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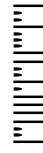
**II B. Tech II Semester Regular Examinations August - 2014**  
**COMPUTER ORGANIZATION**  
 (Com. to CSE, ECC)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
 All Questions carry **Equal** Marks

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- Explain the instruction set architecture of 8085.
    - What addressing mode is used by the following instructions for the relatively simple CPU?  
 i) MVAC      ii) CLAC      iii) JMPZ Γ      (8M+7M)
  - Explain and draw neat timing diagrams for Memory Read and Memory Write operations.
    - Design an interface for an input device which binary address 10101010. Its computer system uses isolated I/O.      (7M+8M)
  - Explain briefly about the shift micro operation.
    - Write the RTL statements for the following transitions. All registers are 1-bit wide.  
 i) IF  $\alpha = 1$  THEN copy X to W and copy Z to Y  
 ii) IF  $\alpha = 0$  THEN copy X to W      (8M+7M)
  - Distinguish between Hardwired control unit and Micro programmed Control unit.
    - Draw and explain briefly about Fetch and Decode cycles for the Simple CPU.      (5M+10M)
  - Design the RTL code for the shift-add multiplication  $UV \leftarrow X.Y$  for  $X=9$  and  $Y=14$ .      (15M)
  - Distinguish between Logical address and Physical address with an example.
    - A computer system using the relatively simple CPU is to include a 1k associative cache with a line size of 2 bytes.  
 i) How many bits are in each location of the cache?  
 ii) What mask value is needed for the associative memory?      (7M+8M)
  - Distinguish between Synchronous data transfer and Asynchronous data transfer.
    - What is an Interrupt? Explain about different types of Interrupts.      (5M+10M)
  - Explain the formats used by the 32-bit SPARC CPU.
    - Explain Flynn's Classification of parallel computers.      (7M+8M)



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**SET - 2**

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**COMPUTER ORGANIZATION**

(Com. to CSE, ECC)

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Answer any **FIVE** Questions  
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1. a) Explain about various addressing modes in Assembly Language Instructions.  
b) Write the instruction code formats for Assembly language programs and Machine code to calculate  $A=B+C$  for two-operand and zero-operand instructions (8M+7M)
2. a) Explain about the different types of Memory Chips.  
b) Construct a 16 X 2 memory subsystem constructed from two 8 X 2 ROM chips with high-order interleaving. (7M+8M)
3. Explain VHDL file to implement modulo 6 counter using high level of abstraction. (15M)
4. a) Explain the generic Micro instruction Formats.  
b) Explain Micro Sequencer for the relatively simple CPU with micro subroutines. (5M+10M)
5. a) Construct a  $3 \times 3$  multiplexer using a Carry-Save Adder.  
b) Explain about overflow generation in unsigned two's complement Addition. (8M+7M)
6. a) Differentiate Cache memory Vs Virtual memory.  
b) Explain about External fragmentation in physical memory caused by Segmentation. (8M+7M)
7. a) Explain the concept of Handshaking technique.  
b) Explain I/O Processor with a neat diagram. (5M+10M)
8. Explain Instruction Pipelines and its conflicts with Examples. (15M)

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**SET - 3**

**II B. Tech II Semester Regular Examinations August - 2014**

**COMPUTER ORGANIZATION**

(Com. to CSE, ECC)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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- ~~~~~
1. a) Explain about Data transfer instructions in Assembly Language Instructions.  
b) What addressing mode is used by the following instructions for the 8085 micro processor?  
i) SPHL                      ii) CMC                      iii) JUMP Γ                      (8M+7M)
  
  2. a) Distinguish between SRAM and DRAM.  
b) Explain the CPU internal Organization.                      (7M+8M)
  
  3. a) Draw the State diagram for modulo 6 counter.  
b) What is a hardware description language? Explain the features of VHDL.                      (10M+5M)
  
  4. Draw and explain the Generic Hardwired Control unit.                      (15M)
  
  5. a) Show the Wallace tree to perform  $6 \times 6$  Multiplication.  
b) What is the result of the following operations on unsigned non-negative numbers using 1's complement.  
i) 1011 0100 – 0111 0111  
ii) 1000 1011 + 0111 0100  
iii) 10101.101+11011.001                      (8M+7M)
  
  6. a) Explain about Locality of Reference.  
b) Explain cache memory with Direct Mapping technique.                      (5M+10M)
  
  7. a) Explain about Daisy Chaining.  
b) Explain incorporating Direct Memory Access into a computer system.                      (5M+10M)

