**United College of Engineering and Research, Allahabad**

**Department of Computer Science & Information Technology**

**IInd Sessional Examination (2019-20)**

**B.Tech. (Vth Semester (CS & IT))**

**Database Management System**

**Subject Code: RCS-501**

**Time:** 2.00 hours **Max. Marks:** 30

**Note:** There are three sections in this paper. All sections are compulsory.

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| **Question No.** | **Question** | **Marks** | **CO** | **Bloom’s level** |
| **Section-A** | | | | |
| 1 | Why do we normalize database? | 10 | 3 | L2 |
| 2 | What are different types of anomalies associated with database? | 3 | L2 |
| 3 | Define schedule of transactions. | 4 | L1 |
| 4 | Define recoverable schedule. | 4 | L1 |
| 5 | Define Multi-valued dependency. | 3 | L1 |
| 6 | Write difference between 3NFand BCNF normal form. | 3 | L4 |
| 7 |  | 3 | L2 |
| 8 |  | 3 | L3 |
| 9 |  | 3 | L3 |
| 10 |  | 4 | L3 |
| **Section-B** | | | | |
| 1. **Attempt any three.** | | | | |
|  | Define 4th and 5th normal form. | 2 | 3 | L1 |
|  | Define canonical or minimal cover. Find canonical cover of following set of functional dependency F={ A🡪B, B🡪C, A🡪C, AB🡪B, AB🡪C, AC🡪B}. | 2 | 3 | L3 |
|  | Consider a relation schema R=(A,B,C,D,E,F,G,H,I,J) and functional dependency set F={AB🡪C, A🡪DE, D🡪IJ, B🡪F, F🡪GH}  Is R in 2NF? If not, decompose in to 2NF. | 2 | 3 | L3 |
|  | Define Armstrong’s Axioms. | 2 | 3 | L1 |
| 1. **Attempt any three.** | | | | |
|  | What do you mean by Transaction? Explain transaction property with suitable example. | 2 | 4 | L2 |
|  | Draw transaction state diagram and also explain each state. | 2 | 4 | L2 |
|  | What is distributed database? List advantages and disadvantages of data replication and data fragmentation. | 2 | 4 | L2 |
|  | Which of the following schedules is conflict serializable? For each serializable schedule, find its equivalent schedule.   1. S1: r1(x), r3(x), w3(x), w1(x) ,r2(x) 2. S1: r1(x), r2(x), r3(y), w1(x), r2(z) ,r2(y), w2(y) | 2 | 4 | L4 |
| **Section-C** | | | | |
| 1. **Attempt any one.** | | | | |
|  | Consider a relation schema R=(A,B,C,D,E) and functional dependency set  F={A🡪B, BC🡪E, ED🡪A}  Compute following:-   1. List all candidate keys for R. 2. Is R in 3NF. 3. Is R in BCNF. | 4 | 3 | L3 |
|  | Consider a relation schema R=(A,B,C,D,E,F) and functional dependency set  F={AB🡪C, C🡪B, ABD🡪E, F🡪A}  The decomposition of R is  R1(B,C), R2(A,C), R3(A,B,D,E), R4(A,B,D,F)  Compute the following:-   1. Is the decomposition of R lossless or lossy? 2. Is the functional dependency preserve in decomposition? | 4 | 3 | L4 |
| 1. **Attempt any one.** | | | | |
|  | What do you mean by serializability? Discuss the conflict and view serialzability with example. Discuss the testing of serializability also. | 4 | 4 | L4 |
|  | What is Log? How is it maintained? Discuss the features of deferred database modification and immediate database modification in brief. | 4 | 4 | L2 |