U.G. 4th Semester Examination - 2021

COMPUTER SCIENCE

[HONOURS]

Generic Elective(GE)

Course Code : COM.SC-H-GE-L-202A&B

Full Marks : 20   Time : 1 Hour

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

COM.SC-H-GE-L-202A

(Computer System Architecture)

GROUP-A

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

1×5=5

a)   What are the basic operations performed by the processor?

b)   Define latency and throughput.

c)   What is locality of reference?

d)   What is the need of DMA?

e)   Why multiplexer is useful?

[Turn over]

f)   What are the different phases of an instruction?

g)   List out different types of bus.

GROUP-B

2.   Answer any **one** question: 5×1=5

a)   How will you build a 16-input MUX using only 4-input MUX? Draw and explain.

b)   Describe any five addressing modes with examples.

c)   Explain microprogrammed control unit with a suitable diagram.

GROUP-C

Answer any **one** question: 10×1=10

3.   What is a binary counter? Draw a 4-bit synchronous binary counter using J-K flip-flop. Explain its working.   2+5+3=10

4.   a)   Describe Booth's multiplication algorithm for multiplying two singed numbers with the help of a flowchart.

b)   Write a short note on DMA.   6+4=10

5.   What is input-output interface? Briefly discuss and compare the following I/O schemes: (i) Programmed I/O (ii) Interrupt driven I/O.   2+8=10

OPTION-B

COM.SC-H-GE-L-202B

[Database Management System (DBMS)]

GROUP-A

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

    1×5=5

    a) What is foreign key?

    b) What is BCNF?

    c) What is weak entity set?

    d) What do you mean by functional dependency?

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

    f) What are the different types of languages that are available in DBMS?

    g) What is database schema?

GROUP-B

2. Answer any **one** question: 5×1=5

    a) Explain three-tier architecture of DBMS.

    b) What is the purpose of normalization in DBMS?

    c) Differentiate between DBMS and RDBMS.

GROUP-C

Answer any **one** question: 10×1=10

3. Define entity, attributes, entity set and relationship with appropriate notations. Explain cardinality ratio with an example.   8+2=10

4. Differentiate between database management system and file based system.

    If R={A,B,C,D,E} and F={A→C, AC→D, E→AD, E→H}. List all the candidate keys.   5+5=10

5. a) Consider the following tables:

    Employee (Emp_no, Name, Emp_city)

    Company (Emp_no, Company_name, Salary)

    i) Write a SQL query to display all employee names and company names.

    ii) Write a SQL query to display employee name, employee city, company name and salary of all the employees whose salary >10000.

    b) Write the difference between procedural and non-procedural query language.   (3+3)+4

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