

U.G. 4th Semester Examination - 2020**COMPUTER SCIENCE****[HONOURS]****Course Code : CMSH-CC-L-410**

Full Marks : 60

Time : $2\frac{1}{2}$ Hours*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.***GROUP-A**

1. Answer any **ten** questions : 2×10=20
- a) Discuss the role of DBA.
 - b) What is foreign key?
 - c) What are the different types of languages that are available in the DBMS?
 - d) What do you mean by hit ratio?
 - e) What are the different levels of abstraction in the DBMS?
 - f) What is E-R model in the DBMS?
 - g) What is 1NF in the DBMS?
 - h) What is a CLAUSE in terms of SQL?

[Turn over]

- i) What are the different type of relationships in the DBMS?
- j) Define physical and logical data independence.
- k) What do you mean by unary and binary operations in Relational algebra?
- l) What do you mean by degree of a relationship?

GROUP-BAnswer any **four** questions:

5×4=20

- 2. Explain with example super key, candidate key and primary key.
- 3. Describe three layer architecture of DBMS.
- 4. Indicate the advantage of DBMS over conventional file system.
- 5. What is 2-phase locking protocol? How does it guarantee serializability?
- 6. Write the difference between procedural and nonprocedural DML.
- 7. What are the ACID properties of a transaction? Explain.

GROUP-C

Answer any **two** questions: $10 \times 2 = 20$

8. a) Define BCNF. How does it differ from 3 NF?
Why is it considered as stronger than 3 NF?
- b) What is metadata and what is data dictionary?
What do you mean by functional dependency?

$2+1+2+2+1+2=10$

9. a) What is weak entity type? What will be the
schema for representing such entity type in a
database table?
- b) Consider the following relations for a database
that keeps track of business trips of salesperson
in a sales office :

SALESPERSON (SSN Name, Start_ Year,
Dept_No)

TRIP (SSN, From_City, To_City,
Departure_Date, Return_Date, Trip ID)

EXPENSE (Trip ID, Account#,. Amount)

Specify the following queries in either
relational algebra or in SQL :

- i) Give the details (all attributes of TRIP
relation) for trip that exceeded Rs. 2,000
in expenses.

- ii) Print SSN of salesman who took trips to
'Andaman'. $2+3+5=10$

10. What is the difference between immediate updation
and deferred updation of database? Write down the
utility of check point mechanism in log based
recovery. What are different types of joins in SQL?
What is the use of DROP command and what are the
differences between DROP, TRUNCATE and DELETE
commands? $2+3+2+3=10$

11. Write short notes on any **two**: $5 \times 2 = 10$

- a) Security features in DBMS
- b) Lossless and Lossy Decomposition
- c) B-tree organization
