U.G. 2nd Semester Examination - 2020

COMPUTER SCIENCE

[GENERIC ELECTIVE]

Course Code : CMSH/GE-L-202-T-A&B

Full Marks : 40 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

(Database Management System (DBMS))

GROUP-A

1. Answer any **five** questions: 2×5=10

   a) What do you mean by DBMS?

   b) What do you mean by Data Dependency?

   c) What is information? How does it differ from data?

   d) What is Referential integrity?

   e) What do you mean by degree of a relationship?

   f) What is a data dictionary?

   g) What is the purpose of normalization in DBMS?

   h) What is the main difference between UNION and UNION ALL?

GROUP-B

Answer any **two** questions : 5×2=10

2. Explain hierarchical data model with suitable example. 5

3. Describe three level architecture of DBMS. 5

4. What is data dictionary? What is multiple relationship? What is attribute inheritance? 2+1+2=5

5. Distinguish between logical and physical dependencies. 5

GROUP-C

Answer any **two** questions: 10×2=20

6. Explain ACID properties of transaction. What do you mean by primary key, super key and foreign key? 4+6=10

7. How does BCNF differ from 3NF? Why is it considered stronger than 3NF? Discuss different anomalies in DBMS. 3+3+4=10

8. What is lossless decomposition? What do you mean by redundant data? Consider the universal relation R = { A, B, C, D, E, F, G, H, I, J } and the set of functional dependencies are F = { { A, B } –> { C },

{ A } –> { D, E }, { B } –> { F }, { F } –> { G, H }, { D } –> { I, J } }.

This set represents which normal form?

3+3+4=10

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

a) Query language

b) Query Optimization Technique

c) Codds rule

OPTION-B

CMSH/GE-L-202B

(Computer System Architecture)

GROUP-A

Answer any **five** of the following questions: 2×5=10

1. a) Add the two binary number 1111100 and 1010101.

b) Mention what are the different types of fields that are part of an instruction.

c) What are the major components of CPU?

d) What is the write-through method?

e) What is virtual memory? What could be the maximum size of virtual memory?

f) Write down the truth table of Half Subtractor.

g) What do you mean by memory read and write operation?

h) What is 1's complement and 2's complement?

GROUP-B

Answer any **two** of the following questions: 5×2=10

2. Explain briefly memory reference, register reference, input-output instruction. Differentiate between direct and indirect addressing. 3+2=5

3. Design a half adder circuit with truth table. What do you mean by Universal gate? 3+2=5

4. Explain De-Morgan's Theorems and prove these Theorems using Truth table. 2+3=5

5. What is op code? What is instruction code? What do you mean by DMA? 1+2+2=5

GROUP-C

Answer any **two** of the following questions: 10×2=20

6. Distinguish between Fixed point and Floating point representations. What is flash memory? Explain memory interleaving with diagram. 4+1+5=10

7. What is write through method and write back method? Explain with block diagram of RAM chip and ROM chip. 3+7=10

8. Explain about programmed input output with flowchart. 10

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

a) Assembly language

b) Computer registers

c) Multiplexers

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