

Daffodil International University
Department of Software Engineering
Quiz 2, Summer 2026, Section: 45 A
Course Code: SE223; Course Title: Database System

Marks- 15

 40 min

Question 1:

A hospital management system maintains information about doctors and patients. Each doctor has a Doctor ID, First Name, Last Name, Specialization, and Phone Numbers. A doctor may have multiple phone numbers. Each patient's information includes a Patient ID, Name, Date of birth, age and address. The address consists of house no., Street, City, and Postal Code. A patient may be admitted to the hospital multiple times. For each admission, the hospital records an admission number, admission date, and ward number. An admission cannot exist without a patient, and the admission number is unique only within a particular patient. Doctors treat patients. A doctor can treat many patients, and a patient can be treated by many doctors. For each treatment, the hospital stores the treatment date and diagnosis.

- a) Draw the ER diagram for the above scenario, including all types of attributes. (5 marks)
- b) Perform the following Relational Algebra: (6 Marks)
 - **Doctor** (DoctorID, Name, Specialization)
 - **Patient** (PatientID, Name, DOB, HouseNo, Street, City, PostalCode)
 - **Admission** (PatientID, AdmissionNo, AdmissionDate, WardNo)
 - **Treatment** (DoctorID, PatientID, TreatmentDate, Diagnosis)
- i) Retrieve the names and specialisations of doctors specialising in cardiology.
- ii) Find the patient IDs and names of patients living in Dhaka.
- iii) Identify the names of doctors who treated patients.
- iv) Retrieve the names of patients who have never been admitted.
- c) Write the SQL query for following Cases (4 Marks)
 - i) Create the Patient database Declaring the PatientID (ex: pt-101) as primary key
 - ii) Add a new column "Status" to the Treatment table
 - iii) Rename the Admission table with Appointment
 - iv) Declare Patient ID as Foreign Key in Treatment table