NATIONAL INSTITUTE OF TECHNOLOGY PATNA
CLASS TEST 1, September 2021, SESSION: 2021-22 ODD SEMESTER

Program**: B.Tech** **Semester: 5th** **Department:** CSE
Course Code: CS5401 **Course Name:** Database Management Systems

Q1) Design an ER model to represent the given data requirements of a company hiring office. Identify entity types, their attributes, relationship types, determine the cardinality and participation constraints of the relationships as well as any role indicators in your ER model. State any assumptions if required with proper justification. Further, map the designed ER schema into a relational schema. Specify all primary keys and foreign keys. **[6]**

- the company hiring has many panels,
- each panel has a name, a HR, a manager, and a set of members,
- each member belongs to only one panel,
- each member has a name, position (developer, automation or data analytics), an expertise skill (such as dot NET or SQL), and a set of project records,
- a manager is also a member,
- a hiring of employee approval meeting is done between two panels (one as host who conducted the interview and other as guest who is responsible with cross check of interviewer performance), and has a date of interview and a merit points (such as 1, 2, 3,…).

Q2) Consider a database of Marks card in which professors within an educational division record CGPA earned by individual scholars in their courses. Design an enhanced entity–relationship diagram (EER) for the marks card database. State any assumptions if required with proper justification. The data requirements are summarized as follows: **[4]**

- Each scholar has a name, roll no, and an email id.
- In each term professor teaches certain courses which is recognized by a course_id, a section_ id, and the term in which it is taught. For each course the professor specifies the minimum number of points required in order to earn letter rating A, B, C, D, and F. For example, 85 points for an A, 75 points for a B, 65 points for a C, and so forth.
- Scholars has to register in each course taught by the professor.
- Each course has a number of rating components (such as class test, assignment, quiz, end semester exam and so on). Each component has a maximum number of rating (such as 100 or 50) and a weight (such as 20% or 10%). The weights of all the rating components of a course is usually total 100.
- Finally, the professor records the points earned by each scholar in each of the rating components in each of the courses. For example, scholar 111 earns 75 points for the class test rating component of the section 5 course CS5301 in the odd semester of 2019. The class test of rating component may have been defined to have a maximum of 100 points and a weight of 20% of the course grade.

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