Code : *1G142*

**R-11**

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET**
**(AUTONOMOUS)**

***II B.Tech II Semester Regular April 2013***

***Database Management Systems***
**( Common to CSE & IT)**

**Max. Marks: 70** **Time: 03 Hours**

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**Answer *any five* questions**
**All Questions carry equal marks (14 Marks each)**

1. a) Define DBMS? Explain Database system Applications. 7M
   b) What is a Data Model? Explain about a Relational Data Model. 7M
2. a) Construct an ER diagram for a bank Database. Bank maintains data about customers, their loans, their deposits, lockers. Determine the entities and relationships. 7M
   b) How composite attribute is modeled in E-R diagram. Explain with an example. 7M
3. a) What are integrity constraints? Define the terms Primary key constraint and Foreign key constraints with an example. How are these constraints expressed in SQL? 7M
   b) What is a View? How do views support logical data independence? How are views used for security? How are queries on views evaluated? 7M
4. a) Explain the following in SQL with examples.
      i) Nested queries ii) Correlated queries 7M
   b) Discuss about aggregation functions with examples. 7M
5. a) Define 1 NF, 2 NF, 3 NF and BCNF. What is the motivation for putting a relation in BCNF? 7M
   b) What are the problems related to decomposition. How these are rectified. 7M
6. a) Discuss about implementation of Atomicity and durability. 7M
   b) What are Save Points and Chained Transactions? Explain why save points and Chained Transactions are useful. 7M
7. a) Discuss about Time Stamp Based Protocols. 7M
   b) Write a detail note on Buffer Management. 7M
8. a) Explain Delete operation on B+ Tree Structure. 7M
   b) Explain Heap file with un clustered Hash Index. 7M

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Code : 1G143

R-11

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET**
**(AUTONOMOUS)**

***II B.Tech II Semester Regular Examinations April – 2013***

***Design and Analysis of Algorithms***
***( Common to CSE & IT )***

**Max. Marks: 70** **Time: 03 Hours**

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**Answer *any five* questions**
**All Questions carry equal marks (14 Marks each)**

1. a) Write an algorithm to find the largest of given n numbers. Show the working of the algorithm with a sample list of elements. Derive its time complexity. 8M

   b) Show that $n^3 \log n$ is $O(n^3)$. 6M

2. Explain the general method of divide and conquer method. Explain in detail about any sorting method that uses divide and conquer strategy for sorting a given list of elements. Write the procedure and derive it's time complexity. 14M

3. Write the general method of greedy strategy. What is knapsack problem? Explain how the knapsack problem can be solved by using greedy method, with an example. Write the algorithm and derive it's time complexity. 14M

4. With an example, explain in detail how the traveling salesperson problem can be solved using the dynamic programming method. Write the algorithm and derive the time complexity. 14M

5. Explain how the 8-queens problem can be solved using backtracking. Write the algorithm and derive the complexity. 14M

6. What is a binary tree? Explain about the preorder, postorder and inorder traversal techniques for binary trees, with one example for each. Write the procedures for each traversal and derive the time complexities. 14M

7. Explain how the 0/1 Knapsack problem can be solved by LCBB method. Write the algorithm, derive the time complexity and trace the algorithm for the following 0/1 Knapsack instances.

   i) N=5, (p1, p2, p3, p4, p5) = (10, 15, 6, 8, 4),
   (w1, w2, w3, w4, w5) = (4, 6, 3, 4, 2) and m = 12 14M

8. a) Write a detailed note on Class NP hard and NP complete problems. 8M

   b) Write non deterministic algorithms for Knapsack problem. 6M

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Code : *1GA41*

**R-11**

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET**
**(AUTONOMOUS)**

***II B.Tech II Semester Regular Examinations April – 2013***

## *Managerial Economics and Financial Analysis*
## ( IT)

**Max. Marks: 70** **Time: 03 Hours**

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**Answer *any five* questions**
**All Questions carry equal marks (14 Marks each)**

1. Discuss the nature and scope of managerial economics
2. What is the significance of demand analysis to a sales manager of a firm? Explain the important determinants of demand.
3. What do understand by Break Even Analysis? The following particulars are available about XYZ ltd.

