Hall Ticket Number :										

R-11/R-13

Code : 1GC42

II B.Tech. II Semester Supplementary Examinations December 2015

Probability and Statistics

(Common to CE, ME & IT)

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

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

****

1. a) Calculate mean, median and mode of the following data related to weight of 120 articles.

Weight(in gm)	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
No. of articles	14	17	22	26	23	18

7M

b) Psychological tests of intelligence and of engineering ability were applied to 10 students. Here is a record of ungrouped data showing intelligence ratio (I.R.) and engineering ratio (E.R.). Calculate the co-efficient of correlation.

Student	A	B	C	D	E	F	G	H	I	J
I.R.	105	104	102	101	100	99	98	96	93	92
E.R.	101	103	100	98	95	96	104	92	97	94

7M

2. a) Box I contains 10 white and 3 black balls, while Box II contains 3 white and 5 black balls. Two balls are drawn at random from Box I and placed in box II. Then 1 ball is drawn at random from Box II. What is the probability that it is a white ball? 7M

b) In a factory which manufactures bolts, machines A, B and C manufacture respectively 25%, 35% and 40% of the bolts of their output 5, 4 and 2 percent are respectively defective bolts. A bolt is drawn at random from the product and is found to be defective. What is the probability it is manufactured by the machine B. 7M

3. a) For the discrete probability distribution

x	0	1	2	3	4	5	6	7
f	0	k	$2k$	$2k$	$3k$	k^2	$2k^2$	$7k^2+k$

Determine **(i)** k **(ii)** mean **(iii)** variance. 7M

b) The density function of a random variable X is

$$f(x) = \begin{cases} e^{-x} & \text{if } x > 0 \\ 0 & \text{otherwise} \end{cases}$$

Find E(X), E(X^2) and Var (X). 7M

4. a) Show that the mean and standard deviation of a Poisson distribution are equal. 7M

b) In a test on 2000 electric bulbs, it was found that the life of particular make was normally distributed with an average life of 2040 hours and S.D. of 60 hours. Estimate the number of bulbs likely to burn for **(i)** more than 2150 hours, **(ii)** less than 1950 hours and **(iii)** more than 1920 hours and but less than 2160 hours. 7M

5. A Sample size of 2 are taken from the population 1, 2, 3, 4, 5 and 6 without replacement. Find **(i)** the mean of the population **(ii)** the standard deviation of the population **(iii)** the mean of the sampling distribution of means **(iv)** the standard deviation of the sampling distribution of means. 14M

6. a) In a study of an automobile insurance a random sample of 80 body repair costs had a mean of Rs. 472.35 and the standard deviation of 62.35. If $\bar{x}$ is used as a point estimate to the true average repair costs, with that confidence we can assert that the maximum error does not exceed Rs. 10/-? 7M

   b) A random sample of size 100 is taken from a population with σ = 5.1. Given that the sample mean is $\bar{x}$ = 21.6, construct a 95% confidence interval for the population mean. 7M

7. a) A random sample of size 25 from a normal population has the mean 47.5 and the standard deviation 8.4. Does this information support or refute the claim that the mean of the population is μ = 42.5? 7M

   b) The means of simple samples of sizes 1000 and 2000 are 67.5 and 68.0 cm. respectively. Can the samples be regarded as drawn from the same population of S.D. 2.5 cm. 7M

8. Fit a Poisson distribution to the following data and test the goodness of fit at 0.05 level of significance

x	0	1	2	3	4	5	6	7
f	305	306	210	80	28	9	2	1

14M

***

Hall Ticket Number :										

R-11/R-13

Code : 1G143

II B.Tech. II Semester Supplementary Examinations December 2015

Design and Analysis of Algorithms

(Common to CSE & IT)

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

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

****

1. a) Define the asymptotic notations used for best case, worst case and average case analysis of algorithms. 7M

   b) Find the complexity of below recurrences:

$$T(n) = \begin{cases} 1 & n = 0 \\ 2T(n-1)+1 & n > 0 \end{cases}$$

$$T(n) = \begin{cases} 1 & n = 0 \\ T(n-1)+1 & n > 0 \end{cases}$$

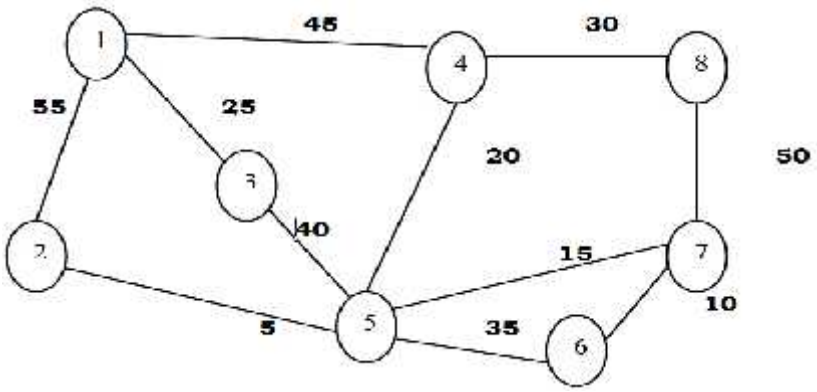
   7M

2. a) Describe the general method of divide and conquer technique. 4M

   b) Discuss the time complexity of quick sort algorithm in best case and worst case. 10M

3. a) List the differences between greedy method and divide and conquer method. 4M

   b) Show the step by step procedure of deriving the minimum cost spanning tree using prim's and kruskal's algorithm for the following graph:



   10M

4. a) Discuss the method of solving the knapsack problem using dynamic programming approach. 7M

   b) Describe Floyd's all-pairs shortest-paths algorithm with example. 7M

5. a) Write an algorithm for solving graph coloring algorithm. 7M

   b) Explain sum of subset problem and discuss possible solution using backtracking. 7M

