DAYANANDA SAGAR UNIVERSITY

Date: 20/05/2020
Time: 10.00AM-11.30A

School of Engineering

KUDLU GATE, BANGALORE-560068

USN	

Department of Computer Science and Engineering / Department of Compute Science and Technology

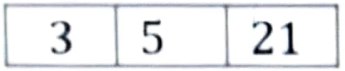
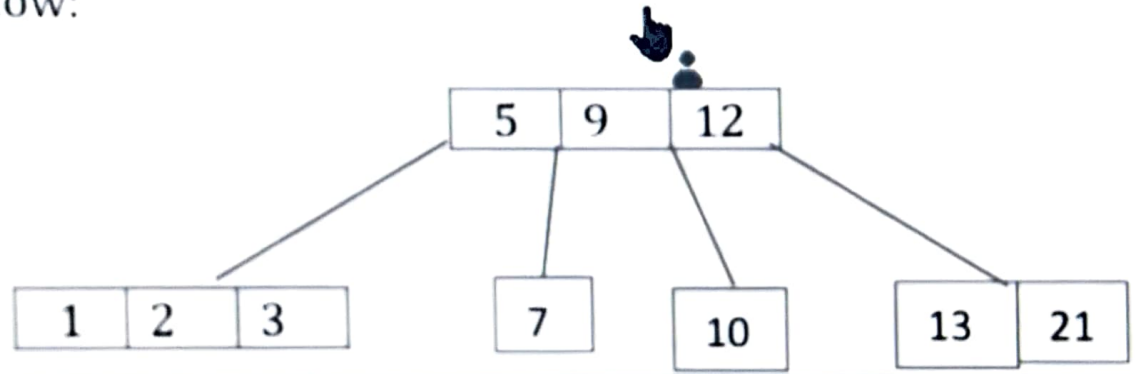
Course: Database Systems
Course code: 16CA209
Max. Marks: 50
Session: JAN – MAY 2020

Year/Semester: II / IV
Internal Assessment: III
Duration: 2 hours

Note: 1. Answer all Questions

Question No.	Question	Marks
Q.1.	How will you handle the collision if I tried to insert an element 'mnp' at index 4 using hashing algorithm -?	3

	abc			xyz					
0	1	2	3	4	5	6	7	8	9

Q.2.	In a B Tree of order 4, what will happen if I try to insert element 9 in the tree given below: 	3
Q.3.	In a B Tree of order 4, what will happen if I try to insert element 4 in the tree given below: 	3

Q.4. Is the table in 1 NF? If yes then tell us why or if no then normalize it to be in 1 NF. 3

Eno	Ename	Department
1	Amit	OBIEE, ETL
2	Divya	ETL, COGNOS
3	Rama	Administrator

Q.5. Is the table in 2 NF? If yes then tell us why or if no then normalize it to be in 2 NF. 3

Employee_no	Department_no	Employee_name	Department
1	101	Amit	OBIEE
2	102	Divya	COGNOS
3	101	Rama	OBIEE

Q. 6.	List down the guidelines that are used as measures to determine the quality of relational schema design. (No explanation is required)	2
Q.7.	The best normal form of relation scheme R(A, B, C, D) along with the set of functional dependencies F = {AB → C, AB → D, C → A, D → B} is a) Boyce-Codd Normal form b) Third Normal form c) Second Normal form d) First Normal Form	2
Q.8.	Which functional dependency types is/are present in the following dependencies? Empno -> EName, Salary, Deptno, Dname DeptNo -> Dname EmpNo -> Dname a) Full functional dependency b) Partial functional dependency c) Transitive functional dependency	2

Q.9.	Which functional dependency types is present in following dependencies? StaffNo, BranchNo -> StaffName, BranchName, Position, DOB StaffNo -> StaffName, DOB BranchNo -> BranchName Is this table in Second Normal Form? If yes then why? And if not then convert into 2NF.	2
Q.10.	In primary indexing, number of entries in index file is equal to the number of blocks in the main file. Is it true or false? Justify you answer.	2
Q.11.	Why block access requires $\log_2 n + 1$ in clustering indexing? Justify	2
Q. 12.	What are the objectives of Hash Function?	2
Q. 13.	What are the multiple interpretation of NULL values?	2
Q. 14.	In the _____ normal form, a composite attribute is converted to individual attributes. a) First b) Second c) Third d) Fourth	1

Q. 15.	A relation that has no partial dependencies is in which normal form a) First b) Second c) Third d) BCNF	1
Q. 16.	An indexing operation a) sorts a file using a single key b) sorts file using two keys c) establishes an index for a file d) both (b) and (c)	1
Q. 17.	The index consists of a) a list of keys b) pointers to the master list	1

	c) both (a) and (b) d) All of the above	
Q.18.	The minimum and maximum number of keys in the internal nodes on B Tree, with order 4, respectively are a) 1,2 b) 2,4 c) 1,3 d) 1,4	1
Q.19.	Insertion of data in B Tree may cause a) Increase in height b) no change in height and no change in number of nodes c) split of node d) any of the above	1
Q.20.	Which of the following is true? a) larger the order of B-tree, less frequently the split occurs b) larger the order of B-tree, more frequently the split occurs c) smaller the order of B-tree, more frequently the split occurs d) smaller the order of B-tree, less frequently the split occurs	1
Q.21.	Match the following three indexing with dense and sparse index: 1) Primary Indexing — 1) Dense Index 2) Clustering Indexing — 2) Spare Index 3) Secondary Indexing	1

	3) Secondary indexing	
Q.22.	Which of the following indexing, requires the main file to be sorted? a) Primary indexing b) Secondary indexing c) clustering indexing	1
Q.23.	If there is more than one key for relational schema in DBMS then each key in relational schema is classified as – a) super key b) primary key c) Candidate key	1
Q.24.	The property of normalization of relations which guarantees that functional dependencies are represented in separate relations after decomposition is classified as – a) nonadditive join property b) independency reservation property c) dependency preservation property d) additive join property	1

Q.25.	A BCNF is: a) lossless join and dependency preserving b) lossless join but not dependency preserving c) not lossless join but dependency preserving d) none of these	1
Q.26.	How fully functional dependency is different from partial Functional Dependency?	1
Q.27.	Which of the following is true? a) A relation in BCNF is always in 3 NF b) A relation in 3 NF is always in BCNF c) BCNF and 3NF are same	1

	d) A relation in BCNF is not in 3 NF	
Q.28.	What is the purpose of indexing in DBMS?	1
Q.29.	Clustering indexing is performed on non-key attribute. True or False	1
Q.30.	The maximum number of keys in the internal nodes on B Tree, with order 5, respectively are a) 4 b) 5 c) 2	1
Q.31.	If a node contains 2 keys, then how many child nodes will be there for this node?	1
Q.32.	Explain spurious tuples generation in brief.	1