8. a) Compare RISC and CISC processors

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**II B. Tech II Semester Regular Examinations August - 2014**

**COMPUTER ORGANIZATION**

(Com. to CSE, ECC)

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Answer any **FIVE** Questions  
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1. a) Explain about Instruction Set Architecture Design.  
b) Write a program for relatively Simple CPU to add the ten values in memory locations 1001H through 100AH and store the result in memory location 1000H. Assume the result will always be less than 256. (8M+7M)
2. a) Show the internal two dimensional configuration of a  $32 \times 2$  Memory chip.  
b) Show how the following values are stored in memory in big endian and little endian formats. Each value starts at location 22H. i) 0927H ii) 5551212H (8M+7M)
3. a) Explain the operation of Toll Booth Controller.  
b) Show the hardware to implement shl(x) micro-operation. X consists of four D flip-flops. Each micro-operation occurs when  $\alpha = 1$ . (8M+7M)
4. a) Explain briefly about micro sequencer operations.  
b) Show the logic to generate the control signals for data register, address register and instruction register of the relatively simple CPU. (8M+7M)
5. Explain the Hardware implementation of Booth's multiplication algorithm. Discuss with an example and draw the flow chart. (15M)
6. What is paging? Explain the conversion of logical address to physical address using the page table. (15M)
7. a) Distinguish between memory mapped I/O and I/O mapped I/O.  
b) Explain the internal configuration of UART. (5M+10M)

**II B. Tech II Semester Regular Examinations August - 2014**  
**DATA BASE MANAGEMENT SYSTEMS**

(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
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1. a) What is data model? List and explain different data models.  
b) Explain the difference between external, internal, and conceptual schemas. How are these different schema layers related to the concepts of logical and physical data independence? (8M+7M)
2. a) Discuss in detail about the main steps in the database design and clearly focus in detail about the goal of each step? In which steps is the ER model mainly used?  
b) Draw and explain E-R diagram of an Airline reservation system? (8M+7M)
3. a) Discuss in detail about integrity constraint over relations.  
b) What is join operation in relational algebra? Discuss in detail about variants of joins. (8M+7M)
4. a) Consider the following relational schema. An employee can work in more than one department; the pct time field of the Works relation shows the percentage of time that a given employee works in a given department.  
Emp(eid: integer, ename: string, age: integer, salary: real)  
Works(eid: integer, did: integer, pct time: integer)  
Dept(did: integer, budget: real, managerid: integer)  
Write the following queries in SQL:  
i) Print the names and ages of each employee who works in both the Hardware department and the Software department.  
ii) For each department with more than 20 full-time-equivalent employees (i.e., where the part-time and full-time employees add up to at least that many full-time employees), print the did together with the number of employees that work in that department.  
iii) Print the name of each employee whose salary exceeds the budget of all of the departments that he or she works in.  
iv) Find the manager ids of managers who manage only departments with budgets greater than \$1,000,000.  
v) Find the enames of managers who manage the departments with the largest budget.  
b) What is a trigger? What are the three parts? Differentiate row-level and statement-level triggers. (8M+7M)

5. a) What is join dependency? How is it different to that of multi-valued dependency and functional dependency? Give an example for join dependencies and multi-valued dependencies.  
b) Contrast 3NF decomposition method with BCNF decomposition method illustratively.  
(8M+7M)
6. a) What is a serializable schedule? What is a recoverable schedule? What is a schedule that avoids cascading aborts? What is a strict schedule?  
b) Discuss in detail about the phases the recovery manager proceeds when the system is restarted after a crash.  
(8M+7M)
7. a) Describe in detail about algorithms for updating single level indices.  
b) Give comparison of different file organizations.  
(8M+7M)
8. Describe a B+ tree for the following set of key values:(2,3,5,7,11,17,19,23,29,31)  
Assume that the tree is initially empty and values are added in ascending order.  
i) Construct B+ tree for the case where the number of pointer that will fit in one node is four.  
ii) Show the step involved to find records with a search-key value of 11. (8M+7M)

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**SET - 2**

**II B. Tech II Semester Regular Examinations August - 2014**  
**DATA BASE MANAGEMENT SYSTEMS**  
(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 75

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Answer any **FIVE** Questions  
All Questions carry **Equal** Marks  
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1. a) What are the responsibilities of a DBA? If we assume that the DBA is never interested in running his or her own queries, does the DBA still need to understand query optimization? Why?  
b) Which of the following plays an important role in representing information about the real world in a database? Explain briefly about:
  - i) The data definition language.
  - ii) The data manipulation language.
  - iii) The buffer manager.
  - iv) The data model. (7M+8M)
  
