

2/3/26, 8:14 AM

Database Management System (See - A)

Marks-15

CT-1

Time: 45 Mins

A Smart Hospital Information System (SHIS) manages patients, doctors, treatments, and hospital resources. Each **Patient** is uniquely identified by **patientID** and has attributes **name**, **dateOfBirth**, **gender**, **bloodGroup**, and **contactNumber**. Each **Doctor** has a unique **doctorID**, **name**, **specialization**, and **designation**. Doctors may work in multiple departments. Each **Department** has a **departmentID**, **departmentName**, and **floorNumber**. Patients are admitted to the hospital through **Admissions**. An **Admission** records **admissionDate**, **dischargeDate**, and **admissionType** (emergency/regular). An admission cannot exist without a patient, and a patient may have multiple admissions over time. During an admission, patients are assigned to **Rooms**. Each **Room** is identified by **roomNumber** and has attributes **roomType** and **dailyCharge**. A room can accommodate multiple patients over time, but only one patient at a time. Patients receive **Treatments** during an admission. Each treatment has a **treatmentID**, **treatmentName**, and **cost**. A patient may receive multiple treatments, and the same treatment may be given to many patients. Doctors **prescribe treatments** to patients during an admission. A prescription records **prescriptionDate**, **dosage**, and **duration**.

1. Draw the ER Diagram (ERD) for the SHIS scenario. 6
 - Show all entities and attributes
 - Clearly mark primary keys and foreign keys
 - Show relationships with correct cardinality and participation constraints
2. Identify all strong and weak entities in the system and justify your choices. 2
3. Justify the cardinality and participation constraints between: 2
 - Patient and Admission
 - Admission and Room
 - Doctor and Treatment
4. Justify the need for associative entities in this ERD. 1
5. Distinguish between DDL and DML. Give an example from the above scenario. 4