END SEMESTER THEORY EXAM; NOV./DEC.-2018

Program:	M. Tech (CSE)	Year/Semester:	1st Sem.
Course/Subject:	Computer Software System	Duration:	03:00 Hrs.
Course/Subject Code:	13110101	Maximum Marks:	100
Roll No.:			

Instructions:-

1. Write your Roll No. on the Question paper.
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any, should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. Q.1 is compulsory. Attempt five questions in all . Students are required to attempt one question from each Unit. Parts of a question should be attempted in sequential order. Marks are indicated against each question.
4. Illustrate your answer with diagram wherever required.

Q. 1   Explain the following-   (5 X 4=20)
   a) Classes and Objects
   b) Abstraction and Encapsulation
   c) Polymorphism
   d) Association

UNIT- I

Q.2   what is object oriented programming concepts in detail? Explain function overloading in detail.   (20)

OR

Q3.   What is inheritance? Explain the type of inheritance in detail?   (20)

UNIT- II

Q.4.   What is class diagram? Explain generalization and specialization in detail?   (20)

OR

Q.5.   Explain function modeling and object modeling in detail?   (20)

UNIT - III

Q.6.   What is UML? Explain use case diagrams for library management system.   (20)

OR

Q7.   Draw and explain sequence diagram for ATM.   (20)

UNIT-IV

Q.8.   What are assemblers, linker and loaders Explain its types in detail.   (20)

OR

Q.9.   What is functional dependency explain cohesion and coupling in detail.   (20)

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END SEMESTER THEORY EXAM; NOV./DEC.-2018

Program:	M. Tech. (CSE)	Year/Semester:	1st Sem.
Course/Subject:	Mathematical Foundation of Computer Science	Duration:	03:00 Hrs.
Course/Subject Code:	13110102	Maximum Marks:	100
Roll No.:			

Instructions:-
1. Write your Roll No. on the Question paper.
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any, should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. Attempt five question in all, Q.1 is compulsory. Parts of a question should be attempted in sequential order. Marks are indicated against each question.
4. Illustrate your answer with diagram wherever required.

Q1. **All questions are compulsory.**   (5 X 4 = 20)

(a) Construct a DFA that accepts all strings which starts with 0 and ends with 1's.

(b) Write and discuss Arden method for converting NFA to DFA.

(c) Prove that $(a + b)* = a*(ba*)*$

(d) Construct CFG to generate the following language: $L = \{ww^R : w \in \{0, 1\}*\}$

(e) Prove that if L_1 and L_2 are regular languages then there union is also a regular language.

Q2   (a) Construct finite automata equivalent to the regular expression:-

$(a+ b)* (aa + bb) (ab)*$ (10)

(b). Construct a minimum state automaton equivalent to the following finite automaton: (10)

State/Σ	0	1
→q0	q1	q5
q1	q6	q2
⬭	q0	q2
q3	q2	q6
q4	q7	q5
q5	q2	q6
q6	q6	q4
q7	q6	q2

Q 3.   (a) What are the various defects of CFG? Given grammar G   (10)

S → AB
A→ a
B→C|b
C → D
D → E
E→a

Find an equivalent grammar which is reduced.

(b) Reduce the following grammar into GNF (10)

$$S \rightarrow AA \mid a$$
$$A \rightarrow SS \mid b$$

Q 4 **(a)** What is Pushdown Automata? How it works? Explain language accepted by PDA. (10)
Design the pda equivalent to the following CFG:

$$S \rightarrow aB \mid bC$$
$$B \rightarrow aBC \mid aCC$$
$$C \rightarrow b$$

(b) Construct a PDA accepting L= $\{0^n 1^{2n} \mid n > 0\}$. (10)

Q 5 **(a)** Explain Chomsky Hierarchy in detail. (10)

(b) Explain different types of Turing Machine. Design a Turing Machine for all palindromes over
$$\Sigma = \{a,b\}*$$ (10)

Q6 **(a)** Explain following:- (10)
i. Halting problem of turing machine
ii. Recursively enumerable languages.