2. a) Describe in detail about conceptual design with ER model.  
b) Construct E-R diagram for a banking enterprise. (8M+7M)
  
3. a) Using the following schema represent the following queries using Tuple relational calculus :  
PROJECT (Projectnum, Project Name, Project Type, Project Manager)  
EMPLOYEE ( Empnum, Empname)  
ASSIGNED\_TO (Projectnum, Empnum)  
Find Employee details working on a project name starts with 'L'  
List all the employee details who are working under project manager "Clevee"  
List the employees who are still not assigned with any project



4. a) What are nested queries? What is correlation in nested queries? How would you use the operators IN, EXISTS, UNIQUE, ANY and ALL in writing nested queries? Why are they useful? Illustrate your answer by showing how to write the division operator in SQL.  
b) Compare constraints and triggers and also give examples for each. (8M+7M)
5. a) Consider a relation R with five attributes ABCDE. You are given the following dependencies:  
A  $\rightarrow$  B, BC  $\rightarrow$  E, and ED  $\rightarrow$  A.  
List all keys for R.  
Is R in 3NF?  
Is R in BCNF?  
b) What is decomposition? Describe problems related to decomposition. (9M+6M)
6. a) Is every conflict serializable schedule is serializable? Explain.  
b) Explain different types of failures that arise due to loss of non-volatile storage. (8M+7M)
7. a) What is an index? Discuss important properties of an index that affect the efficiency of searches using the index.  
b) Describe in detail about different RAID levels. (8M+7M)
8. a) What are the main differences between ISAM and B+ tree indexes?  
b) Describe a B+ tree for the following set of key values:(2,3,5,7,11,17,19,23,29,31) Assume that the tree is initially empty and values are added in ascending order. Construct B+ tree for the case where the number of pointer that will fit in one node is six. (6M+9M)

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**SET - 3**

**II B. Tech II Semester Regular Examinations August - 2014**  
**DATA BASE MANAGEMENT SYSTEMS**  
(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 75

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Answer any **FIVE** Questions  
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1. a) What are application programs? Discuss in detail about database access for application programs.  
b) Explain the difference between logical and physical data independence. What is logical data independence and why is it important? (8M+7M)
  
2. a) A university database contains information about professors (identified by social security number, or SSN) and courses (identified by courseid). Professors teach courses; each of the following situations concerns the Teaches relationship set. For each situation, draw an E-R diagram that describes it (assuming that no further constraints hold).  
Professors can teach the same course in several semesters, and each offering must be recorded.  
Professors can teach the same course in several semesters, and only the most recent such offering needs to be recorded.  
Every professor must teach some course.  
Every professor teaches exactly one course (no more, no less).  
Every professor teaches exactly one course (no more, no less), and every course must be taught by some professor.  
b) Explain the difference between weak entity and strong entity set? How to represent the strong entity and weak entity set through E-R diagram. (10M+5M)
  
3. a) What is the difference between a candidate key and the primary key for a given relation? What is a super key?  
b) Discuss in detail about integrity constraints over relations. (8M+7M)

4. a) Discuss the strengths and weaknesses of the trigger mechanism. Contrast triggers with other

5. a) Consider the following relation R(A,B,C,D,E)  
And FD's  
 $A \rightarrow B$   $C \rightarrow A$   $D \rightarrow E$   $F \rightarrow A$   $E \rightarrow D$   
Is the decomposition of R into  $R_1(A,C,D)$ ,  $R_2(B,C,D)$  and  $R_3(E,F,D)$  lossless? Explain the requirements of lossless decomposition.  
b) Explain in detail about Dependency-Preserving Decomposition. Explain why it is important. (8M+7M)
6. a) What overheads are associated with lock-based concurrency control? Discuss blocking and aborting overheads specifically?  
b) Define these terms: atomicity, consistency, isolation, durability, schedule, blind write, dirty read, unrepeatable read, serializable schedule, recoverable schedule, avoids-cascading- aborts schedule. (8M+7M)
7. a) What are the causes of bucket overflow in a hash file organization? What can be done to reduce the occurrence of bucket overflows?  
b) Discuss about multilevel indices in detail. (8M+7M)
8. a) Explain main characteristics of a B+ tree in detail. Discuss operations on B+ trees.  
b) Describe a B+ tree for the following set of key values:(2,3,5,7,11,17,19,23,29,31)  
Assume that the tree is initially empty and values are added in ascending order. Construct B+ tree for the case where the number of pointer that will fit in one node is six. (6M+9M)

