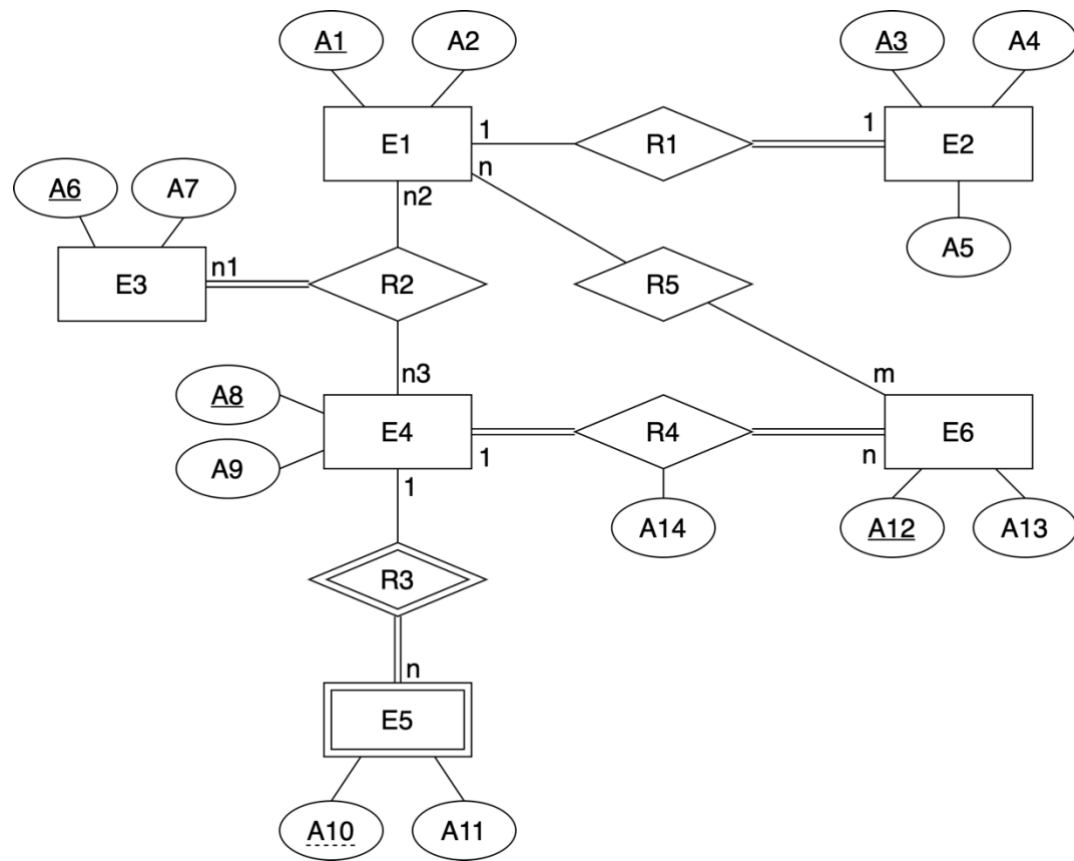# Practice 6

Question 1. Draw an ER diagram to represent the scenario.

An organizer commissioned us to design a database for an inventory management system. They provide a summary of requirements as below.

- A supplier is identified by his/her id. We also record his/her name, phone number and supplier type. A supplier may have several supplier types.

- A product is identified by its id. We also record its name, price, production date and availability. A supplier must provide one or many products. Each product must be provided by one supplier.

- A manager is identified by his/her id. We also record his/her name, phone number, working hours and job description. Each manager is hired by one supplier. A supplier may hire zero or many managers.

- A manager can oversee zero or many products. Each product can be overseen by zero or many managers.

- An order is identified by its id. We also record its order date, status and price.

- An order must involve one or many products. Each product is involved in at most one order. We are interested in the number of products in each order as well.

- Each shipping is identified by its id. We also record the shipping address, shipping company and status. The shipping address is composed of street number, street name, city and country.

- An order can have at most one shipping and each shipping must correspond to an order.

- Each order is associated with zero or many invoices. An invoice is identified by a combination of the invoice id and the order id. It must exist along with the order. We also record its date, billing address, payment method and tax information.

Question 2. Convert the above ER-diagram into a relational data model.

Question 3. Consider the following schema for a movie database:

Player (pID, pName, nationality)

Game (gID, gName, price, platform)

Genre (gID, genre)

Play (pID, gID, duration)

Write the relational algebra expressions for the following queries:

1) Find the *names* of the games that are in the **role-playing** genre and have prices **lower than $200**. (2 marks)

2) Find the *names* of the players who have played **more than 5 games** where duration of each is **more than 3 hours**. Only consider the games that are on the **Windows** Platform. (2 marks)

3) Find the *names* of the games that are in both **Adventure** and **Action** genres at the same time and have been played by **German** players. (3 marks)

4) Find the *names* of the **Italian** players who have only played games that are on the **PSP** platform and have never played any game that are in the **Fighting** genre. (3 marks)