(101CP24)

M.SC DEGREE EXAMINATION, Model QP
Computer Science-First Semester
DATA STRUCTURES IN C

Time : Three hours **Maximum : 70 marks**

Answer ONE Question from each unit **5 x 14 = 70 M**

Unit -I

1. a) Write short notes on structures and Unions.
   b) Write a program to push and pop elements into and from the stack

(OR)

2. a) Explain queue with deletion and insertions algorithms
   b) Develop an algorithm to delete an element from a circular Queue.

Unit-II

3. a) Write short notes on representation on chains
   b) Write a program to add two polynomials

(OR)

4. a) Explain single linked list with code and example
   b) Develop an algorithm to insert an element from double linked list.

Unit-III

5. a) Explain the various representations of trees.
   b) Explain binary search trees

(OR)

6. a) Explain Threaded binary trees.
   b) Explain the tree traversals.

Unit-IV

7. a) Illustrate Heap sort through an example.
   b) Write short notes on Insertion sort.

(OR)

8. a) What is Merge sort ?
   b) Explain static hashing.

Unit-V

9. a) Write short notes on Representation of Graphs.
   b) Explain Kruskals Algorithm.

(OR)

10. a) Explain Breadth first search and Depth first search.
    b) Explain all pairs shortest path.

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M.SC DEGREE EXAMINATION, Model QP
Computer Science-First Semester
Object oriented programming with JAVA

Time : Three hours **Maximum : 70 marks**

Answer ONE Question from each unit **5 x 14 = 70 M**

UNIT – I

1. a) Describe type conversion and type casting with example?
   b) Explain about the constructor with example program

(OR)

2. What is inheritance? Explain its importance? Also describe about types with examples.

UNIT – II

3. How is a user-defined package created? Explain with example. Also describe what are the different ways to import packages.

(OR)

4. a) Describe about extending interface.
   b) Compare Interface with abstract class.

UNIT – III

5. What is an exception? How can it be handled ? Explain with suitable example program.

(OR)

6. a. Write a program to copy content from one file to another file.
   b. Write about Character Stream Classes.

UNIT-IV

7. a) With the help of an example, explain keyboard events
   b) Explain about Delegate Event Model.

(OR)

8. a) Discuss about Adapter class with example .
   b) Explain about Interthread communication.

UNIT – V

9. Describe about Layout Management with examples.

(OR)

10. Explain about life cycle of applet with example program

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M.SC DEGREE EXAMINATION, Model QP
Computer Science-First Semester

Operating Systems

Time : Three hours **Maximum : 70 marks**

Answer ONE Question from each unit **5 x 14 = 70 M**

UNIT – I

1. Explain the Process Management & Memory Management?

OR

2. Write the Operating System Design and Implementation?

UNIT – II

3. Discuss the Multithreading Models?

OR

4. What is Thread? Explain the Thread Scheduling?

UNIT – III

5. Describe the Semaphores?

OR

6. a) What is Deadlock? Write the Deadlock Characterization?

b) Differences between the Deadlock Avoidance & Deadlock Detection?

UNIT – IV

7. Discuss about the Swapping?

OR

8. Explain the Page Replacement?

UNIT – V

9. a)What is File system? Discuss the File System Mounting?
b) Compare the Disk Scheduling & Disk Management?

OR

10. Explain the I/O Hardware and Kernal I/O Interface?

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M.SC DEGREE EXAMINATION, Model QP
Computer Science-First Semester
PROBABILITY AND STATISTICS

Time : Three hours **Maximum : 70 marks**

Answer ONE Question from each unit **5 x 14 = 70 M**

UNIT-I

1. a) State and prove Baye`s theorem
   b) Two dice are thrown X assigned to each point, if S the sum of the variables on the faces. Find mean and variance of the random variable.

(OR)

2. a) Ten coins are thrown simultaneously then find the probability of getting atleast seven heads.
   b) Show that for a Poisson distribution mean and variance are equal.

UNIT-II

3. a) Discuss the chief characteristics of normal distribution and its importance.
   b) Explain the central limit theorem?

(OR)

4. a) Define Weibull distribution and find its mean and variance?
   b) Discuss an application of exponential distribution and find its mean, variance and reliability?

UNIT-III

5. a) What is hypothesis testing? Explain the testing procedure for testing null against alternative hypothesis.
   b) According to the norms established for a mechanical aptitude test persons who are 18 years old have an average height of 73.2 with a standard deviation of 8.6. If 45 randomly selected persons of that age average 76.7 test the null hypothesis $\mu = 73.2$ against the alternative hypothesis $\mu > 73.2$ at the 1% level of significance.

(OR)

6. a) A study shows that 16 of 200 tractors produced on one assembly line required extensive adjustments before they could be shipped. While the same was true for 14 of 400 tractors produced on another assembly line. At 1% level of significance, does this support the claim that the second production line does superior work?
   b) During a country wide investigation, the incidence of tuberculosis was found to be one percent in a college of 400 strength five reported to be effected and there were 1200 effected in another college. (i) Thus it indicates any significant difference (ii) If the population proportion of tuberculosis is not known test whether the difference is significant.

UNIT-IV

7. a) Define point estimation and show that sample mean is unbiased estimator of population mean?
   b) Test at 5% level the equality of variances of the wage distribution in the two cities. The daily wages in rupees of skilled workers in two cities are as follows:

City	Size of sample	S.D. of wages in the sample
A	16	25
B	13	32

(OR)

8. a) What is ANOVA and its fundamental assumptions?
   b) Discuss the ANOVA Model for one way classification.

UNIT-V

9. a) Calculate the correlation coefficient for the following Heights(in inches) of fathers X and their sons Y.

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

b) Explain i)Coefficient of determination ii) Matrix approach in MLR model.

(OR)

10. The following show the improvement (gain in reading speed) of eight of students in a speed reading program and the number of weeks they have been in the program. Fit a straight line by the method of least squares and find 90% confidence interval for β.

M.SC DEGREE EXAMINATION, Model QP
Computer Science-First Semester
COMPUTER ORGANIZATION

Time : Three hours **Maximum : 70 marks**

Answer ONE Question from each unit **5 x 14 = 70 M**

UNIT-I

1. a) Simplify the Boolean expression using K-map and implement using NAND gates
   $F(A,B,C,D) = \sum m(0,2,3,8,10,11,12,14)$
   b) State and Explain the DeMorgan's Theorem

(OR)

2. a) Explain the Working of SR Flip-flop with necessary circuit diagram.
   b) Write short notes on floating point representation.

UNIT-II

3. Implement Bus line for an 8-bit register using three state-buffers

(OR)

4. a) Illustrate the register transfer mechanism for P: R2 ← R1 with necessary diagrams
   b) List out the Register transfer notations for Arithmetic Micro Operations

UNIT-III

5. Demonstrate the general configuration of Micro programmed Control unit with a neat block diagram.

(OR)

6. Design a 4-bit ALU which performs arithmetic, Logical and shift operations.

UNIT – IV

7. Explain the process for signed magnitude addition and subtraction with flow chart

(OR)

8. Explain in detail about booth multiplication algorithm with an example?

UNIT-V

9. Explain Virtual address Mapping using Pages with necessary example

(OR)

10. Explain Daisy-Chaining priority and Parallel priority Interrupt with its hardware diagram.