Code : 1G441

R-11

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

II B.Tech. II Semester Regular Examinations June 2014

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) Explain different services provided by operating systems. 7M

   b) What is a distributed system? What are the reasons for building the distributed systems 7M

2. a) Describe different operations on Processes. 7M

   b) Explain FCFS Scheduling algorithm with example? 7M

3. With neat diagram explain the concept of monitors for process synchronization. 14M

4. a) Describe necessary conditions for a deadlock situation. 7M

   b) How dead locks can be described by a resource allocation graph? Explain. 7M

5. a) Explain the concept of paging. 7M

   b) Explain optimal page replacement algorithm 7M

6. a) Explain different methods of disk free space management. 7M

   b) Explain different directory structures. 7M

7. Explain in detail any three disk scheduling algorithms. 14M

8. a) Explain goals of protection. 7M

   b) Explain various system threats. 7M

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Code : 1GC42

R11

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET

(AUTONOMOUS)

II B.Tech. II Semester Regular Examinations, June 2014

Probability & Statistics

(Common to Civil, ME & IT)

Time: 3 hours **Max Marks: 70**

Answer any FIVE of the following

All questions carry equal marks (14 Marks each)

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1. a) Calculate the mean, mode and standard deviation for the following.

x	1	2	3	4	5	6	7	8
f	4	9	16	25	22	15	7	3

b) The marks obtained by 10 students in Mathematics (X) & Statistics (Y) are given below. Find the coefficient of correlation between X & Y.

X	75	30	60	80	53	35	15	40	38	48
Y	85	45	54	91	58	63	35	43	45	44

2. a) A card is drawn from a pack of 52 cards. Find the probability of getting a king or a heart or a red card.

b) An urn contains 5 white and 5 black balls, 4 balls are drawn from this urn and put into another urn. From this second urn a ball is drawn and is found to be white. What is the probability of drawing a white ball again at the next draw when the first white ball drawn is not replaced?

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

x	0	1	2	3	4	5	6	7
$P(x)$	0	k	$2k$	$2k$	$3k$	k^2	$2k^2$	$7k^2+k$

(i) Find k (ii) $P(x \le 6)$ (iii) If $P(x \le a) > 0.5$ then find the maximum value of a.

b) Define probability density function. The diameter of an electric cable, say X, is assumed to be a continuous random variable with p.d.f $f(x) = 6x(1-x),\ 0 \le x \le 1$.

(i)Prove that $f(x)$ is a p.d.f (ii) Determine a number b such that $P(x < b) = P(x > b)$.

4. a) A multiple choice test consists of 8 questions with 3 answers to each question (of which only one is correct). A student answers each question by rolling a balanced die and checking the first answer if he gets 1 or 2, the second answer if he gets 3 or 4 and the third answer if he gets 5 or 6.To get a distinction, the student must secure at least 75% correct answers. If there is no negative marking, what is the probability that the student secures a distinction?

b) Average number of accidents on any day on a national highway is 1.8. Determine the probability that the number of accidents are (i) atleast one (ii) atmost one.

5. A population consists of five numbers 2,3,6,8 and 11. Consider all possible samples of size 2 that can be drawn from the population (i)With replacement (ii) Without replacement

Find (a) The mean of the population.

(b) The standard deviation of the population.

(c) Mean of the sampling distribution of means.

(d) The standard deviation of the sampling distribution of means.

6. a) Find 95% confidence limits for the mean of a normally distributed population from which the following sample was taken 15, 17, 10, 18, 16, 9, 7, 11, 13, 14.

b) What is the smallest size of the smallest sample required to estimate an unknown proportion to within a maximum error of 0.06 with atleast 95% confidence.

7. a) A coin is tossed 900 times and heads appear 490 times. Does this result support the hypothesis that the coin is unbiased?

b) A sample of 26 bulbs gives a mean life of 990 hours with a S.D of 20 hours. The manufacturer claims that the mean life of bulbs is 1000 hours. Is the sample not upto the standard?

8. Four methods are under development for making discs of a super conduction material. Fifty discs are made by each method and they are checked for super conductivity when cooled with liquid.

	Method I	Mehod II	Mehod III	Mehod IV
Super conductors	31	42	22	25
Failures	19	8	28	25

Test the significant difference between the proportions of conductors at 0.05 level.

Code : 1G142

R11

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

II B.Tech. II Semester Regular Examinations, June 2014

Database Management Systems

(Common to CSE & IT)

Time: 3 hours **Max Marks: 70**

Answer any FIVE of the following
All questions carry equal marks (14 Marks each)

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1. a) Differentiate data base System and file System. Discuss the benefits of Data base system relating to practical applications. 7M
   b) Explain Network, Relational and ER models diagrammatically. 7M
2. a) Draw ER diagram for hospital environment incorporating all the ER notations with explanation. 7M
   b) Explain generalization and aggregation with simple example. 7M
3. a) Discuss referential integrity constraint with suitable example. 7M
   b) Explain views and their benefits. Also give explanation for the following
      i) Can views be altered?
      ii) Can view be updated?
      iii) Can view be created on another view? 7M
4. a) Explain aggregate functions with examples. 7M
   b) Consider the relation **Employee[empno, ename, department, salary]**
      i) List out the details of top five high salary drawn employees
      ii) List out the details of the employees who are drawing greater salary than 'Srinivas' 7M
5. a) Explain 2NF and BCNF with examples. 7M
   b) Write about De-normalization and the situations to opt it. 7M
6. a) Explain ACID properties of transaction. 7M
   b) Give example for Updation and Insertion anomaly. 7M
7. a) Write about Two phase locking protocol. 7M
   b) Reasons for Deadlock. Discuss Deadlock avoidance, prevention and detection. 7M
8. a) Explain various file organization techniques in detail. 7M
   b) Discuss B+Trees with suitable example 7M