| | |
|---|---|
| Selling Price per unit (Rs.) | 50 |
| Variable Cost per unit(Rs.) | 30 |
| Total Fixed Cost(Rs.) | 1, 00, 00 |

   **a)** Find out the Break Even quantity and revenue

   **b)** What quantity is required to be sold to earn a profit of Rs. 10, 000

4. Explain different pricing methods with suitable examples
5. Discuss different types of business organizations detailing the merits and demerits of each of them
6. Rank the following projects P and Q based on PBP and ARR techniques.

| End of the Year | CASH FLOWS (Rs.) | |
|---|---|---|
| | Project P | Project Q |
| 0 | (1500) | (1500) |
| 1 | 800 | 800 |
| 2 | 600 | 600 |
| 3 | 400 | 400 |
| 4 | 200 | -- |
| 5 | 100 | -- |

7. What is double entry –book keeping? Explain the Journal , Ledger and Trail balance

8 Explain different turnover ratios in assessing the financial position of an organization

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Code : 1G145 **R-11**

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET**
**(AUTONOMOUS)**

***II B.Tech II Semester Regular Examinations April – 2013***

***Object Oriented Programming through JAVA***
**( Common to CSE & IT)**

**Max. Marks: 70** **Time: 03 Hours**

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**Answer *any five* full questions**
**All Questions carry equal marks (14 Marks each)**

| | | | |
|---|---|---|---|
| 1. | a) | What is byte code in java? Explain how the concept of pointers is implemented in java. | **7M** |
| | b) | An organization wants to transmit data securely over telephone, but they are concerned that their phone may be tapped. All the data are transmitted as five digit integers (numbers). The organization wants to encrypt (hide the actual five digit number by encoding) the actual five digit number so that it can be transmitted more securely. The encryption or encoding method is as follows: each digit in the number will be replaced by sum of all the digits modulo 10. Write a program which takes a series of five digit numbers (as input) and produce /print the encrypted or encoded numbers. | **7M** |
| 2. | a) | Write a program to demonstrate the use of *final* in inheritance | **7M** |
| | b) | Demonstrate the use of *super* where it can be used like *this* keyword | **7M** |
| 3. | | What is the purpose of '*packages*' in java? Discuss the various access specifiers in packages with suitable examples. | **14M** |
| 4. | | What is a thread? What are the two ways in which threads can be implemented? Explain with an example for each. | **14M** |
| 5. | a) | Define *Event Listener*. Explain ActionListener and Adjustment Listener | **7M** |
| | b) | Write a program to demonstrate *MouseListener* event. | **7M** |
| 6. | a) | Explain the applet lifecycle? What are the different types of applets | **7M** |
| | b) | What is a Layout Manager? Explain the different types of Layout Managers with suitable examples. | **7M** |
| 7. | | Write a swings program to demonstrate the implementation of JButton class and Radio Buttons | **14M** |
| 8. | a) | What is a Socket? Explain the various types of TCP socket classes | **6M** |
| | b) | What is Inet address? Explain various Factory and Instance methods with example | **8M** |

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Code : 1G441

R-11

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET**
**(AUTONOMOUS)**

## *II B.Tech II Semester Regular April 2013*

### *Operating Systems*
### ( IT)

**Max. Marks: 70** **Time: 03 Hours**

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**Answer *any five* questions**
**All Questions carry equal marks (14 Marks each)**

| | | | |
|---|---|---|---|
| 1. | a) | What is an operating system? Explain the concept of simple batch systems. | 7M |
| | b) | What is a system call? What are various categories of system calls? Explain | 7M |
| 2. | a) | What are different implementation issues of Inter process communication? | 6M |
| | b) | What are four circumstances under which CPU scheduling decisions may take place? | 4M |
| | c) | What are different criteria for comparing CPU scheduling algorithms? | 4M |
| 3. | a) | State and explain the critical section problem. | 7M |
| | b) | Explain binary semaphore with example. | 7M |
| 4. | | With an example explain Banker's algorithm for dead lock avoidance. | 14M |
| 5. | a) | Explain the concept of swapping. | 7M |
| | b) | With neat diagram explain different steps in handling a page fault. | 7M |
| 6. | a) | What are file attributes? What are different operations on files? | 7M |
| | b) | Explain different file access methods. | 7M |
| 7. | a) | What is stable storage? Explain stable storage implementation. | 7M |
| | b) | Explain various disk management aspects. | 7M |
| 8. | | Explain various program threats and system threats. | 14M |

