Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem (Even) Examination May-2022

CS3ED01 Database Applications & Tools

Programme: B.Tech. Branch/Specialisation: CSE

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. What is full form of SDLC? **1**

(a) System Design Life cycle
(b) Software Design Life Cycle
(c) System Development Life Cycle
(d) Software Development Life Cycle

ii. Verification is focused on- **1**

(a) Product (b) Process
(c) Both (a) and (b) (d) None of these

iii. An entity in A is associated with at most one entity in B, and an entity in B is associated with at most one entity in A. This is called as- **1**

(a) One-to-many (b) One-to-one
(c) Many-to-many (d) Many-to-one

iv. Data integrity constraints are used to: **1**

(a) Control who is allowed access to the data
(b) Ensure that duplicate records are not entered into the table
(c) Improve the quality of data entered for a specific property
(d) Prevent users from changing the values stored in the table

v. An _____ is a set of entities of the same type that share the same properties, or attributes. **1**

(a) Entity set (b) Attribute set
(c) Relation set (d) Entity model

P.T.O.

vi. The attribute 'name' could be structured as an attribute consisting of first name, middle initial, and last name. This type of attribute is called: **1**
(a) Simple attribute (b) Composite attribute
(c) Multivalued attribute (d) Derived attribute

vii. Tables in second normal form (2NF): **1**
(a) Eliminate all hidden dependencies
(b) Eliminate the possibility of a insertion anomalies
(c) Have a composite key
(d) Have all non-key fields depend on the whole primary key

viii. Which is a bottom-up approach to database design that design by examining the relationship between attributes: **1**
(a) Functional dependency (b) Database modelling
(c) Normalization (d) Decomposition

ix. A data warehouse is which of the following? **1**
(a) Can be updated by Users
(b) Contains various different naming conventions and formats
(c) Organized around important subject areas
(d) Contains only current data

x. Fact tables are which of the following: **1**
(a) Completely de-normalized
(b) Partially de-normalized
(c) Completely normalized
(d) Partially normalized

Q.2 i. Define Data and information. What is CASE? **2**

ii. Differentiate between traditional file processing and DBMS. **3**

iii. Write advantages of database approach. Define enterprise data model and SDLC steps. **5**

OR iv. Write and explain the three schema architecture for database development. **5**

Q.3 i. What is data modelling and data modelling rules? **2**

ii. (a) Create an E-R diagram for university enrolment system. **8**
(b) What is specialization explain using an example?

OR iii. (a) What is super type and sub type hierarchy and disjointness? **8**
(b) Give suitable example for Unary, ternary and n-ary cardinality constraints. What is specialization explain using an example?

Q.4 i. What are various Codds rules? **3**

ii. Define following: **7**
(a) Integrity constraints.
(b) Composite, primary and super key.
(c) Relational Model and strong and weak entity.

OR iii. What is the condition to transform EER diagram into relations? Write various steps to map EER model into relations. **7**

Q.5 i. Write and explain functional dependency with one example. **4**

ii. (a) What is transitive dependency? Explain with a suitable example. **6**
(b) A relation that is in First and Second Normal Form and in which no non-primary-key attribute is transitively dependent on the primary key, then it is in which normal form? Justify your answer with proper explanation.

OR iii. (a) What do you understand by De-normalization and merging relations? **6**
(b) "De-normalization does not maintain any data integrity" is this statement is true/false. Justify your answer.

Q.6 Attempt any two:

i. Differentiate between Data Mining and Data warehousing. **5**

ii. What do you understand by the knowledge exploration in the Data Mining? Write steps involved in Data Mining? **5**

iii. (a) Analyze and explain how the traditional DBMS is different from the Data warehouse? **5**
(b) Write any two differences between OLTP and OLAP.

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Marking Scheme
CS3ED01 Database Applications & Tools

Q.1	i.	What is full form of SDLC? (d) Software Development Life Cycle		**1**
	ii.	Verification is focused on- (b) Process		**1**
	iii.	An entity in A is associated with at most one entity in B, and an entity in B is associated with at most one entity in A. This is called as- (b) One-to-one		**1**
	iv.	Data integrity constraints are used to: (c) Improve the quality of data entered for a specific property		**1**
	v.	An _____ is a set of entities of the same type that share the same properties, or attributes. (a) Entity set		**1**
	vi.	The attribute 'name' could be structured as an attribute consisting of first name, middle initial, and last name. This type of attribute is called: (b) Composite attribute		**1**
	vii.	Tables in second normal form (2NF): (a) Eliminate all hidden dependencies		**1**
	viii.	Which is a bottom-up approach to database design that design by examining the relationship between attributes: (a) Functional dependency		**1**
	ix.	A data warehouse is which of the following? (c) Organized around important subject areas (d) Contains only current data		**1**
	x.	Fact tables are which of the following: (c) Completely normalized		**1**
Q.2	i.	Definition Data	0.5 mark	**2**
		Information	0.5 mark	
		CASE	1 mark	
	ii.	Difference between traditional file processing and DBMS		**3**
		1 mark for each point	(1 mark * 3)	
	iii.	Advantages of database approach	1 mark	**5**
		Definition enterprise data model	2 marks	
		SDLC steps	2 marks	
OR	iv.	Three schema architecture for database development		**5**
		Diagram	2 marks	
		Description	3 marks	
Q.3	i.	Data modelling	1 mark	**2**
		Data modelling rules	1 mark	
	ii.	Create an E-R diagram	3 marks	**8**
		Description	1 mark	
		Specialization definition	1 mark	
		Explanation with example		
OR	iii.	Super type and sub type hierarchy and disjointness		**8**
		Definition	1 mark	
		Explanation	3 marks	
		Unary, ternary and n-ary cardinality constraints.		
		Definition	1 mark	
		Explanation	3 marks	
Q.4	i.	Minimum six rules various Codds rules		**3**
		0.5 mark for each	(0.5 mark * 6)	
	ii.	Define following:		**7**
		(a) Integrity constraints.	2 marks	
		(b) Composite, primary and super key.	2 marks	
		(c) Relational Model and strong and weak entity.	3 marks	
OR	iii.	Condition to transform EER diagram into relations and various steps to map EER model into relations		**7**
		Diagram	3 marks	
		Description	4 marks	
Q.5	i.	Functional dependency definition	1 marks	**4**
		Description with example	3 marks	
	ii.	Definition transitive dependency	1 mark	**6**
		Description	2 marks	
		Normal Form	1 mark	
		Justification	2 marks	

OR	iii.	De-normalization	1.5 marks	**6**
		Merging relations	1.5 marks	
		True/false	1 mark	
		Justification	2 marks	
Q.6		Attempt any two:		
	i.	Difference between Data Mining and Data warehousing		**5**
		1 mark for each point	(1 mark * 5)	
	ii.	Knowledge exploration Definition	2 marks	**5**
		Steps involved in Data Mining	3 marks	
	iii.	Traditional DBMS is different from the Data warehouse		**5**
			2.5 marks	
		Any two differences between OLTP and OLAP	2.5 marks	

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