student \bowtie (\Pi_{sno, cno}(SC) \div \Pi_{cno}(\sigma_{score > 90}(SC))))$$

$$R_4 = \begin{pmatrix} Adam \\ Lilin \end{pmatrix}$$

$$(5) R_5 = \Pi_{sname}(Student \bowtie (SC \div \Pi_{cno}(\sigma_{sno=2}(SC))))$$

$$R_5 = \begin{pmatrix} Lilith \end{pmatrix}$$

==.

$$(1)$$

$$\pi_{sno, sname}((\sigma_{cno='001'}(SC) \bowtie Student) \cap (\sigma_{cno='002'}(SC) \bowtie Student))$$

$$(2)$$

$$\pi_{tno}(\sigma_{tc1.cno \neq tc2.cno}(\rho_{tc1}(TC) \bowtie_{tc1.tno=tc2.tno} \rho_{tc2}(TC)))$$

$$(3)$$

$$\pi_{cno, sno}(SC) - \pi_{sc1.cno, sc1.sno}(\sigma_{sc1.score < sc2.score \wedge sc1.cno = sc2.cno}(\rho_{sc1}(SC) \times \rho_{sc2}(SC)))$$

(4)

$$\pi_{sname}(Student \bowtie ((\sigma_{tno='01'}(SC \bowtie TC) - \sigma_{tno \neq '01'}(SC \bowtie TC))))$$

(5)

$$\pi_{sno}(\sigma_{dno='03'}(Student)) \cap \pi_{sc1.sno}(\sigma_{sc1.score \geq 60 \wedge sc2.score \geq 60 \wedge sc1.cno \neq sc2.cno}(\rho_{sc1}(SC) \bowtie \rho_{sc2}(SC)))$$