Duration: 3hrs   **[Max Marks:80]**

N.B. : (1) Question No 1 is Compulsory.
       (2) Attempt any three questions out of the remaining five.
       (3) All questions carry equal marks.
       (4) Assume suitable data, if required and state it clearly.

1		Attempt any FOUR	[20]
	a	Explain the role of DBA.	[5]
	b	Explain the ACID properties of transactions.	[5]
	c	Explain components of ER Models.	[5]
	d	Explain the aggregate functions in SQL with examples.	[5]
	e	Differentiate between Strong and Weak Entity.	[5]
2	a	Design an ER diagram for a Bank Database System and convert it into relational tables.	[10]
	b	Explain different relational algebra operators with examples.	[10]
3	a	Describe the overall architecture of DBMS with a suitable diagram.	[10]
	b	Given a relation R(P, Q, R, S, T) and Functional Dependency set FD = { QR → PST, S → Q }, determine given R is in which normal form?	[10]
4	a	What is Deadlock? How to avoid deadlock?	[10]
	b	What is Normalization? Explain 1NF, 2NF and 3 NF with examples.	[10]
5	a	Explain the EER features with suitable examples.	[10]
	b	Explain the constraints in SQL.	[10]
6	a	Explain conflict and view Serializability with an example.	[10]
	b	Explain the Log based recovery mechanism.	[10]

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