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10MN73

**Seventh Semester B.E. Degree Examination, Aug./Sept. 2020**  
**Computer Application in Mining**

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

**PART – A**

- 1 a. Explain the application of computers for design. (10 Marks)  
b. Explain the design process with flow diagram. (10 Marks)
- 2 a. Explain the design workstation. (05 Marks)  
b. Explain in brief the graphics terminal. (10 Marks)  
c. Explain the input devices. (05 Marks)
- 3 a. Give the differences between wireframe and solid modeling. (10 Marks)  
b. Explain applications of computers in mining industries. (10 Marks)
- 4 a. Write an algorithm for material handling system. (10 Marks)  
b. Explain the algorithm for SWOVEL DUMPER COMBINATION equipment selection. (10 Marks)

**PART – B**

- 5 a. Explain the blast induced ground vibration prediction and give the algorithm. (10 Marks)  
b. Write an algorithm for developing the pillar design in mines. (10 Marks)
- 6 a. Define DBMS. Explain the difference between logical and physical data independence. (10 Marks)  
b. Discuss the three schema architecture. What are the problem associated with it? (10 Marks)
- 7 a. Explain the following relational operations:  
i) Select ii) Project iii) Rename iv) Cartesian product v) Division. (10 Marks)  
b. Consider the following relational and write relational algebra queries:  
EMPLOYEE (Name, SSN, Salary, Dno, SuperSSN, gender, Address)  
DEPARTMENT (Dname, Dnumber, MgrSSN)  
Project (Pname, Pno, Dnum)  
DEPENDENT (ESSN, Dependent\_name)  
i) Retrieve SSN of all employee who either work in department 4 or directly supervise an employee who work in department 4.  
ii) Retrieve list of names of each female employee's dependent.  
iii) Retrieve the names of the manager of each department.  
iv) Retrieve each department number, the number of employees in the department and their average salary.  
v) Retrieve the highest salary of an employee. (10 Marks)
- 8 a. Define normalization. Explain 1NF, 2NF and 3NF in detail. (10 Marks)  
b. Consider the data given below and write queries in SQL.  
EMPLOYEE (Name, SSN, Salary, Dno, SuperSSN, gender, Address)  
DEPARTMENT (Dnam, Dnumber, MgrSSN)  
PROJECT (Pname, Pno, Dnum)  
DEPENDENT (ESSN, Dependent\_name)  
i) Retrieve names of all employees whose salary is greater than 50000.  
ii) Retrieve name and address of all employee who work for the research department.  
iii) Retrieve the salary of every employee.  
iv) Retrieve all employees whose address is in Bangalore, Karnataka.  
v) Retrieve all employees in department 5 whose salary is between 30000 and 40000. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.