ER Diagram

- Name
- Phone
- Email

Person(an individual)

ISA

Individual Seller

Contact Person

For a book, works for company

Sold by

- Name
- ISBN
- Category
- Status

Textbook

Published by

Company

- Name
- Address

Contact

- Description
- Phone no.

Phone

ISA

Publisher

- Year

Answer 1. (i). Entity sets:

a. All textbooks published by a company
b. All sellers for a textbook
c. All phone numbers for a company
d. All contact persons for a textbook in a company
e. All publishers for a textbook

Answer 1.(ii). Relationship sets and their multiplicity

a. Textbook and published by company - many to one relationship
b. Textbook sold by many sellers(Individual seller and Company) – one to many relationship
c. Company's contact number – one to many
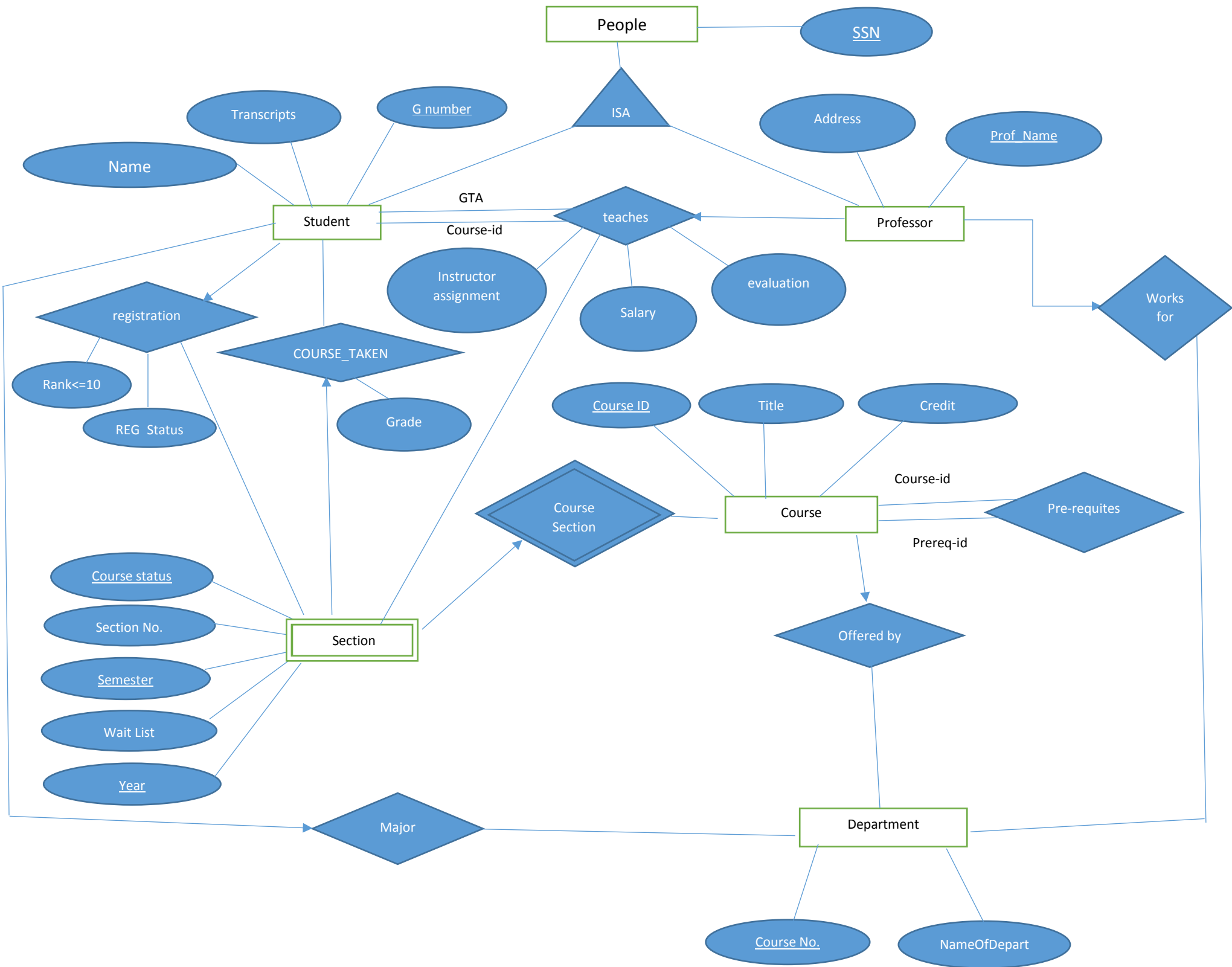
Answer 1.(iii). Primary key for entity sets:

a. Entity name : Textbooks – Primary key : ISBN
b. Entity name : Company – Primary key : Company name
c. Entity name : Publisher – Primary key : Company name
d. Entity name : Person – Primary key : Phone
e. Entity name : Phone – Primary key : Phone no.

Weak Entity set:

Contact no. of Company(Entity name : Phone)

The point not shown in the diagram are :

a. Textbook sold by a Company can have only one Contact person per textbook.

Entity-Relationship Diagram

- **People** — SSN
- **People** ISA **Student** / **Professor**
- **Student** attributes: Name, Transcripts, G number
- **Professor** attributes: Address, Prof_Name
- **teaches** relationship (GTA, Course-id) between Student, Professor
- **Instructor assignment**
- **evaluation**, **Salary**
- **Works for** — Professor to Department
- **registration** (Rank<=10, REG Status) — Student
- **COURSE_TAKEN** (Grade) — Student
- **Course** attributes: Course ID, Title, Credit
- **Course Section**
- **Pre-requites** (Course-id, Prereq-id) — Course
- **Offered by** — Department
- **Section** attributes: Course status, Section No., Semester, Wait List, Year
- **Major** — Student to Department
- **Department** attributes: Course No., NameOfDepart

Answer 2.(i). Entity Sets:

a. All people who are either students or professors
b. All students who are either only students and GTA students
c. All courses offered by a department
d. All professors who work for a department
e. All sections for a particular course
f. All departments listed in the database

Answer 1.(ii). Relationship sets and their multiplicity:

a. All sections of a course in a particular semester and year, Many sections for a course, Many to one
b. Many professors working for a department, Many to one
c. Professor for a course, one to one
d. GTA for a course, one to one
e. Student registration for many sections in a semester, one to many
f. Student status for a section of course while registration, one to one

Answer 1.(iii). Primary keys in the ERM:

a. Entity : Student, Primary Key: G_Number
b. Entity : Professor, Primary Key : Name
c. Entity : People, Primary Key : SSN
d. Entity : Courses_taken, Primary Key : G_number
e. Entity : Major, Primary Key : G_Number
f. Entity : Section , Primary key : COURSE_ID,Section_No
g. Entity : Registration, Primary Key : G_Number
h. Entity : Department, primary Key : Course_no

Answer 2. The Rank which is between 0 and 10 is not captured by our ER diagram.

Answer 3.

a. List of courses for which the system does not imply prerequisite but they have prerequisite on catalog.
b. List of courses which are in on the department's catalog but not offered in a year.