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| Hall Ticket Number : | | | | | | | | | | |
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| R-17 |
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Code: 7P2B12

M.C.A. I Semester Supplementary Examinations June 2019

Problem solving with 'C'

Max. Marks: 60

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 12 = 60 Marks)

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| UNIT-I |
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1. a) What are the advantages and limitations of using flow charts? 6M
- b) What is algorithm? Write an algorithm and flowchart for the finding the given no is Armstrong no or not? 6M

OR

2. Why we need storage classes? List and explain the various storage classes present in language 'C' with example. 12M

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| UNIT-II |
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3. Describe the following a) break b) continue c) goto statements with example. 12M

OR

4. Describe the following (a) getc() (b) getchar() (c) getch() (d) getche() with example. 12M

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| UNIT-III |
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5. a) Give the implementation of multidimensional arrays using pointers. Let the user specify the number of rows and columns for the array for allocating memory dynamically. 7M
- b) Write a c program for matrix multiplication with sufficient conditions. 5M

OR

6. With the help of syntax and example program explain the various string handling functions. 12M

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| UNIT-IV |
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7. a) How is a structure variable different from an array with respect to its use as a function parameter? 6M
- b) What is union? How to declare and initialize unions? Discuss. 6M

OR

8. a) What are self referential structures? Explain with one example. 5M
- b) Create a structure called student and the members of the structure are Stu_Name, Stu_Rno, M1, M2,M3. Create a pointer variable for the structure, store the values and fetch the values present in the structure student. 7M

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| UNIT-V |
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9. a) What is a pointer, pointer to a pointer and explain the advantages of using pointers? 6M
- b) Write in detail about the various dynamic memory allocation functions. 6M

OR

10. a) What are different types of operating modes of files? Explain with an example. 7M
- b) Write a program to read a text file and to count the no of uppercase letters in a given file. 5M

Code: 7P2B15

M.C.A. I Semester Supplementary Examinations June 2019

Object Oriented Programming with C++

Max. Marks: 60

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 12 = 60 Marks)

UNIT-I

1. a) Explain the key concepts of Object Oriented Programming. 6M
b) Write a program for calculating the total marks and Grade of the 60 students in a class. 6M

OR

2. a) Present the structure of C++ program. Explain different elements in it. 6M
b) Briefly write about the evolution of C++. 6M

UNIT-II

3. a) Define inline function. Write a C++ program for finding the area of a triangle using inline functions. 6M
b) How to define a class in C++? How to declare objects for the class? Give an example. 6M

OR

4. What is friend function? List out it's advantages over a normal function with an example program. 12M

UNIT-III

5. a) Write a C++ program to define three overloaded functions to swap two integers, swap two floats and swap two doubles. 6M
b) What is Constructor overloading? Explain different types of constructors. 6M

OR

6. a) Write a C++ program to overload unary operator in complex numbers by using friend function. 6M
b) What is Operator overloading? Write a C++ program illustrating overloading NEW and DELETE operators? 6M

UNIT-IV

7. a) Write a C++ program to implement single inheritance with public access specific. 6M
b) What is code reusability? Explain different C++ features that enable reusability. 6M

OR

8. a) What is dynamic binding? How it is different from static binding? List some advantages of dynamic binding over static binding. 6M
b) Discuss about virtual functions with a C++ example. 6M

UNIT-V

9. a) Explain how to catch multiple exceptions in C++. 6M
b) What is a container? Give the comparison of various containers used in STL programming. 6M

OR

10. a) Write a program using try block to detect and throw an exception if the condition "divide-by-zero" occurs. 6M
b) Explain about the sequential and random access file operations 6M

Code: 7P2C13

M.C.A. I Semester Supplementary Examinations June 2019

Probability and Statistics

Max. Marks: 60

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 12 = 60 Marks)

UNIT-I

1. a) A random variable X has the following probability function

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| X | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| P(x) | $\frac{k}{45}$ | $\frac{k}{15}$ | $\frac{k}{9}$ | $\frac{k}{5}$ | $\frac{2k}{45}$ | $\frac{6k}{45}$ | $\frac{7k}{45}$ | $\frac{8k}{45}$ | $\frac{4k}{45}$ |

Determine (i) value of k (ii) mean (iii) variance of the distribution.

6M

- b) A consulting firm rents cars from three agencies, 30% from D, 20% from E and 50% from F agencies. If 10%, 15% and 5% of the cars have bad tires respectively from agencies D, E and F, what is the probability that a car with bad tires rented by the firm came from agency E?

6M

OR

2. a) State and prove Bay's theorem

6M

- b) For a continuous probability function
- $f(x) = k x^2 e^{-x}$
- when
- $x \geq 0$

find (i) k (ii) Mean (iii) Variance.

6M

UNIT-II

3. a) If 30 of 20 tyres are defective and 4 of them are randomly chosen for inspection, what is the probability that only one of the defective tyre will be included?

6M

- b) If the variance of a Poisson variate is 3, then find the probability that

(i) $x=0$ (ii) $0 < x \leq 3$ (iii) $1 \leq x \leq 4$.

6M

OR

4. a) Given that the switchboard of a consultant's office receives on the average 0.8 calls per minute. Find the probability that (i) there will be at least 2 calls (ii) at most 4 calls in a given minute.

6M

- b) If a random variable 'X' follows a normal distribution with mean 16.28 and standard deviation 0.12. Find the probabilities

(i) $P(16 < X < 16.5)$ (ii) $P(X > 16.2)$.

6M

UNIT-III

5. A population consist of five numbers 2, 3, 6, 8, 11. consider all possible distinct Samples of Size 2 with replacement. Find

(i) Population Mean

(ii) Population standard deviation

(iii) Sampling distribution of mean

(iv) Mean of the sampling distribution of means

(v) Standard deviation of the sampling distribution of means.

(vi) Verify sampling distribution of mean and variance by suitable formula.

12M

OR

6. a) The mean and the standard deviation of a population are 11,795 and 14054 respectively. If $n=50$, find the 95% confidence interval for the mean. 6M
- b) Explain Maximum error of estimate E for large sample. 6M

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| UNIT-IV |
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7. a) Write about (i) Critical region (ii) Left tail test and right tail test (iii) Two tailed test 6M
- b) A manufacturer claims that only 4% of his products are defective .A random sample of 500 were taken among which 100 were defective. Test the hypothesis at 0.05 level. 6M

OR

8. a) In a college of 600 students of a certain college 400 are found to use ball pens. In another college of 900 students, 450 were found to use ball pens. Test whether the two colleges are significantly different with respect to the habit of using ball pens. 6M
- b) A random sample from a company's very extensive files shows that the orders for a certain kind of machinery were filled, respectively in 10, 12, 19, 14, 15, 18, 11, and 13 days. Use $\alpha = 0.01$ to test the claim that on the average such orders are filled in 10.5 days. 6M

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| UNIT-V |
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9. Explain Pure birth and death process of queueing theory and Characteristics of (M/M/1) model. 12M

OR

10. Arrival rate of telephone calls at a telephone booth are according to Poisson distribution with an average time of 12 minutes between two consecutive call arrivals. The length of telephone calls is assumed to be exponentially distributed with mean 4 minutes.
- (i) Find the probability that a call arriving at the booth will have to wait.
- (ii) Find the average queue length that forms time to time
- (iii) Find the fraction of a day that the phone will be in use.
- (iv) What is the probability that an arrival will have to wait for more than 15 minutes before the phone is free. 12M
