Hall Ticket Number :										

R-11/R-13

Code : 1G141

II B.Tech. II Semester Supplementary Examinations December 2015

Computer Organization

(Computer Science & Engineering)

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

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1.	a)	Draw the diagram and explain of 4-bit binary adder-subtractor circuit.	7M
	b)	Write about error detecting codes.	7M
2.	a)	What is register transfer language? Explain bus and memory transfers with examples.	6M
	b)	Explain various addressing modes with examples.	8M
3.	a)	Explain the operation of microprogram sequencer for control memory.	8M
	b)	Compare hardwired and microprogrammed control unit.	6M
4.	a)	Write booth's multiplication algorithm with example.	7M
	b)	Draw a flowchart to explain how addition and subtraction of two fixed point numbers can be done.	7M
5.	a)	Explain memory hierarchy.	4M
	b)	What is significance of cache memory and write about direct and associative mapping techniques.	10M
6.	a)	Distinguish between synchronous and asynchronous data transfer.	4M
	b)	Define DMA controller. Explain process of DMA transfer in computer system	10M
7.	a)	Discuss briefly about instruction pipeline.	8M
	b)	Write about vector processing.	6M
8.	a)	Explain the working of 8 _ 8 Omega Switching network.	8M
	b)	Explain the inter-processor communication using message passing and shared variable.	6M

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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)

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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:

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

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

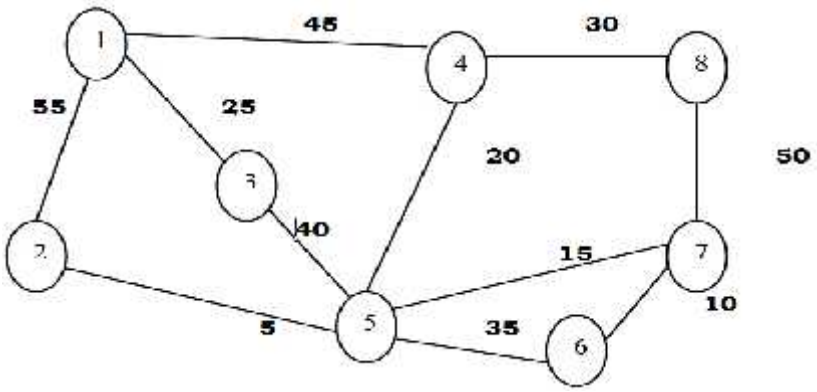
   7M

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

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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)

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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

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Hall Ticket Number :										

R-11/R-13

Code : 1GC43

II B.Tech. II Semester Supplementary Examinations December 2015

Environmental Science

(Common to Civil, ME & CSE)

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

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1.	a)	Describe the multidisciplinary nature of environmental studies.	7M
	b)	Discuss in detail about the different layers of the atmosphere.	7M
2.	a)	Define renewable and non-renewable resources.	6M
	b)	Discuss in detail about uses and over exploitation of forest resources.	8M
3.	a)	Discuss the soil erosion and desertification.	8M
	b)	Explain briefly about equitable use of natural resources for sustainable life style.	6M
4.	a)	What are various methods of control to reduce water pollution?	6M
	b)	Explain about any two pollution case studies.	8M
5		Define ecosystem. Explain about various components of an ecosystem.	14M
6.	a)	India is one of the mega diversity nations. Explain.	7M
	b)	Distinguish between the endemic and endangered species.	7M
7.		Write a short note on.	
		a) Global warming.	5M
		b) Ozone layer depletion.	5M
		c) Acid rain	4M
8.	a)	Write a brief note on environment and human health.	7M
	b)	Explain the necessity of value education.	7M

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Hall Ticket Number :										

R-11/R-13

Code : 1G144

II B.Tech. II Semester Supplementary Examinations December 2015

Formal Languages and Automata Theory

(Computer Science & Engineering)

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

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1. a) What are the applications of Finite Automata? 7M

   b) Draw DFA to accept a strings a's and b's ending with ab or ba. 7M

2. a) Describe the procedure to convert an NFA into a DFA. 6M

   b) Explain the procedure Equivalence between NFA with and without ϵ with example. 8M

3. a Construct minimized DFA for the Regular Expression $10 + (001)^*1$ 8M

   b Prove any two closure properties of Regular Language. 6M

4. a For the Regular Expression $(10)^*$, construct right linear and left linear grammar. 6M

   b What is meant by ambiguous grammar? Test whether the grammar is ambiguous or not $S \rightarrow a \mid Sa \mid bSS \mid SSb \mid SbS$. 8M

5. a) Consider the following grammar

$$S \rightarrow 0A|1B$$
$$A \rightarrow 00A \mid 1S \mid 1$$
$$B \rightarrow 1BB \mid 0S \mid 0$$

   Obtain the grammar in CNF. 10M

   b) State and prove pumping lemma for context free languages. 4M

6. Design PDA to accept

$$S \rightarrow 0A$$
$$A \rightarrow 0AB \mid 1$$
$$B \rightarrow 1BA \mid 0$$

   14M

7. a) Design the Turing Machine for the language $L = \{a^n b^n \mid n \geq 1\}$ 10M

   b) Write short notes on church's hypothesis. 4M

8. Construct $LR(0)$ item for the grammar given, find its equivalent DFA. Check the parsing by taking a suitable derived string

$$S \rightarrow E$$
$$E \rightarrow E + E \mid T$$
$$T \rightarrow (E) \mid a$$

   14M

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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)

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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

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