Bharati Vidyapeeth's
Institute of Computer Applications and Management
A-4, Paschim Vihar, New Delhi-63
SECOND SEMESTER [MCA] Internal Examination, February 2020

Paper Code: MCA – 108	Subject: Database Management Systems
Time: 2 Hours	Maximum Marks: 45

Note: Attempt THREE questions in all. Question No. 1 is compulsory and attempt one question from each unit.

1.		Answer all the following questions briefly:-	1.5 x 10 = 15
	(a)	What is the difference in applying constraints at table-level and at column level?	
	(b)	Write a query to create a view for retrieving RollNos and Names in upper case from Student table, Student(Roll, Name, Address, Gender, ContactNo).	
	(c)	List two reasons why null values might be introduced into database.	
	(d)	Discuss Update anomaly.	
	(e)	What do you mean by partial dependency? Give example	
	(f)	Discuss the role of data dictionary.	
	(g)	Distinguish instr() and substr() functions in SQL.	
	(h)	What do you mean by minimal cover of a FD set?	
	(i)	Explain unary relationships.	
	(j)	Distinguish outer and inner joins.	

UNIT – I

2.	(a)	Draw an EERD for a Garment Manufacturing Company. The information system has to capture data about Warehouses, Production Units, Products and Vendors. Vendors can be either Retailers or Wholesalers. Production Units manufactures different products and store the same to its warehouses from where the products are supplied to vendors. Note that, only those products are supplied to vendors which are already stored in Warehouses. Take necessary assumptions, if required.	5
	(b)	Discuss overview of DBMS components with suitable diagram. Also discuss few roles of Query Processor.	5
	(c)	What do you mean by Cardinality of a relationship? List its types and show how each type of relationship is implemented in SQL, with example.	5

3.	(a)	Write Syntax and examples of following SQL commands:
		  1. Alter table with different clauses
		  2. Like operator
		  3. Check constraint
		Also discuss the difference between having and where conditions.
			3
			+2

	(b)	Discuss the major disadvantages of keeping information in a file processing system that led the development of DBMS.	5

	(c)	For the given ERD, write commands to create necessary tables with required constraints.	5

4.	(a)	What do you mean by Functional Dependency? Distinguish
		   i) trivial and non-trivial dependencies.
		   ii) Transitivity and Pseudo-transitivity
			2+
			3

	(b)	Consider the following schema and write the following queries in SQL:
		      College (*CCode#*, CName, NoOfCourses, Address, ContactNo)
		      Student (*Eno#*, SName, DOB, DateOfEnrollment, Rank, *CCode*)
		      CCode- Foreign Key based on College entity.
		      Rank – unique key
		  a. Create a sequence to generate ENo. (Enrollment Nos) starting with 1001 and use this sequence to insert a record.
		  b. Display the names of top ranker.
		  c. List the names of students studying in BVICAM.
		  d. List the address and contact number of the college in which 'Amit' is enrolled.
		  e. Display the number of students enrolled in each college. (Result should be based on College Code and no. of students)
			5

	(c)	Consider a relation R={A,B,C,D,E,F,G,H} with the following FDs={A→ BCD, AE→ F, E→G, D→ H}. Decompose the relation till 3NF.	5
5.	(a)	Compare Relational Algebra and SQL. Also discuss various relational algebra operators with example of each.	2+ 3
	(b)	Discuss the use and significance of indexes in DBMS. And explain types of indexes supported by Oracle, with syntax.	5
	(c)	List the roles of different types of keys in DBMS. And, find candidate keys and Primary Key for R={A,B,C,D,E} and F={CD→E, DE→B, AB→C}	2+ 3