**University of Mumbai**

**Examination 2020 under cluster 4 (Lead College: PCE,New Panvel)**

**Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021**

Program: Computer Engineering

Curriculum Scheme: Rev2016

Examination: TE Semester V

Course Code: CSC502 and Course Name: Database Management System

Time: 2 hour Max. Marks: 80

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| **Question Number** | **Correct Option**  **(Enter either ‘A’ or ‘B’ or ‘C’ or ‘D’)** |
| Q1. | A |
| Q2. | B |
| Q3. | B |
| Q4 | D |
| Q5 | C |
| Q6 | B |
| Q7 | D |
| Q8. | C |
| Q9. | B |
| Q10. | C |
| Q11. | A |
| Q12. | A |
| Q13. | C |
| Q14. | B |
| Q15. | B |
| Q16. | A |
| Q17. | B |
| Q18. | B |
| Q19. | C |
| Q20. | D |

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| **Q2** | **Solve any Four out of Six 5 marks each** |
| A | Que: Discuss the roles of DBA  Explanation of minimum 4 responsibilities of DBA 5 marks  If only listed --3 marks |
| B | Que :Explain data independence and discuss types of data independence  Definition of data independance 2-marks  Explanation/definition of Logical and Physical data independence -3 marks |
| C | Que:Explain Specialization and Generalization in EER with example  Definition of Generalization /Specialization 2 marks  Designing approch difference and example 3 marks |
| D | Que :Explain different integrity constraints  Listing 4 types integrity constraints 2 marks  - concept of primary key and foreign key ,Unique key 2 marks  -Concept of Check and Null constraint |
| E | Que:Discuss the need of Normalization in Database design.Explain 3NF.   * Need of normalization-2 marks * 3 normal form – 1 mark * Example – 2marks |
| F | Que:Explain deadlock with wait-for graph  Definition of Deadlock in DBMS 2-marks   * Diagram- for WFG 2 marks * Mechanism with of Detection 1 marks |

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| **Q3.** | **Solve any Two Questions out of Three 10 marks each** |
| A | Draw an E-R diagram for University database consisting of entities Student,Faculty,Department,Class.  A student has a Unique id,the student can enroll for multiple classes and has at most one major.  Faculty must belong to department and faculty can take multiple classes  Every student will get a grade for the class he/she was enrolled.  Convert E-R diagram into relational schema  Solution : Correctly identification of entity and relationship -2 marks  ER diagram with all components – 5 marks  Relational model (tables)- 3 marks |
| B | Consider the employee database  *employee (employeename, street, city,date of join)*  *works (employeename, company name, salary)*  *company (company name, city)*  *manages (employee name, manager name)*  Write SQL queries for the following statements   1. Find all the employees who joined in the month of october 2. Modify the database so that ‘Anjali’ now lives in ‘Mumbai’ 3. List all the employees who live in the same cities as their managers. 4. Find all employees who earn more than the average salary of all the employees of their company 5. Give all the employees of ABC corporation a 15 percent raise.   2 marks for each correctly written query   1. Select \* from employee where tochar(dateofjoin,’mon’)=’October’ 2. Update employee set city =’Mumbai’ where employeename=’Anjali’ 3. select p.employee-name from employee p, employee r, manages m where p.employee-name = m.employee-name and m.manager-name = r.employee-name and p.city = r.city 4. select employee-name from works t where salary >(select avg(salary) from works s where t.company-name = s.company-name) 5. Update works set salary=salary+salary\*.15 where company-name=’ABC corporation’ |
| C | Explain any two concurrency control protocol in database system  Time stamp ordering- 1 mark  Example- 2 marks  Explanation- 3 mark  Two phase locking protocol- 1 mark  Example- 2 marks  Explanation- 3 mark |