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**SET - 4**

**II B. Tech II Semester Regular Examinations August - 2014**  
**DATA BASE MANAGEMENT SYSTEMS**  
(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 75

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Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) Why would choose a database system instead of simply storing data in operating system files?  
When would it make sense not to use a database system?  
b) Shows the structures of a typical DBMS based on the relational data model and explain in detail. (8M+7M)
2. a) Construct an E-R diagram for a university registrar's office. The office maintains data about each class, including the instructor the enrollment, and the time and place of the class meetings. For each student-class pair, a grade is recorded. Document all assumptions that you make about the mapping constraints.  
b) Explain the difference between weak entity and strong entity sets? How to represent the strong and weak entity set through E-R diagrams. (8M+7M)
3. a) What restrictions are necessary to ensure that view is updatable? State any three advantages and three disadvantages of views.  
b) Discuss in detail about the set operations of relational algebra and explain with examples. (8M+7M)
4. a) The following relations keep track of airline flight information:  
Flights(flno: integer, from: string, to: string, distance: integer, departs: time, arrives: time, price: integer)  
Aircraft(aid: integer, aname: string, cruisingrange: integer)  
Certified(eid: integer, aid: integer)  
Employees(eid: integer, ename: string, salary: integer)  
Note that the Employees relation describes pilots and other kinds of employees as well; every pilot is certified for some aircraft, and only pilots are certified to fly. Write each of the following queries in SQL.
  - i) Find the names of aircraft such that all pilots certified to operate them earn more than 80,000.
  - ii) For each pilot who is certified for more than three aircraft, find the eid and the maximum cruisingrange of the aircraft that he (or she) is certified for.
  - iii) Find the names of pilots whose salary is less than the price of the cheapest route from Los

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5. a) What is schema refinement? Discuss the problems caused by redundancy.  
b) Give a set of FDs for the relation schema  $R(A,B,C,D)$  with primary key  $AB$  under which  $R$  is in 2NF but not in 3NF. (8M+7M)
6. a) Explain various types of lock based concurrency control with a neat sketch and examples.  
b) Describe in detail about shadow paging recovery technique. Under what circumstances does it not require a log? (8M+7M)
7. a) Explain the distinction between closed and open hashing. Discuss the relative merits of each technique in database applications.  
b) On what factors techniques for indexing and hashing must be evaluated? Explain. (8M+7M)
8. Explain all the operations on B+ tree by taking a sample example. (15M)

**II B. Tech II Semester Regular Examinations August – 2014**  
**FORMAL LANGUAGES AND AUTOMATA THEORY**  
 (Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
 All Questions carry **Equal** Marks

1. a) How NFA is different from DFA? Explain with an example.  
 b) Design a DFA which accepts all the strings with even number of 0's and odd number of 1's over an alphabet {0,1}
2. a) State and prove the minimization of DFA with an example.  
 b) Explain the finite automata with outputs Moore and mealy machines with simple examples.
3. a) What is regular expression? Explain the operations and applications of regular expressions.  
 b) Convert the given regular expression  $(11d)^*1$  over an alphabet {1, d} into NFA. Use extended transitions.
4. a) What is Context-sensitive language? How Linear Bounded Automata is related with it? Explain.  
 b) Explain the procedure for the inter conversion of regular grammars and finite automata with an example.
5. Minimize the grammar G given into equivalent grammar by removing useless symbols and productions from it. And also explain the reasons for minimization of grammar.  
 $S \rightarrow aAa \quad A \rightarrow SblbccldAa \quad C \rightarrow abbIDD \quad E \rightarrow ac \quad D \rightarrow aDA$
6. a) Define Push Down Automata (PDA). Discuss about the languages accepted by PDA  
 b) Design Nondeterministic PDA for the language  $L = \{ 0^n 1^n \mid n \geq 1 \}$
7. Explain the following:
  - a) Types of Turing machines used for computable functions.
  - b) Unrestricted grammars.
  - c) Recursive and recursively enumerable languages.
8. a) Explain what is undecidable problem and post correspondence problem?  
 b) Consider the grammar  $G: E \rightarrow +EE \mid *EE \mid xE \mid y$ . Construct the left most and right most parse trees for the string  $+*-xyxy$

