

U.G. 4th Semester Examination - 2020**COMPUTER SCIENCE****[GENERIC ELECTIVE]****Course Code : CMSH-GE-L-202**

Full Marks : $\left. \begin{array}{l} \text{Option-A : 60} \\ \text{Option-B : 40} \end{array} \right\}$ 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.

Answer all the questions from selected Option

OPTION-A**CMSH-GE-L-202A****Computer System Architecture****GROUP-A**

1. Answer any **ten** of the following questions: 2×10=20
- Why NAND gate called universal logic gate?
 - Define instruction format.
 - What are the major components of CPU?
 - Convert the $(15)_2$ to its binary equivalent.
 - What do you mean by parallel transfer and serial transfer?

[Turn Over]

- What is Branch Unconditionally (BUN) and Branch and Save Return Address (BSA).
- What is race condition?
- What is 1's complement and 2's complement?
- What do you mean by start bit, character bit and stop bit in serial asynchronous transfer?
- What is parity bit?
- What is JK flip flop?
- Add two Binary numbers 1111100 and 1111010.

GROUP-B

Answer any **four** of the following questions: 5×4=20

- Explain the concept of memory interleaving with proper diagram. 5
- Write down the truth table, logical expression, block diagram and circuit of full adder. 5
- What do you mean by content addressable memory (CAM)? What do you mean by main memory, cache memory, and auxiliary memory? 2+3=5
- What is parallel transfer and serial transfer? Which one is faster? What do you mean by serial synchronous and serial asynchronous transfer? 2+1+2=5

6. Explain De-Morgan's Theorems and prove these Theorems using Truth table. $2+3=5$
7. Differentiate in detail between RISC and CISC architecture. 5

GROUP-C

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

8. What is locality of reference? What is biased exponent? Discuss the memory read and memory write operations. $2+3+5=10$
9. What is write through method and write back method? Explain with block diagram of RAM chip and ROM chip. $3+7=10$
10. What do you mean by addressing modes? Explain in detail about the different addressing modes and give an example in each case. $2+8=10$
11. Write short notes on any **two** of the following: $5 \times 2 = 10$
- RISC
 - Cache memory
 - Multiplexer

OPTION-B

CMSH-GE-202B

Database Management System (DBMS)

GROUP-A

1. Answer any **five** of the following questions:

$2 \times 5 = 10$

- What are the different type of relationships in the DBMS?
- What do you mean by Data Dependency?
- What is 3NF in the DBMS?
- What is E-R model in the DBMS?
- What do you mean by degree of a relationship?
- What is the use of DROP command?
- What is the purpose of normalization in DBMS?
- Enlist some commands of DDL, DML, and DCL.

GROUP-B

Answer any **two** questions:

$5 \times 2 = 10$

- Differentiate between 'DELETE', 'TRUNCATE' and 'DROP' commands. 5
- Describe three level architecture of DBMS. 5
- What is data anomaly? Define functional dependency. Describe Armstrong's axioms. $2+1+2=5$
- Explain the different database language types. 5

GROUP-C

Answer any **two** questions: 10×2=20

6. Explain about the normal forms BCNF, 1NF, 2NF and 3NF.

Suppose that we decompose the schema, $R = (A, B, C, D, E)$ into (A, B, C) and (A, D, E) . Show that this decomposition is lossless decomposition, if the following set F of FDs holds- $A \rightarrow BC$ $CD \rightarrow E$ $B \rightarrow D$ $E \rightarrow A$. 4+6=10

7. Explain the differences between network and hierarchical database model. What are the functions of a Database Administrator? 5+5=10

8. Explain the different types of database keys. What are the differences between Traditional File Management System and Database Management System? 6+4=10

9. Write short notes on any **two** of the following: 5×2=10

- a) ACID property
 - b) Query Optimization Technique
 - c) Inner join and Outer join.
-