Attempt Any Three Questions

Roll No

II SEM (1st Year) Examination NOV – DEC 2020

680304/MCA-304 **Subject Title: Database Management Systems**

Time : 2 Hours any 3 Maximum Marks : 42 Minimum Pass Marks:

Note :
1. *Answer all five questions. All questions carry equal marks.*
2. *In each question part a, b, c are compulsory and part d has internal choice. Out of which part a & b (Max. 50 words) carry 2 marks, part c (Max. 100 words) carry 3 marks and part d (Max. 400 words) carry 7 marks. Word limit would not be followed for (except) diagram, numerical, derivation etc.*
3. *All Parts of each question are to be attempted at one place.*
4. *Assume suitable value for missing data, if any.*

Question No.			Marks	
1.	(a)	Explain schema and subschema.	02	CO1,CO2
	(b)	Explain different level of data abstraction.	02	CO1,CO2
	(c)	Describe main functions of a database administrator.	03	CO1
	(d)	Explain disjoint and overlapping design constraints in case of generalization with suitable example.	07	CO3
		OR		
	(e)	Discuss the main characteristics of the database approach and how it differs from traditional file systems.	07	CO1
2.	(a)	Explain Single value and multiple valued attribute.	02	CO2
	(b)	Describe DDL and DML.	02	CO2
	(c)	List the different operations of relational algebra.	03	CO2
	(d)	Describe the division and the join operation of the relational algebra. Give an example for each.	07	CO3
		OR		
	(e)	Differentiate (i) Simple and composite attribute. (ii) Primary key and candidate key.	07	CO3
3.	(a)	Define Join dependency.	02	CO3
	(b)	Explain trivial and non trivial dependencies.	02	CO3
	(c)	Explain non-loss decomposition.	03	CO3
	(d)	Let R(A, B, C, D, E, G) and F = {A->B, CD->A, CB->D, AE->G, CE->D}. Decompose R into 2NF then in 3NF.	07	CO3
		OR		
	(e)	Explain the needs of normalization and also explain 2NF and 3NF.	07	CO3
4.	(a)	Describe deadlock.	02	CO4
	(b)	Explain log-based recovery.	02	CO4
	(c)	Consider the following schedule: **S1: R1(X)W2(X)W1(X)R3(X)C1C2C3** Is the schedule serializable and also find whether it is recoverable or not.	03	CO4
	(d)	Explain ACID properties with an example.	07	CO4,CO6
		OR		
	(e)	Differentiate between strict two-phase and rigorous two-phase with conversion protocol.	07	CO4,CO6
5.	(a)	Define starvation.	02	CO5

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	(b)	Explain magnetic disk.	02	CO5
	(c)	Explain primary index and secondary index.	03	CO5
	(d)	Write short notes on: (i) Data replication (ii) Fragmentation	07	CO5
		OR		
	(e)	Explain different levels of RAID.	07	CO5
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