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**SET - 2**

**II B. Tech II Semester Regular Examinations August – 2014**  
**FORMAL LANGUAGES AND AUTOMATA THEORY**  
(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
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1. a) What is a relation? Explain representation and properties of relations.  
b) Design DFA which accepts all the strings ending with **101** over an alphabet  $\{0,1\}$
2. a) Describe the formal notation for NFA with epsilon closure and the uses of epsilon closure.  
b) For regular expression  **$(01)^*011$** , draw the NFA with  $\epsilon$ -closures and convert it into NFA.
3. a) How to find out equivalence of two DFA's. Explain with an example.  
b) Explain the closure properties of regular expressions.
4. a) What is regular grammar? How to convert left linear grammar into right linear grammars  
b) Derive left and right most derivations for the input string  **$a=b*c+d/e$**  for the given grammar  
 **$E \rightarrow E+E \mid E-E \mid E^*E$        $E \rightarrow E/E$        $E \rightarrow (E) \mid id$**
5. a) What is ambiguous grammar? Explain how to eliminate the ambiguity from following the grammar  **$E \rightarrow E+E \mid E-E \mid E^*E \mid E/E \mid (E) \mid id$**   
b) What is left recursion and left factoring in Context Free Grammars explain with examples?
6. Explain PDA definition model and Construct the PDA that accepts the language  **$L = \{a^n b^n \mid n \geq 1\}$** . Give the graphical representation for PDA obtained. Show the instantaneous description of the PDA on the input string ***aaaabbbb***
7. a) Explain with neat diagram working of Turing machine and the types of Turing machines.  
b) Design Turing machine to accept all set of palindromes over  $\{0, 1\}^*$ . And also write the transition diagram and instantaneous description on the string ***10101***
8. Write short notes on the following.

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**SET - 3**

**II B. Tech II Semester Regular Examinations August – 2014**  
**FORMAL LANGUAGES AND AUTOMATA THEORY**  
(Computer Science and Engineering)

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1. Explain the following:
  - a) Operations on strings and languages
  - b) Finite State Machines
  - c) DFA for formal language which does not contain **100** as substring over an alphabet  $\{0, 1\}$ .
  
2. Design NFA to recognize the set of strings such as **lab, calb, dabl** over an alphabet  $\{a, b, c, d, l\}$  and convert each NFA to equivalent DFA
  
3.
  - a) Explain the algebraic laws of regular expressions.
  - b) Explain the procedure for the conversion of DFA into regular expression like  **$(10)^*110(10)^*$**  over an alphabet  $\{0, 1\}$ .
  
4.
  - a) What is Context-Free grammar? Explain each tuple in its representation.
  - b) What is derivation? Explain the types of derivations for the grammar which defines arithmetic expressions.
  
5.
  - a) Differentiate Chomsky and Greibach Normal forms.
  - b) Convert the following grammar G into CNF  
 **$S \rightarrow aAD$      $A \rightarrow aB|bAB$      $B \rightarrow b$      $D \rightarrow d$**
  
6.
  - a) Convert the following Grammar G to PDA that accepts the same language by empty stack  **$S \rightarrow 0S1|A$      $A \rightarrow A0|S|e$**
  - b) Explain the graphical notation of PDA with an example and acceptance of context free languages by PDA.
  
7.
  - a) Define Turing machine. Explain with diagram, general structure of multi tape Turing machine.



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**SET - 4**

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1. a) What is finite automaton model? How it is useful for the acceptance of strings and languages explain with an example.  
b) Design a language recognizer which consists of any number of 0's followed by number of 1's followed by number of 2's.
2. a) State and prove the theorem for equivalence of NFA and DFA.  
b) Design a finite state machine to find out the residues of 3.
3. Draw and explain the basis construction of regular expressions and also convert the regular expression  $(011)^*$  into equivalent DFA over an alphabet  $\{0,1\}$
4. a) Explain the Chomsky hierarchy of languages.  
b) Differentiate right linear and left linear grammars with an example.
5. a) Explain and prove the usage of Pumping Lemma for Context free languages?  
b) What is ambiguous grammar? Check out ambiguity for the given grammar G and consider the input string as **aaabab**  
 **$S \rightarrow AbB$      $A \rightarrow aAe$      $B \rightarrow aBbBle$**
6. a) Obtain PDA for the following grammar  
 **$S \rightarrow ASle$      $A \rightarrow 0A1|A1|01$**   
b) What is deterministic PDA? Differentiate acceptance by final state and acceptance by empty state.
7. a) Explain the general structure of multi tape and non deterministic Turing machines and show that these are equivalent to basic Turing machines.  
b) Design Turing machine which will accept the language  $L = \{0^n 1^n \mid n \geq 1\}$

