Code : 4GC33

II B.Tech. I Semester Supplementary Examinations May/June 2016
Probability & Statistics
(Computer Science & Engineering)

Max. Marks: 70 **Time: 03 Hours**
Answer *all five* units by choosing one question from each unit (5 x 14 = 70Marks)
****

UNIT-I

1. a) Two cards are drawn at random from an ordinary deck of 52 playing cards. What is the probability of getting two aces if

    (i) The first card is replaced before the second card is drawn.

    (ii) The first card is not replaced before the second card is drawn. 6M

   b) There are three bags: first containing 1 white, 2 red, 3 green balls; second 2 white, 3 red, 1 green balls and third 3 white, 1 red, 2 green balls. Two balls are drawn from a bag chosen at random. These are found to be one white and one red. Find the probability that the balls so drawn came from the second bag. 8M

OR

2. a) If 3 cars are drawn from a lot of 6 cars containing 2 defective cars, find

    (i) the probability distribution of the number of defective cars

    (ii) The expected number of defective cars. 7M

   b) A continuous random variable X has the probability density function

   $$f(x) = \begin{cases} kx & for\ 0 \le x < 2 \\ 2x & for\ 2 \le x < 4 \\ -kx + 6x & for\ 4 \le x < 6 \\ 0 & else\ where \end{cases}$$

   Find k and mean of the density function. 7M

UNIT-II

3. a) If the probability is 0.05 that a certain wide-flange column will fail under a given axial load, what are the probabilities that among 16 such columns (i) at most two will fail;   (ii) at least four will fail? 6M

   b) Find the mean and variance of a Poisson distribution. 8M

OR

4. a) In a distribution exactly normal 7% of the items are under 35 and 89% are under 63. What are the mean and standard deviation of the distribution? 8M

   b) The mean and variance of a binomial distribution are 4 and 4/3 respectively, find $p(x \ge 1)$. 6M

UNIT-III

5. Take 30 slips of paper and label 5 each -4 and 4, four each -3 and 3, three each -2 and 2, 2 each -1, 0 and 1. If each slip of paper has the same probability of being drawn, find the probabilities of getting -4, -3, -2, -1, 0, 1, 2, 3, 4 and find the mean and variance of the distribution.   14M

OR

6. a) In a random sample of 400 individual accidents, it was found that 231 were due at least partially to unsafe working conditions. Construct a 99% confidence interval for the corresponding true proportion.   7M

   b) A random sample of size n = 100 is taken from a population with = 5.1. Given that the sample mean is $\bar{x} = 21.6$, construct a 95% confidence interval for the population mean ~ .   7M

UNIT-IV

7. a) The means of two large samples of sizes 1000 and 2000 members are 67.5 inches and 68.0 inches respectively. Can the samples be regarded as drawn from the same population of S.D. 2.5 inches   7M

   b) A machinist is making engine parts with axle diameter of 0.7 inch. A random sample of 10 parts shows mean diameter 0.742 inch with a standard deviation of 0.04 inch. On the basis of this sample, would you say that the work is inferior?   7M

OR

8. a) Twenty people were attacked by a disease and only 18 survived. Will you reject the hypothesis that the survival rate if attacked by this disease is 85% in favour of the hypothesis that is more at 5% level?   7M

   b) The means of the two random samples of sizes 9 and 7 are 196.42 and 198.82. The sum of the squares of the deviations from their means is 26.94 and 18.73 respectively. Can the samples be considered to have been from the same normal distribution?   7M

UNIT-V

9 The random samples gave the following results

Sample	Size	Sample mean	Sum of squares of deviations from the mean
1	10	15	90
2	12	14	108

Test whether the samples came from the same normal population.   14M

OR

10. Determine whether there is a really a relationship between an employee's performance in the company in training program and his/her ultimate success in the job. Taking a sample of 400 cases from its very extensive files, and obtained the results shown in the following table.

	Below Average	Average	Above Average
Poor	23	60	29
Average	28	79	60
Very good	9	49	63

14M

***

R-14

Code : 4G236

II B.Tech. I Semester Supplementary Examinations May/June 2016

Electrical Engineering and Electronics Engineering

(Common to ME, CSE & IT)

Max. Marks: 70   Time: 3 Hours

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

****

UNIT-I

1. a) Three resistances of R ohms are connected in delta. Transform it into an equivalent star with resistances R_1, R_2 and R_3.   7M

   b) Define the terms active elements, bilateral elements, linear elements and passive elements with examples.   7M

OR

2. a) Derive the expression for equivalent inductance of two parallel connected inductors.   7M

   b) Three capacitors of 2 mF, 5 mF and 10 mF are connected in series. Find the equivalent capacitance.   7M

UNIT-II

3. a) Derive E.M.F. equation of a d.c generator.   7M

   b) Explain the operation of three point starter.   7M

OR

4. a) Derive the condition for maximum efficiency of dc motor.   7M

   b) Draw the equivalent circuits and write voltage current relations for separately excited dc motor and dc shunt motor.   7M

UNIT-III

5. a) Explain the principle of operation of single phase transformer.   7M

   b) Explain how equivalent circuit parameters are determined for open circuit and short circuit tests.   7M

