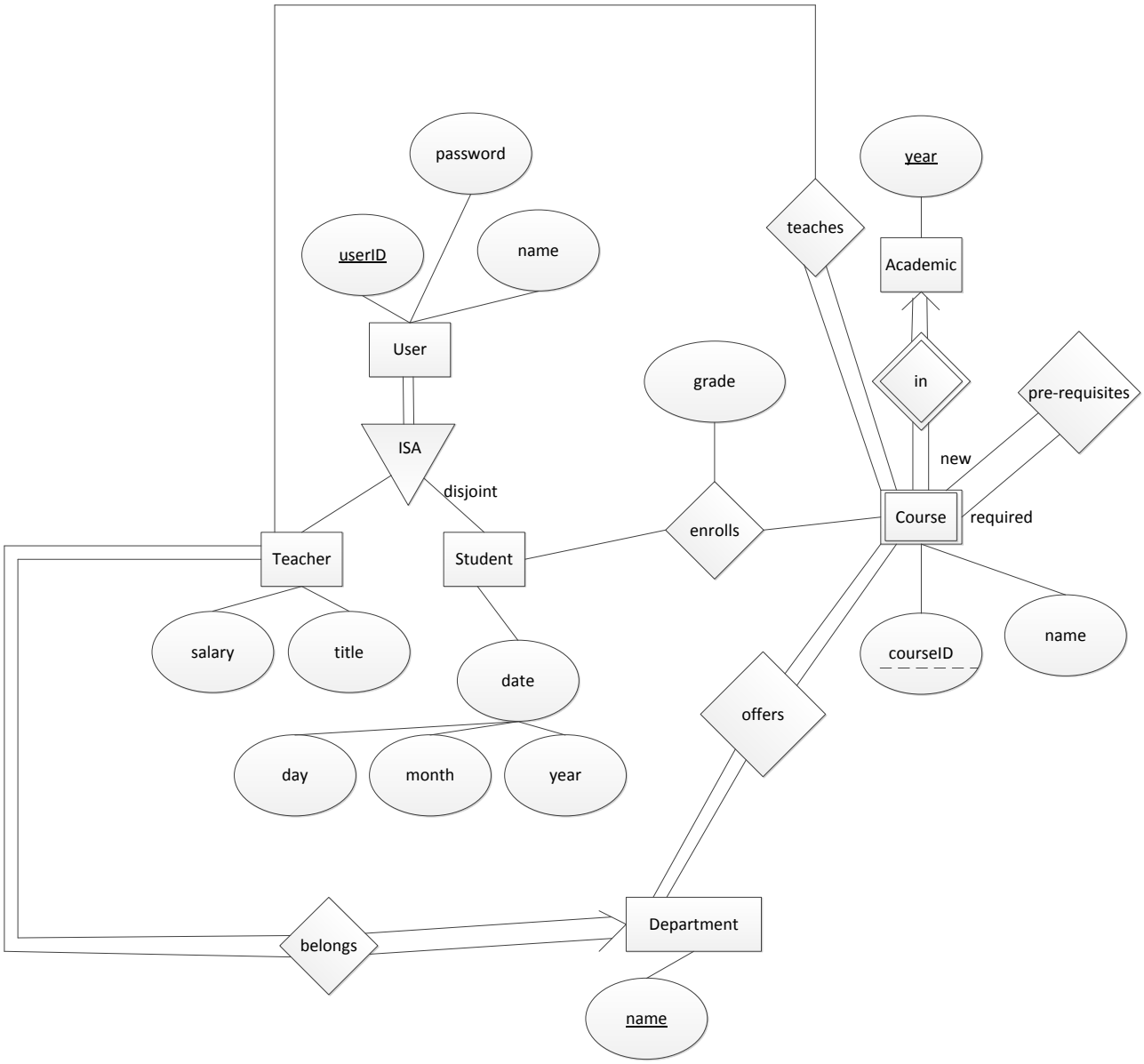
Question 1

a) ER diagram



b) Table:

1. User (<u>userID</u>, password, name)

2. Teacher (<u>userID</u>, salary, title, department_name)
Foreign keys: {userID} referencing User
{deparment_name} referencing Department

3. Student (<u>userID</u>, date.day, date.month, date.year)
Foreign key: {userID} referencing User

4. Department (<u>name</u>)

5. Academic (<u>year</u>)

6. Course (<u>courseID, year</u>, name)
Foreign key: {year} referencing Academic

7. enrolls (<u>userID, courseID, year</u>, grade)

Foreign keys: {userID} referencing Student
{courseID, year} referencing Course

8. offers (courseID, year, department_name)
Foreign keys: {department_name} referencing Department
{courseID, year} referencing Course

9. pre-requisites (newCourseID, requiredCourseID)
Foreign keys: {newCourseID} referencing Course
{requiredCourseID} referencing Course

10. teaches (courseID, year, userID)
Foreign keys: {userID} referencing Teacher
{courseID, year} referencing Course

Question 2

a) D

b) SELECT d.dish_name, SUM(r.quantity * i.caroliesPerUnit)
FROM Dish d, Recipe r, Ingredient i
WHERE d.did = r.did
AND r.iid = i.iid
GROUP BY d.did

c) π Ingredient.ingredient_name (σ Dish.category="Thai" ((Dish) ⋈ (Recipe) ⋈ (Ingredient)))

d)