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Code : *1GC42*

**R-11**

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET**
**(AUTONOMOUS)**

## *II B.Tech II Semester Regular April 2013*

***Probability & Statistics***
***( Common to ME & IT )***

**Max. Marks: 70** **Time: 03 Hours**

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**Answer *any five* questions**
**All Questions carry equal marks (14 Marks each)**

1. a) Find the mean, median and mode for the following distribution

| x | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| y | 4 | 9 | 6 | 25 | 22 | 18 | 7 | 3 |

7M

b) Find the rank correlation coefficient to the following data:

| X | 65 | 63 | 67 | 64 | 68 | 62 | 70 | 66 | 68 | 67 | 69 | 71 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Y | 68 | 66 | 68 | 65 | 69 | 66 | 68 | 65 | 71 | 67 | 68 | 70 |

7M

2. a) Among 150 students 80 are studying Math's, 40 are studying Physics and 30 are studying Math's and Physics. If a student is chosen at random find the probability that the student

(i) Studying Math's or Physics

(ii) Student studying neither Math's nor Physics. 7M

b) State and prove BAYE'S theorem. 7M

3. a) If X and Y are discrete random variables and K is constant then prove that

(i) $E(X+K) = E(X) + k$

(ii) $E(X+Y) = E(X) + E(Y)$ 7M

b) Find the probability density of random variable is given by

$f(x) = k(1-X^2)$ for $0 < x < 1$

$= o$ elsewhere

find the value of k and the probabilities that a random variable will take on a value

(i) between .1 and .2 (ii) greater than .5. 7M

4. a) If mean and variance of a binomial distribution are 4 and 2 find the probability of

(i) Exactly two successes (ii) less than two successes (iii) at least two successes. 7M

b) Pipes for tobacco are being packed in fancy plastic boxes. The length of the pipes is normally distributed with $\mu = 5$ and $a = 0.1$, the internal length of the boxes is 5.2. What is the probability that they would be small for the pipe? 7M

5. A population consists of six numbers 4,8,12,16,20,24.consider all samples of size two which can be drawn without replacement from this population .find

   (a) population mean

   (b) Population S.D

   (c) Mean of the sampling distribution of means

   (d) S.D of the sampling distribution of means. 14M

6. a) The following are the average weekly losses of the worker hours due to accidents in 10 industrial plants before and after a certain safety program were put into the operation. 45 and 36, 73 and 60, 46 and 44, 124 and 119, 33 and 35, 57 and 51, 83 and 77, 34 and 29, 26 and 24,& 17 and 11. Use 0.05 level of significance to test whether the safety program is effective. 7M

   b) A random sample of size 81 was taken whose variance is 20.25 and mean 32. Construct 90% confidence interval. 7M

7. a) Samples of students were drawn from two universities and from their weights in kgm and standard deviations are calculated. Make a large sample test to test significance of the difference between the means

| | Mean | S.D | Size of the sample |
|---|---|---|---|
| University A | 55 | 10 | 400 |
| University B | 57 | 15 | 100 |

7M

   b) Find maximum difference that we can expect with probability 0.95 between the means of samples of sizes 10 and 12 from a normal population if their standard deviations are found to be 2 and 3 respectively. 7M

8. Decide on the basis of following data (observed frequencies ) shown in the following table whether the number of errors a compositor makes in the setting a galley of type is a random variable having Poisson distribution:

| **Number of errors (Xi)** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Observed frequencies (fi)** | 18 | 53 | 103 | 107 | 82 | 46 | 18 | 10 | 2 | 1 |

14M

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