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Code : 1G143

R11

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

II B.Tech. II Semester Regular Examinations, June 2014

Design and Analysis of Algorithms

(Common to CSE & IT)

Time: 3 hours **Max Marks: 70**

Answer any FIVE of the following
All questions carry equal marks (14 Marks each)

* * * * *

1. a) Write the asymptotic notations, discuss the general relation between time and space complexities? 8M

   b) Find the 'O' notation of the following functions
   - i) 5n2 – 6n
   - ii) n !
   - iii) n2+ 2n + log (n) + n/log(n) 6M

2. a) Describe the two cases, where the Quick sort Algorithm will give Best performance and worst performance respectively, with suitable example? 8M

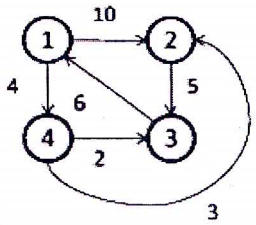
   b) How many times the following list of elements will get divided to find out element '92' using Binary search. 36, 42, 54, 62, 78, 89, 92, 100. 6M

3. a) Discuss and Derive the Time Complexities of the prims and Kruskal Algorithms? 6M

   b) Find the optimal solution for following knapsack instance.
   n =5, (W1 W2 W3 W4 W5) =(4,8,2,6,1), (P1 P2 P3 P4 P5) = (12,32,40,30,50)
   Knapsack size m = 10? 8M

4. a) In what way Dynamic Programming can out performs the Greedy method? Compare and Contrast Dynamic and Greedy method. 5M

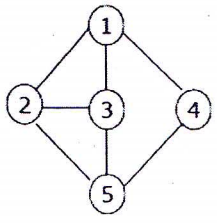
   b) Find all pairs shortest paths in the following graph.



9M

5. a) Distinguish the solutions for Eight Queens problem using backtracking and dynamic programming? 6M

   b) Consider the following graph for coloring problem. Find the chromatic number and show the solution space.



8M

6. a) Write the Algorithms for DFS and BFS graph traversal methods and Analyze the time complexities? 8M

   b) State the Relation between spanning trees and Graph traversal Algorithms (DFS, BFS) for any sample Graph? 6M

7. a) What do you mean by bounding? Explain how these bound are useful in branch and bound? 6M

   b) Draw the portion of state space tree generated by LC Branch and Bound for the knapsack instances:
   n=5, (P1, P2,....P5) = (10, 15, 6, 8, 4) , (W1, W2,...W5) = (4, 6, 3, 4, 2) and M=12. 8M

8. a) Define P and NP class problems with the help of examples. 6

   b) Describe the concept of non-deterministic algorithm. Give non-deterministic algorithm for knapsack problem. 8M

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Code : *1GA41*

R-11

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

II B.Tech. II Semester Regular Examinations June 2014

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. "Managerial Economics is the application of Economics in analyzing business decisions"- Explain
2. Suppose that the government of India wishes to encourage the manufacture and sale of cars. The current demand (Qd) and supply (Qs) of small cars are:

   Qd = 100 – P

   Qs = -(10/9) + (1/9)P; Where Q is in millions of cars and P is in hundreds of rupees

   a) What is the current equilibrium price and quantity of cars sold?

   b) Calculate the price elasticity of demand and price elasticity of supply at the equilibrium.
3. What is Production Function? Explain the Cobb - Douglas Production function
4. What are the different classifications of the market structure? Discuss their characteristics.
5. Discuss the problems and remedies of public sector business organizations
6. What is Capital budgeting? Discuss different methods of evaluating capital budgeting
7. What are final accounts? How are they prepared? What are their uses?
8. The Following is the Comparative Balance sheet of XYZ Ltd.

LIABILITIES			ASSETS		
			(Rs. Crores as on 31.03.)		
	2011	2012		2011	2012
Share Capital	30	30	L&B	30	40
Reserves	5	10	P&M	30	60
Debt	50	80			
Creditors	10	5	Cash & Bank	5	5
Bills Payable	5	10	Inventory	20	40
			Debtors	10	5
Total	100	120		100	150

Give critical comments on the long term and short term financial position of the organization by computing appropriate ratios

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Code : 1G145

R11

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

II B.Tech. II Semester Regular Examinations, June 2014

Object Oriented Programming through JAVA

(Common to CSE & IT)

Time: 3 hours **Max Marks: 70**

Answer any FIVE of the following
All questions carry equal marks (14 Marks each)

* * * * *

1. a) What is static member? When do we declare a member as static? In what way it is different from final member? Can we declare a member as static and final? With an example explain the concepts. 7M
   b) What is byte code in Java? Why Java does not support pointers? Explain 7M
2. a) What is single inheritance? Explain with an example? 7M
   b) What is abstract class? Explain with an example? 7M
3. a) Write a runtime polymorphism program in java using interface reference variables? 7M
   b) What is a package? How do create a package? Explain about access protection in packages? 7M
4. a) What is a thread? Explain the concept of a multithreading programming. 7M
   b) Describe the various java's built-in exceptions. 7M
5. a) With help of simple java program explain how you handle mouse related events 7M
   b) What is the functionality supported by java related to drawing arcs 7M
6. a) What is an applet? What are the differences between local and remote applets? 7M
   b) What is the task performed by Layout manager? Explain different layout managers 7M
7. a) Discuss MVC Architecture. 7M
   b) Difference between Applet and JApplet. Write short note on JFrame and JComponent 7M
8. a) What are the various networking classes and interfaces present in java? Explain. 7M
   b) Discuss about multiple clients. 7M

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