**British Columbia Institute of Technology**

**COMP 2714-Relational Database Systems**

**Friday December 13, 2024**

Duration: 110 Minutes

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**Lab Section:** Week Day: Hour/Tile:

**Lab Instructor:**

**About the Exam**

* This is a closed-book exam. You are not allowed to use anything beyond your cheat sheet.
* Please make sure to close any communication app on your laptop (discord, slack, WhatsApp, …) during the exam.
* There are 35 multi-choice questions and 2 written questions.
* The Multiple-choice questions worth 60% and the written questions worth 40%.
* Enter the answers for the multiple-choice questions in the table below and enter your answers for other questions in the designated areas.
* No question is answered during the exam regarding the questions. If you need to make any assumptions, please write down your assumptions in the designated areas and then answer the question. We will make sure to read your assumptions if any.
* If you find something is missing or wrong in a question, please just add comments about it and answer the question. No need to ask about it during the exam.
* No need to hand in your **“cheat-note”** at the end of the exam.
* Submit this word document (no need to make pdf) to D2L.

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**Generated by AI**

**Best of Luck**

**And**

**Happy Holiday**

**Add your answers here: Please Add a dark big X for the correct answer(s)**

**Please do not write anything else (than X) in this table.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Question** | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** |
| **SAMPLE** |  |  | **X** |  | **X** |  |  |  |
| **1** | **X** | **X** |  |  |  |  |  |  |
| **2** |  |  | **X** |  |  |  |  |  |
| **3** |  |  |  | **X** |  |  |  |  |
| **4** |  |  |  | **X** |  |  |  |  |
| **5** |  | **X** |  |  |  |  |  |  |
| **6** |  | **X** |  |  |  |  |  |  |
| **7** |  |  | **X** | **X** |  |  |  |  |
| **8** |  | **X** | **X** |  |  |  |  |  |
| **9** |  |  |  |  | **X** |  |  |  |
| **10** |  | **X** |  |  |  |  |  |  |
| **11** |  |  |  | **X** |  |  |  |  |
| **12** |  |  | **X** |  |  |  |  |  |
| **13** |  |  | **X** |  |  |  |  |  |
| **14** | **X** |  |  |  |  |  |  |  |
| **15** | **X** |  |  |  |  |  |  |  |
| **16** |  |  | **X** |  |  |  |  |  |
| **17** |  |  |  | **X** |  |  |  |  |
| **18** |  |  | **X** |  |  |  |  |  |
| **19** | **X** | **X** |  | **X** |  |  |  |  |
| **20** |  | **X** |  |  |  |  |  |  |
| **21** | **X** |  | **X** |  |  |  |  |  |
| **22** |  | **X** |  |  |  |  |  |  |
| **23** |  | **X** |  |  |  |  |  |  |
| **24** |  |  | **X** |  |  |  |  |  |
| **25** |  |  | **X** |  |  |  |  |  |
| **26** |  | **X** |  |  |  |  |  |  |
| **27** |  |  |  | **X** |  |  |  |  |
| **28** |  |  | **X** |  |  |  |  |  |
| **29** |  | **X** |  |  |  |  |  |  |
| **30** |  | **X** | **X** |  |  |  |  |  |
| **31** |  |  | **X** |  |  |  |  |  |
| **32** |  | **X** |  |  |  |  |  |  |
| **33** |  | **X** |  |  |  |  |  |  |
| **34** |  |  | **X** |  |  |  |  |  |
| **35** |  |  | **X** |  |  |  |  |  |

**Assumptions:**

If you had to make some assumptions to answer any of the questions above, add them here.

**Answer for Question 36: (20 mark)**

**Query1:**

SELECT id, *COUNT*(title) AS num\_events  
FROM *Attends*GROUP BY id  
ORDER BY num\_events DESC;

**Query2:**

SELECT *COUNT*(*\**) AS total\_number  
FROM *User*WHERE nationality IN (  
 SELECT nationality  
 FROM *User* GROUP BY nationality  
 HAVING *COUNT*(*\**) >= 3  
)  
AND id IN (  
 SELECT significantOther  
 FROM *User*);

**Answer for Question 37: (20 mark)**

1. Finding minimal cover for relation R

{K} → {J, I, H, G, F}

{F} → {A, B, C, D}

{I} → {J, K, G}

{F, B} → {K, D, E}

1. Decompose R to 3NF such that all functional dependencies are preserved.

R1 [K, J, I, H, G, F]

R2 [F, B, C, D]

R3 [F, B, E]