PES University, Bangalore
(Established under Karnataka Act No. 16 of 2013)
Department of Computer Science and Engineering

UE18CS252

August 2021: END SEMESTER ASSESSMENT (ESA) B.Tech. IV SEMESTER

UE18CS252: DATABASE MANAGEMENT SYSTEM

Time: 3 Hrs.   Answer All Questions   Max Marks: 100

1.	a)	With a neat diagram, Explain the database system environment.	6
	b)	Explain self-describing nature of database. [3 marks] Provide comparison of database with file system. [3 marks]	6
	c)	You are given the following requirements for a simple database for the National Hockey League (NHL): 1. the NHL has many teams, 2. each team has a name, a city, a coach, a captain, and a set of players, 3. each player belongs to only one team, 4. each player has a name, a position (such as left wing or goalie), a skill level 5. a tcam captain is also a player 6. a game is played between two teams (referred to as host_team and guest_team) and has a date (such as May 11th, 2019) and a score (such as 4 -2) Construct a clean and concise ER diagram for the NHL database. List your assumptions and clearly indicate the cardinality mappings, participation constraints in your ER diagram.	8
2.	a)	Discuss the Characteristics of Relation.	6
	b)	Explain Join operation in relational algebra and also discuss Division operation with suitable example.	8
	c)	Write the following queries as relational algebra expressions. Author(name, city, age, expert_in) Book(title, author_name, pages, price) i) list the author details who are expert in Pattern Recognition and live in Bengaluru. ii) list the titles of the books which are written by Stallings and have either 380 pages or cost Rs.450. iii) display author names, who have authored books on OS and DS as well	6
3.	a)	List and explain any four Primary Data types in SQL.	4
	b)	Considering Company Database, Write SQL Queries for the following: 1. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth date. 2. Make a list of all project numbers for projects that involve an employee whose last name is 'Smith', either as a worker or as a manager of the department that controls the project. 3. Retrieve all employees whose address is in Houston, Texas	8

		4. Show the resulting salaries if every employee working on the 'ProductX' project is given a 10% raise.	
	c)	Discuss SQL Triggers with example.	8
4.	a)	Explain informal design guidelines for relation schemas	8
	b)	Which normal form is based on the concept of transitive dependency? Explain with an example the decomposition into 3NF.	8
	c)	Define Functional Dependency and Normalization.	4
5.	a)	Discuss Interfaces provided by DBMS.	10
	b)	Explain all the SQL commands which support database transaction.	6
	c)	Mention the difference between Logical Data Independence and Physical data Independence	4