ST. XAVIER'S COLLEGE
KOLKATA
(AUTONOMOUS)

1st SEMESTER EXAMINATION
JANUARY – FEBRUARY 2021
M.Sc COMPUTER SCIENCE

CMSM4122

Thursday, January 19, 2021
12:00 NOON to 3:00 PM
3hours
Full Marks : **80**

ADVANCED DATABASE MANAGEMENT SYSTEM

PLEASE READ THESE INSTRUCTIONS BEFORE YOU START WRITING:

1. Of the questions attempted, the answers to only the first required number of questions (as stipulated in the question paper) will be evaluated. **So please do not attempt extra questions**.
2. Use fountain pen or ball-point pen of **blue** or **black ink**.
3. Write **(not type)** the answers legibly, in your own words as far as practicable, on A4 size sheets.
4. Save the pages of your answer sheets (hand-written document) to a single PDF file and name the document accurately i.e. **Roll No_Paper Code.PDF** (example: 147_PH36141T).
5. Send the PDF file to the following email address **within 30 minutes of the completion of the examination**: **CMSM4122@SXCCAL.EDU**
6. In the subject field of your email, please write "**Answer Script – Roll No, Paper Code**" (example: "Answer Script – 147, PH36141T").
7. The scanned answer scripts should have **enough clarity** to enable evaluation.
8. On top of each page **handwrite** the following information: **Name, Roll Number, Paper Code , Date,** and **Page Number**
9. No multiple submissions would be allowed.

The marks are given in **brackets [ ]** at the end of each question or part question.

The question paper consists of **2** pages.

Of the questions attempted, the answers to only the first required number of questions (as stipulated in the question paper) will be evaluated.
So, PLEASE DO NOT ATTEMPT EXTRA QUESTIONS.

GROUP-A[MARKS-40]

[Students are expected to use original/unique examples designed by them and not the ones used in class to explain]

1. **Write short notes on ANY TWO** **[5×2=10]**
   a. Deadlock prevention techniques.
   b. Variations of two-phase locking protocols.
   c. The justification of Thomas' Write Rule.

Answer ANY TWO questions.

2. Explain immediate and deferred database modification using a suitable example. **[15]**
3. Explain buffer management focusing on log record buffering and database buffering. **[15]**
4. Explain the testing process for conflict serializability using an original precedence graph. **[15]**

GROUP-B [MARKS-40]

5. **Answer ANY TWO questions.** **[5×2=10]**
   a. Explain the concept of distributed database on a wide area network with illustration.
   b. Discuss the various rules that must be followed when defining fragments.
   c. Discuss Distribution and Logical correlation.

Answer ANY TWO questions. **[15×2=30]**

6.
   a) A global relation R is divided into four fragments. Fragments are distributed as follows: R1 at Site 1 & 2, R2 at Site 2 & 3, R3 at Site 3 and R4 at Site 1 & 3. Draw a labeled diagram to depict the fragments and the physical images of the global relation. **[10]**
   b) Explain with illustration, the various components of a DDBMS. **[5]**

7.
   a. Explain 4NF and 5NF with examples. **[10]**
   b. Explain mixed fragmentation with example. **[5]**

8.
   a. Explain the various levels of transparencies with examples to support you answer. **[10]**
   b. Explain data replication with its advantages and disadvantages. **[5]**

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