 PG/IIIS/COS/304(M1 & M2)/23 (CBCS)(Old)

M.Sc. 3rd Semester Examination, 2023

COMPUTER SCIENCE

PAPER – COS-304(M1&M2)(Supplementary)

Full Marks : 50

Time : 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

Illustrate the answers wherever necessary

PAPER – COS-304(M1)

(*Module-I*)

GROUP – A

Answer any **two** questions : 2×2

1. What are the responsibilities of a Database Administrator (DBA) ?

2. What is the purpose of the foreign key in a relational database ?

3. What is the purpose of DDL ?

4. Which SQL statement is used to

   (*a*) Remove a row from a table

   (*b*) Remove a column from a table.

GROUP – B

Answer any **two** questions : 4×2

5. State the advantages of using database system over file-based information system.

6. Explain the term 'weak and strong entity' in context of ER data model. Give an example. $2 + 2$

7. Define BCNF. Why is it considered stronger than 3NF ? Justify your answer. $2 + 2$

8. Suppose that we have an enterprise database containing following set of relations :

Employee : (E_id, name, address, Gender, Salary, Dept_no)
Department : (Dept_no, D_name, D_location)
Project : (P_no, P_name, P_loc, Dept_no)
Works_on: (E_id, P_no, hours)

Write SQL for the following queries

(*a*) List the employees who work in a project for more than 10 hours a day. 2

(*b*) Retrieve the name and salaries of the employees who work on a project in Kolkata. 2

GROUP – C

Answer any **one** question : 8×1

9. Consider the relations
WORKER (ID, FIRST_NAME, LAST_NAME, SALARY, DOJ, DEPARTMENT)

BONUS (REF_ID, AMOUNT, BONUS_DATE)

Answer the following queries

(*i*) Display FIRST_NAME of all works using the alias name WORKER_NAME.

(*ii*) Display unique values of DEPARTMENT

(*iii*) Display details of all workers order by FIRST_NAME Ascending and DEPARTMENT Decending.

(*iv*) Display details of 'Vipul and Satish' from WORKER Table.

10. (*a*) State the Armstrong's Axioms for functional dependencies. 3

(*b*) Given the set $F = \{A \rightarrow B, C \rightarrow X, BX \rightarrow Z\}$, derive AC→Z, using inference axioms. 5

PAPER – COS-304(M2)

(*Internet Technology*)

GROUP – A

Answer any **two** questions : 2×2

1. What is data communication ?

2. List names of layers in ISO/OSI and TCP/IP models.

3. What is the function of IP addresses ?

4. What are the advantages of HTML ?

GROUP – B

Answer any **two** questions : 4×2

5. What is computer network ? Define the responsibilities of data link and network layer.

6. Write the differences among different types of network topologies.

7. Describe classful addressing.

8. Write a HTML program which includes image, hyperlink and table.

GROUP – C

Answer any **one** question : 8×1

9. Write short note about following (any *two*) : 4×2

   (*i*) Switch

   (*ii*) Router

   (*iii*) Gateway.

10. Describe basic HTML program structure.

Find the range of the block and number of addresses for following addresses. 2 + 6

(*i*) 143.66.77.32/24

(*ii*) 15.30.16.0/28.

[Internal Assessment – 10 Marks]
