**COURSE WORK QUESTION PAPER FOR RELATIONAL DATABASE DESIGN**

**Module code : ADipIT03**

**Module title: Database Design and Implementation**

**Module leader: Jnaneshwar Bohara**

**Semester Autumn 2019**

**Year Year 2**

**Distribution Date:** **7th Week**

**Submission Date: 12th Week**

**Assessment: Course Work**

**Type Individual Assessment**

**Assessment Weightage 25%**

**Assessment Full Marks 100 Marks**

**Assessment Pass Marks 40 Marks**

**Warning: You are reminded that there exist regulations concerning plagiarism.**

**Instructions to candidates:** **Candidates are required to go through the content of the course work and answer the questions accordingly.**

**The coursework should be submitted as report with word processed and formatted contents**

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**Case Study of Herald College Kathmandu**

Herald College Kathmandu wants to automate its operations in classrooms. You are required to design a database based on following requirements:

Students are given a student number when they join the college. This is stored along with their name, date of birth, and the date they joined the college.

In addition to the name and date of birth, for all teachers, the date that they start working as a teacher must be recorded, along with their status (full time or part time).

A teacher may be assigned to teach any number of classes, but each class has one and only one assigned teacher. Some teachers, especially part time teachers, may not be assigned to any class.

Classes are divided in Lectures, Tutorials and Workshops. A class is offered for a specific level(year) at a specific time, day of the week, and location. For example, one class taught on Mondays at 7:00 a.m. in Lecture Theatre 1 is for Level 4 (first year) students. Another class taught on Mondays at 7:00 a.m. in Lecture Theatre 2 is for Level 5 (second year) students. A class taught on Tuesdays at 7:00 a.m. in Lecture Theatre 3 is for Level 6 (third year) students. Similarly, there may be Tutorial and Workshop Classes running at the same time for different level (year) students at different classrooms.

It is necessary to keep track of all the different classes that are being offered, who is assigned to teach each class, and which students attend each class. Also, it is important to track the progress of each student.

Students are assessed either by coursework or exam or both. Your proposed database should be able to keep the record of the marks of coursework and exams for each student.

**QUESTIONS:**

1. **Build conceptual data model [35 marks]**
   1. Identify entity types [8 marks]
   2. Identify relationship types [7 marks]
   3. Identify and associate attributes with entity or relationship types [5 marks]
   4. Determine attribute domains [5 marks]
   5. Determine candidate, primary, and alternate key attributes

[10 marks]

1. **Build and validate logical data model [20 marks]**
   1. Derive relations for logical data model [10 marks]
   2. Validate relations using normalization [10 marks]
2. **Translate logical data model for Oracle DBMS [30 marks]**
   1. Design base relations [10 marks]
   2. Design representation of derived data [10 marks]
   3. Design general constraints [10 marks]
3. **SQL [15 marks]**
   1. Insert at least 5 records in reference tables and 10 records in transaction tables [2.5 marks]
   2. List the name of students and teachers according to classes

[2.5 marks]

* 1. Demonstrate the SQL query to give attendance of a student in particular class [5 marks]
  2. Demonstrate the SQL query to give marks obtained by a student in particular subject [5 marks]

**Instruction to Students**

Students are required to include evidence and screen shots of

1. ER Diagram
2. Normalization
3. Table Creation
4. Data Insertion
5. Select Statement for Query

**Note:**

You can add entities and scenario to elaborate your design.

***End of Course Work***