i. $\Pi_{COURSENAME}$ (σ ((TEACHER.TEACHERNAME = 'PPC') $\wedge$ (COURSE.COURSEID = TEACHES.COURSEID) $\wedge$ (TEACHES.TEACHERID = TEACHER.TEACHERID)) (COURSE $\times$ TEACHES $\times$ TEACHER))

ii) $\Pi_{STUDENT.ROLLNO, NAME}$ (σ ((TEACHER.TEACHERNAME = 'PPC') $\wedge$ (COURSE.COURSEID = TECHES.COURSEID) $\wedge$ (TEACHES.TEACHERID = TEACHER.TEACHERID) $\wedge$ (STUDENT.ROLLNUMBER = REGISTRATION.ROLLNUMBER) $\wedge$ (REGISTRATION.COURSEID = COURSE.COURSEID)) (STUDENT $\times$ REGISTRATION $\times$ COURSE $\times$ TEACHES $\times$ TEACHER))

(ii) $\Pi_{COURSE.COURSEID, COURSENAME, START\_TIME, END\_TIME, DAY}$ (σ ((CLASSROOM.ROOMNO = 'NC142') $\wedge$ (CLASSROOM.ROOMNO = TEACHES.ROOMNO) $\wedge$ (TEACHES.SLOTID = TIMING.SLOTID) $\wedge$ (TEACHES.COURSEID = COURSE.COURSEID)) (TIMING $\times$ TEACHES $\times$ CLASSROOM $\times$ COURSE))

4. $\Pi_{NAME}(\Pi_{NAME, GRADCARD.ROLLNO}(\sigma_{T.COURSEID=REGISTRATION.COURSEID \wedge T.MAX(MARKS)=GRADECARD.MARKS \wedge GRADECARD.ROLLNUMBER=REGISTRATION.ROLLNUMBER \wedge STUDENT.ROLLNO=REGISTRATION.ROLLNUMBER}(REGISTRATION \times GRADECARD \times STUDENT \times \beta_T(COURSE.COURSEID \mathcal{G}_{MAX(MARKS)} \sigma_{TEACHER.TEACHERNAME='PPC'}(REGISTRATION \times STUDENT \times COURSE \times TEACHES \times TEACHER \times GRADECARD)))))$

$(GRADECARD.ROLLNUMBER=REGISTRATION.ROLLNUMBER) \wedge (COURSE.COURSEID=TEACHES.COURSEID) \wedge (TEACHES.TEACHERID=TEACHER.TEACHERID) \wedge (STUDENT.ROLLNUMBER=REGISTRATION.ROLLNUMBER) \wedge (REGISTRATION.COURSEID=COURSE.COURSEID) \wedge (COURSE.COURSEID=GRADECARD.COURSEID))$

$\mathcal{G}$ = Aggregation operator

5. $\Pi_{\text{NAME, STUDENT.ROLLNUMBER}} \left(\sigma_{(\text{STUDENT.ROLLNUMBER} = T2.\text{ROLLNO}) \wedge (T2.\text{NO\_OF\_EX} = T1.\text{MAX-EX})} \rho_{T_1} \left(\cancel{\text{GR}} \; \cancel{\text{MAX-EX}} \; G_{\rho_{\text{MAX-EX}}(\text{MAX}(\text{NO\_OF\_EX}))} \left(\sigma_{(T.\text{ROLLNO} = \text{STUDENT.ROLLNUMBER})} \left(\rho_T \left(\rho_{\text{ROLLNO}}(\text{GRADECARD.ROLLNUMBER}) \; G_{\rho_{\text{NO-OF-EX}}(\text{COUNT})} \left(\sigma_{(\text{GRADE}='EX')}(\text{GRADECARD}) \right) \right) \times \text{STUDENT} \right) \right) \right) \times \rho_{T_2} \left(\sigma_{\rho_{\text{ROLLNO}}(\text{GRADECARD.ROLLNO})} \; G_{\rho_{\text{NO-OF-EX}}(\text{COUNT}(\text{COURSE\_ID}))} (\text{GRADECARD}) \times \text{STUDENT} \right) \right) \right)$

G = Aggregation Operator