OR

6. a) Explain the principle of operation of a three phase induction motor with relevant diagrams.   7M

   b) Explain the operation of alternator and derive its emf equation.   7M

UNIT-IV

7. a) Explain the working of full wave rectifier with necessary diagrams.   9M

   b) What are the applications of diode rectifiers?   5M

OR

8. a) What is feedback amplifier? Explain the operation of feedback amplifier.   7M

   b) Derive the expressions for voltage gain, current gain, output impedance and input impedance of a CE amplifier.   7M

UNIT-V

9. a) What are the applications of induction heating?   5M

   b) Explain about induction heating with necessary diagrams.   9M

OR

10. a) List the applications of dielectric heating.   5M

    b) Explain the working of CRO with relevant diagrams.   9M

***

Code : 4G131

R-14

II B.Tech. I Semester Supplementary Examinations May/June 2016
Advanced Data Structures Through C++
(Common to CSE & IT)

Max. Marks: 70   **Time: 3 Hours**

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

****

UNIT-I

1. a) What are the four basic properties are of object Oriented Paradigm?   8M

    b) Compare public and private derivation of a class from base class.   6M

OR

2. a) What is the significance of exception in C++?   4M

    b) Explain exception handling in C++.   10M

UNIT-II

3. a) What is polymorphism?   4M

    b) How polymorphism can be used in function overloading in C++?   10M

OR

4. a) Explain runtime polymorphism using virtual functions in C++.   10M

    b) Explain significance of time complexity and space complexity.   4M

UNIT-III

5. a) What are the advantages of queues?   4M

    b) Illustrate an implementation of queue ADT in C++ with example.   10M

OR

6. a) What is double hashing?   4M

    b) Compare of different hashing techniques.   10M

UNIT-IV

7. a) What are the properties of binary tree?   4M

    b) Explain binary tree traversal methods.   10M

OR

8. a) What are the advantages of ADT?   4M

    b) Explain Multi-way merge and Poly-phase merge.   10M

UNIT-V

9. a) What are the advantages of splay trees?   2M

    b) Compare different Search Trees.   12M

OR

10. a) What are the advantages of brute force method?   4M

    b) Explain Moore algorithm.   10M

***

II B.Tech. I Semester Supplementary Examinations May/June 2016
Digital Logic Design
(Common to CSE & IT)

Max. Marks: 70   Time: 3 Hours

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

****

UNIT-I

1. a) (i) Convert $(0.513)_{10}$ to octal   4M
        (ii) $(306.D)_{16}$ to Binary   4M
    b) Using 10's complements, Subtract 72532-3250 and 3250-72532   6M

OR

2. a) Proof the theorems
        i) $x+x=x$ 3M
        ii) $x+xy=x$ 3M
    b) Explain about canonical and standard forms   8M

UNIT-II

3. a) Simplify the Boolean Function $F(A,B,C,D,E)=(0,2,4,6,9,13,21,23,25,29,31)$ Using K-Map   14M

OR

4. a) What are the universal Gates? Explain about universal gates   7M
    b) Explain about parity generation and checking?   7M

UNIT-III

5. a) Explain about decimal adder with neat sketch?   7M
    b) Explain About Binary Multiplier with example?   7M

OR

6. a) Explain about magnitude comparator with 4-bit magnitude comparator?   7M
    b) Write a short note about HDL for combinational circuits?   7M

UNIT-IV

7. a) What is flip – flop and Explain about flip- flops?   7M
    b) Explain about shift registers?   7M

OR

8. a) Explain about Ring Counter?   7M
    b) Explain about Johnson Counter?   7M

UNIT-V

9. a) What is Race Conditions and Explain it?   7M
    b) Explain about design Procedure of Asynchronous Sequential Logic?   7M

OR

10. a) Explain about Programmable Array logic?   7M
    b) Explain about Programmable logic Array?   7M

***

Code: 4G133

R-14

II B. Tech. I-Semester Supplementary Examinations May/June 2016
Principles of Programming Languages
(Common to CSE & IT)

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

UNIT-I

1. a) Explain Imperative, Object Oriented, Functional programming.   7M
    b) Explain various categories of languages.   7M

OR

2. a) Explain the processes of Compilation.   7M
    b) Discuss about various programming domains and their associated languages.   7M

UNIT-II

3. a) Distinguish between name type compatibility and structure type computability.   7M
    b) Explain Short Circuit evaluation and mixed mode assignment?   7M

OR

4. a) Explain the concept of late binding and early binding.   7M
    b) Discuss in detail the design issues for arithmetic expressions.   7M

UNIT-III

5. a) Explain pass by result parameter passing technique in detail.   7M
    b) Define Co-routines? Write about overloaded subprograms.   7M

OR

6. a) Discuss the design issues of sub programs? Define Overloaded operators.   7M
    b) Explain the design issues and characteristics of subprograms.   7M

UNIT-IV

7. a) What are the languages design issues for abstract data types?   7M
    b) What is meant by subprogram level concurrency? Explain.   7M

OR

8. a) What is the difference between checked and unchecked exception in JAVA?   7M
    b) How user defined exception defined in ADA?   7M

UNIT-V

9. a) Discuss about basic elements of PROLOG.   7M
    b) Give the internal representation of LISP lists and explain in detail about it. 7M

OR

10. a) Explain some of the important functions of LISP.   7M
    b) Discuss in detail about the different data structures that are present in LISP
       with suitable examples?   7M

***