Hall Ticket Number :										

R-15

Code: 5G133

II B.Tech. I Semester Supplementary Examinations Nov/Dec 2022

Principles of Programming Languages

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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UNIT–I

1. a) Describe the basic concept of Denotational Semantics? 5M
   b) Give a brief note on The general problem of describing Syntax and Semantics? 9M

OR

2. a) Explain different aspects of the costs of a Programming Language? 7M
   b) Explain syntax of a "for" statement in PASCAL using BNF Notation and Syntax graphs? 7M

UNIT–II

3. a) What are the design issues of Union? 4M
   b) How does C support Relational and Boolean expressions? 10M

OR

4. a) What is short-circuiting evaluation? Name a language that always does the short-circuit evaluation of Boolean expressions? 10M
   b) What are the design issues for character string type? 4M

UNIT–III

5. a) What are the Common solutions to the Nesting problem for Two-way Selectors 6M
   b) What is the general problem with Static Scoping? What are the advantages and disadvantages of Dynamic Scoping? 8M

OR

6. a) What common Programming Language borrows part of it's deign from Dijkstra's Guarded commands? 10M
   b) What does it mean for a Subprogram to be active? What are the design issues for Subprograms? 4M

UNIT–IV

7. a) What are the differences between a C++ **throw** specification and a Java **throws** clause? 4M
   b) Write and explain about Exception handling in C++ with examples? 10M

OR

8. a) Which is more general, Concurrency through Monitors or Concurrency through Message passing? 7M
   b) Describe the actions of the three Java methods that are used to support Cooperation Synchronization? 7M

UNIT–V

9. a) List and explain the potential applications of Logic programming? 6M
   b) What are the Syntactic forms and usage of Fact and Rule statements in Prolog? 8M

OR

10. a) Write and explain about various features and functions used in ML? 8M
    b) Explain the difference between a Depth-first search and a Breadth-first search when discussing how multiple goals are satisfied? 6M

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II B.Tech. I Semester Supplementary Examinations Nov/Dec 2022

Probability and Statistics

(Computer Science and Engineering)

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) Define Conditional probability. State and prove Multiplication theorem of Probability. 7M

   b) A card is drawn from a well shuffled pack of cards. What is the probability that it is either a spade or an ace? 7M

OR

2. a) If X is a continuous random variable and y= ax+b, prove that $E(y) = a\,E(X) + b$ and $V(y) = a^2\,V(x)$ 7M

   b) The probability is 0.02 that an item produced by a factory is defective. A shipment of 10,000 items is sent to its ware house. Find the expected number E of defective items and the standard deviation σ. 7M

UNIT–II

3. a) Derive Mean and Variance of Binomial Distribution. 7M

   b) Show that Poisson distribution as a limiting case of the Binomial distribution under the conditions that (i) p is very small (ii) n is very large and (iii) np = λ (say) is finite. 7M

OR

4. 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 14M

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 7M

   b) A random sample of size 81 taken whose variance is 20.25 and mean is 32, construct 98% confidence interval 7M

OR

6. a) A die is thrown 1536 times. An even integer obtained 1000 times. Test whether the die is unbiased. 7M

b) A random sample of 400 men from one stage gives the mean pay of Rs 200 per day with a standard deviation of Rs 10/-. Another random sample of 400 men has a mean pay of Rs 190 per day with a standard deviation of Rs 9/-. Construct 99% confidence interval for μ_1-μ_2. 7M

UNIT–IV

7. The theory predicts that the proportion of beans available in four groups I, II, III, IV should be 4:3:2:6. In an experiment with 1500 beans the numbers in the four groups are 390, 305, 196, and 609. Use χ^2 test to verify whether the experiment results supports the theory. 7M

OR

8. a) A sample of 400 items is taken from a population whose standard deviation is 10. The mean of the sample is 40. Test whether the sample has come from a population with mean 38. Also calculate 95% confidence interval for the population 7M

b) In a random sample of 125 cola drinkers, 68 said they prefer Thumsup to Pepsi. Test the null hypothesis P = 0.5 against the alternative hypothesis P > 0.5 7M

UNIT–V

9. An inspection of 10 samples of size 400 each from 10 lots revealed the following number of defective units : 17,15,14,26,9,4,19,12,9,15

Construct control limits for the number of defective units. Plot the control limits and the observations and state whether the process is under control or not. 14M

OR

10. A sample analysis of examination results of 500 students was made. It was found that 220 students had failed, 170 had secured a third class, 90 were placed in second class and 20 got a first class. Do these figures commensurate with the general examination result which is in the ratio of 4:3:2:1 for the various categories respectively 14M

END