

ACAD-27 a)	Shri Ramdeobaba College of Engineering and Management, Nagpur -440013		Iss. No.: 01, Rev. No.: 00
Ref. Clause(s): 9.1			Date of Rev: 01/01/2018
Department:CSE	Semester: V Course Code: CST351 Course Name:Database Management Systems	Shift: II	Page: 01/01
Programme:B.E.	Test: 2	Date of Exam:29-10-2021	
Max Marks:15	Session:2021-22(Even)	Time: 01 Hour 10.30 P.M. to 11.30 PM	

Q.1	a)	Suppose that we are using extendable hashing on a file that contains records with the following search-key values: 1,5,7,8,9,10,13,15,24,27,29 Show the extendable hash structure for this file if the hash function is $h(x) = x \text{ mod } 8$ and buckets can hold three records. Show each step in the solution.	05	CO3	L4
Q.2	a)	Identify the Highest Normal Form of the given relation? Write the Justification for your answer. $R(X,Y,W,Z)$ $F=\{ XY \rightarrow W, XY \rightarrow Z, W \rightarrow X, Z \rightarrow Y \}$	03	CO3	L3
	b)	Differentiate between cost based and Heuristic based optimization.	02	CO4	L2
Q.3	a)	Given two transactions with data items X and Y and its value is initialized to zero : T1: read (X); read (Y); if $X = 0$ then $Y := Y + 1$; write (Y). T2: read (Y); read (X); if $Y = 0$ then $X := X + 1$; write (X). For the above transactions T1 and T2 ,consistency requirement is $X = 0$ OR $Y = 0$, with $X = 0$ and $Y = 0$ be the initial values. i) Prove that every serial execution of above two transactions will preserves the database consistency. Justify how the consistency property is preserved. ii) Demonstrate a concurrent execution of above transaction that generates a non serializable Schedule. iii) Can there be a concurrent execution of above transaction that produces a serializable schedule?	05	CO4	L3