6. a) Explain DFS and BFS with an example. 7M

   b) How bi-connected components can be identified using DFS? Explain. 7M

7. a) Describe the general method of branch and bound. 7M

   b) Discuss the method of reduction to solve travelling sales man problem using branch and bound. 7M

8. a) Define and differentiate among P, NP, and NPC problems. 7M

   b) State and explain cooks theorem. 7M

***

Hall Ticket Number :										

R-11/R-13

Code : 1G142

II B.Tech. II Semester Supplementary Examinations December 2015

Database Management Systems

(Common to CSE & IT)

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

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

****

1.	a)	Define schema and instance. Explain the concept of data independence	7M
	b)	Explain the components of query evaluation engine of DBMS	7M
2.	a)	What is a unary relationship? Is it possible to have unary relationships in ER diagrams? Justify your answer	7M
	b)	Discuss aggregation in ER model.	7M
3.		What is the need and importance of integrity constraints in DBMS? How to define them? When the enforcement happens? Explain with illustrations.	14M
4.	a)	Discuss various types of triggers in SQL.	8M
	b)	With example explain the usage of group by clause	6M
5.	a)	What is schema refinement? What is its significance in database design process?	7M
	b)	Define BCNF. Compare it with third normal form	7M
6.	a)	Explain the desirable properties for transaction in DBMS with examples	8M
	b)	What is the support provided by SQL for transactions?	6M
7.	a)	Discuss timestamp based protocol for concurrency control	7M
	b)	Explain the pin count and dirty bits usage in buffer management with examples.	7M
8.	a)	Compare heap file organization with hash file organization	6M
	b)	What is meant by multilevel indexing? How B+ tree supports multi level indexing?	8M

***

Hall Ticket Number :										

R-11/R-13

Code : 1GA41

II B.Tech. II Semester Supplementary Examinations December 2015

Managerial Economics and Financial Analysis

(Information Technology)

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

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

****

1. Define Managerial Economics and explain its nature and decision areas. 14M

2. Explain the importance of Demand forecasting. List out the techniques used in demand forecasting. 14M

3. Explain Cost- Output relationship in short run and Long run with graphical representation. 14M

4. a) Differentiate between Perfect and imperfect markets with examples. 8M

   b) Write about Skimming Pricing, Penetration Pricing and Going Rate Pricing. 6M

5. Describe the various forms of organizations? 14M

6. What are the techniques of Capital budgeting? Explain its importance. 14M

7. Journalize the following transactions in the book of a trader: 1-5-2015 and prepare ledger for cash account.
   a) Cash in hand: Rs. 8000; Cash at bank: Rs.25, 600; stock of goods: Rs.20,000; Buildings: Rs.14,000; Debtors: Rs.18,000; Creditors: Rs.18,000; Mrs. Loan: Rs.10,000.
   b) Purchased goods worth Rs.5,000 less 20% trade discount and 5% cash discount
   c) Rs. 2,646 received from Vijay and allowed him discount Rs.54.
   d) Rs. 5,292 paid to Anand and discount allowed by him Rs.108.
   e) Paid for: charity Rs. 100; Postage Rs. 200; Stationary Rs. 250. 14M

8. What is ratio? Explain Liquidity and Solvency ratios in detail. 14M

***

Hall Ticket Number :										

R-11/R-13

Code : 1G145

II B.Tech. II Semester Supplementary Examinations December 2015

Object Oriented Programming through JAVA

(Common to CSE & IT)

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

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

****

1.	a)	Briefly describe the importance of OOP paradigm.	5M
	b)	Explain buzzwords of Java.	9M
2.	a)	What is inheritance? Explain different types of inheritance with an example each.	10M
	b)	Describe the methods used to modify a string.	4M
3.	a)	Differentiate between an interface and a class with an example each.	8M
	b)	Illustrate the usage of final keyword with an example	6M
4.	a)	List out the difference between throw and throws keywords with an example.	6M
	b)	Explain thread synchronization with an example	8M
5.	a)	What is an event? Explain event delegation model in Java.	6M
	b)	Write a Java program to handle mouse events.	8M
6.	a)	Enumerate the differences between applet and an application? List and explain the attributes of an applet tag.	8M
	b)	How to pass parameters to an applet? Explain with an example.	6M
7.	a)	Describe in detail about various components in swing.	8M
	b)	Write a Java program to display the month names by JList.	6M
8.		Write a program for simple chatting using TCP	14M

***

Hall Ticket Number :										

R-11/ R-13

Code : 1G441

II B.Tech. II Semester Supplementary Examinations December 2015

Operating Systems

(Information Technology)

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

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

****

1. a) Discuss about the different types of Distributed Systems. 7M
   b) What is System Call? List out any six system calls and explain. 7M

2. a) Define Scheduler. Discuss the different types of schedulers. 7M
   b) State Producer-Consumer problem. How can it be solved using Direct Communication technique? 7M

3. a) Write and explain the Peterson's solution for critical section problem. 7M
   b) What is Semaphore? State and give the solution for Dining-Philosopher problem using it. 7M

4. Explain the following Page Replacement techniques with examples.
   a. Optimal
   b. LRU 14M

5. a) What are the necessary conditions of a Deadlock, explain. 7M
   b) Discuss the Deadlock Prevention technique. 7M

6. a) Write short notes on File Sharing. 7M
   b) Write short notes on Directory implementation 7M

7. a) Write a short notes on Territory Storage devices 7M
   b) Write a short notes on SSTF Disk scheduling algorithm 7M

8. a) Discuss about ACL and CL 7M
   b) Write a detailed notes on Protection Access Matrix 7M

***