JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

B.Tech-III Semester (CSE/IT)

COURSE CODE (CREDITS):25B11CI313 (3) MAX. MARKS: 25

COURSE NAME: DATABASE MANAGEMENT SYSTEMS

COURSE INSTRUCTORS: {Pardeep, Ekta, Amol, Pankaj, Nitika, Gaurav} MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

<table>
<tr><th>Q.No</th><th>Question</th><th>CO</th><th>Marks</th></tr>
<tr><td>Q1</td><td>Consider the relation R(A,B,C,D,E) and Functional dependencies set {A→B, B→C, C→D, D→E). Find the closure of each attribute in relation R.</td><td>4</td><td>4</td></tr>
<tr><td>Q2</td><td>Consider the student relational schema given as under:
<table><tr><td>Enrollment-No</td><td>Student Name</td><td>Student-Department</td></tr><tr><td>1</td><td>Ram</td><td>CSE, IT</td></tr><tr><td>2</td><td>Shyam</td><td>ECE</td></tr><tr><td>3</td><td>Sita</td><td>CSE, CE</td></tr></table>What is the highest normal form of the given relation?
Convert the given student relation into its next immediate normal form? What would be the primary key in your converted relation?</td><td>3</td><td>3</td></tr>
<tr><td>Q3</td><td>Consider the relation R(A,B,C,D,E) and Functional dependency set: {A→B, B→C, C→D, D→A}. Find the highest normal form in relation R.</td><td>4</td><td>4</td></tr>
<tr><td>Q4</td><td>Consider the relation R(A,B,C,D,E) and functional dependency set : { A→BCDE, BC→ACE, D→E}. Find out the highest normal form in the relation starting checking from lowest normal to highest one.</td><td>4</td><td>5</td></tr>
<tr><td>Q5</td><td>Consider the relation R(A,B,C) :
<table><tr><td>A</td><td>B</td><td>C</td></tr><tr><td>1</td><td>1</td><td>1</td></tr><tr><td>2</td><td>1</td><td>2</td></tr><tr><td>3</td><td>2</td><td>1</td></tr><tr><td>4</td><td>3</td><td>2</td></tr></table>Let R is decomposed into R1(A,B) and R2(A,C). Check whether the decomposition is lossless or lossy.</td><td>4</td><td>4</td></tr>
<tr><td>Q6</td><td>Consider the relation R(A,B,C,D) and Functional dependency set F: { A→B, C→D}. What is the highest normal form of the given relation R? Convert the relation R into its immediate next higher normal form.</td><td>4</td><td>5</td></tr>
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