(b) What is Post Correspondence Problem? Does the PCP with two lists F= $\{101^3, 1, 10\}$ and S= $\{10, 1^3, 0\}$ have a solution? (10)

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END SEMESTER THEORY EXAM; NOV./DEC.-2018

Program:	M. Tech (CSE)	Year/Semester:	1ST Sem.
Course/Subject:	Analysis And Design of Algorithms	Duration:	03:00 Hrs.
Course/Subject Code:	13110103	Maximum Marks:	100
Roll No.:			

Instructions:-
1. Write your Roll No. on the Question paper.
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any, should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. Attempt five (5) questions in all and Question No. 1 is compulsory. Attempt other four questions. Parts of a question should be attempted in sequential order. Marks are indicated against each question.
4. Illustrate your answer with diagram wherever required.

Q.1   **Write short notes on following:**   (5x4=20)
     a)   Quick Sort
     b)   Time & Space complexity
     c)   Shell sort
     d)   Hashing
     e)   Binary Search Tree

Q.2   a)   Explain different types of Asymptotic notations with the help of diagram in detail?   **(10)**

       b)   Explain Merge sort and also write the Pseudo code for it? Explain with example?   **(10)**

Q.3   Construct the RB-Tree by inserting the elements   **(20)**

    Elements: **(4,7,12,15,3,5,14,18,16,17)**

Q 4   a)   Solve the recurrence relation (by using Master Theorem)   **(10)**
         $T(n) = 2T(n/2) + n$

       b)   Construct Binary Expression Tree for the following expression?   **(10)**

       (A-B)*(C^D)+E

Q.5   Sort the following elements in ascending order using heap sort: **(20)**

    46,25,35,49,10,92,83,32

Q.6   Discuss the term Minimum spanning tree briefly with the help of example?

     a)   Dijkstra Algoritm   **(10)**

     b)   Prims Algoritm   **(10)**

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Program:	M. Tech (CSE)	Year/Semester:	1st Sem.
Course/Subject:	Internet & Web Technology	Duration:	03:00 Hrs.
Course/Subject Code:	13110104	Maximum Marks:	100
Roll No.:			

Instructions:-
1. Write your Roll No. on the Question paper.
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any, should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. Attempt five questions in all. Q.1 is compulsory. Attempt other four questions by selecting one question from each unit. Parts of a question should be attempted in sequential order. Marks are indicated against each question.
4. Illustrate your answer with diagram wherever required.

Q. 1   Explain the following-   (4x5=20)
   a)   Define cookies.
   b)   Difference between PPP and SLIP.
   c)   Explain table driven routing.
   d)   Difference between SOAP and RESTful web services.

UNIT-I

Q.2.   (a) Define two and three tier client server architecture with diagram.   (10)
       (b) Difference between switch, hub, bridge, router, gateway, with examples.   (10)

Q. 3   (a) Difference between OSI and TCP\IP model with explanation of each layer.   (10)
       b)   Difference between switch based routing and mobile routing. Explain the algorithm of each routing.
                                                                                        (10)

UNIT-II

Q.4.   Define crawler with its types.   (20)
Q.5.   What is XML and convert the given XML into DTD   (20)
       <note>
       <to>MTech</to>
       <from>SGT University</from>
       <heading>Main Exam 2018<heading>
       <body>SGT University is located on Gurugram Badli raod<?heading>
       </note>

UNIT-III

Q.6.   What is DHTML and convert the given XML to XSD   (20)
       <note>
       <to>MTech</to>
       <from>SGT University</from>
       <heading>Main Exam 2018<heading>
       <body>SGT University is located on Gurugram Badli raod<?heading>
       </note>

Q.7.   Create a HTML page having header, title, image, table(6X3) and unordered list. (20)

UNIT-IV

Q.8.   Create a HTML frame of a given image.   (20)

Image	Image
	Ordered List
	Hyperlink

Q.9.   What is CSS and its types with suitable code?   (20)

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