II B.Tech. II Semester Supplementary Examinations October 2020
Database Management Systems
(Common to CSE & IT)

Max. Marks: 70   Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) List four significant differences between a file processing system and a DBMS.

   b) Explain various query processor components and its functions.

OR

2. a) Explain about types of database languages with syntax and example?

   b) Explain different types of database users and write the functions of DBA?

UNIT–II

3. a) Explain the following terms:

   i) Relationship set ii) Composite attribute iii) Multivalued attribute iv) Derived attribute

   b) Name the main steps in database design. What is the goal of each step? In which step is the E-R model mainly used?

OR

4. Distinguish strong entity set with weak entity set? Draw an ER diagram to illustrate weak entity set?

UNIT–III

5. What are views? Discuss the problems encountered in modifying database through views

OR

6. a) Explain about union and intersect operator

   b) Explain briefly about joins and its types with examples?

UNIT–IV

7. Give an example of a relation schema R and a set of dependencies such that R is in BCNF but is not in 4NF.

OR

8. Suppose you are given a relation R = (A,B,C,D,E) with the following functional dependencies:

   $\{CE \rightarrow D, D \rightarrow B, C \rightarrow A\}$

   i. Find all candidate keys.

   ii. Identify the best normal form that R satisfies (1NF, 2NF, 3NF, or BCNF).

   iii. If the relation is not in BCNF, decompose it until it becomes BCNF. At each step, identify a new relation, decompose and re-compute the keys and the normal forms they satisfy.

UNIT–V

9. How data organized in a tree-based index. When would you use a tree-based index?

OR

10. a) Briefly discuss the AICD prosperities of transaction.

    b) What are the main differences between ISAM and B+ tree indexes?

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II B.Tech. II Semester Supplementary Examinations October 2020
Probability & Statistics
(Common to CE, ME, CSE & IT)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Find the probability of getting a sum of 10 if we throw two dice

   b) A random variable X has the following probability function

x	0	1	3	4	5	6	7
P(x)	0	K	2K	2K	3K	K^2	$7K^2+K$

       (i)   Find the value of K
       (ii) Evaluate p(0<X<5)
       (iii) Evaluate p(X<6)

OR

2. a) If $P(A) = \frac{1}{2}$, $P(B) = \frac{1}{3}$ and $P(A \cap B) = \frac{1}{5}$ then find (i) P(AUB) (ii) $P(A^c \cap B)$ (iii) $P(A \cap B^c)$
   (iv) $P(A^c \cap B^c)$

   b) Find the continuous probability function $f(x)=k \, x^2 \, e^{-x}$ when x   0 find (i) k
   (ii) mean (iii) variance

UNIT–II

3. a) A die is thrown 6 times. If getting an even number is a success, find the probabilities of
    (i) at least one success   (ii)   3 successes   (iii) 4 successes

   b) If a random variable has a poisson distribution such that P(1) = P(2) find
       (i)   Mean of the distribution
       (ii)   P(4)
       (iii)   P(x   1)
       (iv)   P(1<x<4)

OR

4. a) The mean and variance of a binomial variable X with parameters n and p are 16 and 8. Find
   P(x 1) and P(x > 2)

   b) A hospital switch board receives an average of 4 emergency calls in a 10 minute interval.
   What is the probability that
       (i) There are at most 2 emergency calls in a 10 minute interval
       (ii) There are exactly 3 emergency calls in a 10 minute interval

UNIT–III

5. a) A normal population has a mean of 0.1 and standard deviation of 2.1. Find the probability
   that mean of a sample of size 900 will be negative

   b) A random sample of size 81 taken whose variance is 20.25 and mean is 32, construct 98%
   confidence interval

OR

6. a) The variance of population is 2. The size of the sample collected from the population is 169.
   What is the standard error of mean

   b) A research worker wants to determine the average time it takes a mechanic to rotate the
   tires of a car and he wants to be able to assert with 95%. Confidence that the mean of his
   sample is of by at most 0.5 minutes. If he can presume from past experience that σ = 1.6
   minutes how large a sample will have to take

UNIT–IV

7. a) In a sample of 1,000 people in Karnataka 540 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in the state at 1% level of significance

   b) If 80 patients are treated with an antibiotic 59 got cured. Find a 99% confidence limits to the true population of cure

OR

8. The mean yield of wheat from a district A was 210 pounds with S.D 2.5 inches per acer from a sample of 100 plots. In another district the mean yield was 220 pounds with S.D 12 pounds from a sample of 150 plots. Assuming that the S.D of yield in the entire state was 11 pounds. Test whether there is any significant difference between the mean yield of crops in the two districts

UNIT–V

9. The measurements of the output of two units have given the following results. Assuming that both samples have been obtained from the normal populations at 10% significant level, Test whether the two populations have the same variance

Unit-A	14.1	10.1	14.7	13.7	14.0
Unit-B	14.0	14.5	13.7	12.7	14.1

OR

10. The number of automobile accidents per week in a certain community are as follows 12, 8, 20, 2, 14, 10, 15, 6, 9, and 4. Are these frequencies in agreement with the belief that accident conditions were the same during this 10 week period

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