**II B. Tech II Semester Regular Examinations August - 2014  
OBJECT ORIENTED PROGRAMMING THROUGH JAVA**

(Com. to CSE, IT, ECC)

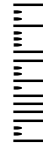
Time: 3 hours

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1. a) Explain the mechanisms that help you to implement the object-oriented model. (8M+7M)  
b) Compare object oriented programming with structured programming. (8M+7M)
2. a) What are the bit wise operators supported by Java? Explain each with an example. (8M+7M)  
b) Illustrate the usage of jump statements in Java with an example program. (8M+7M)
3. a) With an example program explain the overloading methods and constructors. (8M+7M)  
b) Explain how final keyword is used to prevent overriding and inheritance. (8M+7M)
4. What is meant by access protection? Explain different access specifiers supported by Java with an example of each. (15M)
5. a) Write short notes on Java built in exceptions and chained exceptions. (8M+7M)  
b) Explain the Java thread model and its related issues in detail. (8M+7M)
6. a) Write about : i) Applet life cycle ii) Difference between applets and applications. (8M+7M)  
b) Develop a simple banner applet using repaint() method to scroll a message from left to right and across the applet's window. (8M+7M)
7. a) Explain about various interfaces defined by the java.awt.event to implement event listeners. (5M+10M)  
b) Explain about the layout manager and different layouts and also write an example Java program for any 2 layouts. (5M+10M)
8. a) Write an example program to create username and password screen using TextField and TextArea. (8M+7M)  
b) Explain the usage of swing buttons with a programming example. (8M+7M)



Code No: R22052

**R10**

**SET - 2**

**II B. Tech II Semester Regular Examinations August - 2014**  
**OBJECT ORIENTED PROGRAMMING THROUGH JAVA**  
(Com. to CSE, IT, ECC)

Time: 3 hours

Max. Marks: 75

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Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) Explain the fundamental forces that necessitated the invention of Java along with the key factors involved in moulding the java language.  
b) What is meant by class hierarchies in Java? Explain different class hierarchies that Java supports. (8M+7M)
2. a) Illustrate the usage of arrays in Java with the help of two dimensional arrays multiplication.  
b) Explain the usage of constructor and types of constructors in Java. (8M+7M)
3. a) What is the use of super keyword in Java? Explain in detail.  
b) What is the importance of abstract classes? Show it with an example. (8M+7M)
4. What is an interface? Explain the definition and implementation of interface in Java. (15M)
5. a) Explain usage of following words in exception handling: throw, throws, finally.  
b) Explain different ways defined by Java to create threads. (8M+7M)
6. a) Write in detail about the applet architecture. Explain how it is different from console based program.  
b) Develop an applet program to change the foreground and background colors and to display the message in the order in which the init(), start() and paint() methods are called. (8M+7M)
7. a) Describe the delegation event model and the roles of event sources and event listeners.  
b) Write and explain the Java programs to handle buttons and check boxes. (5M+10M)
8. a) Explain the usage of Lists and choices with an example program.  
b) Write a java program to illustrate the usage of Radio buttons (8M+7M)

Code No: R22052

**R10**

**SET - 3**

**II B. Tech II Semester Regular Examinations August - 2014**  
**OBJECT ORIENTED PROGRAMMING THROUGH JAVA**  
(Com. to CSE, IT, ECC)

Time: 3 hours

Max. Marks: 75

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Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) Explain in detail the fundamental principles of OOPs with respect to Java language.  
b) Explain with an example Java program the concepts of method binding. (8M+7M)
  
2. a) Write a program that illustrates the dynamic initialization, the scope and lifetime of variables in Java.  
b) Explore the concept of string classes with an example program. (8M+7M)
  
3. a) What is meant by multilevel hierarchy? Explain with an example program in Java.  
b) Illustrate the concept of method overriding with an example program. (8M+7M)
  
4. a) Define package? Explain the process of finding a package.  
b) Write a short note on i) Nested Interfaces. ii) Difference between class and interfaces. (8M+7M)
  
5. a) Write a program to illustrate the usage of try and catch blocks in Java.  
b) What is the need to assign priorities to threads? Explain with an example. (8M+7M)
  
6. a) Write and explain the fundamentals of an applet with a simple applet program.  
b) How to pass parameters to an applet? Explain with an example program. (8M+7M)
  
7. Explain different classes used in Java's event handling mechanism. (15M)
  
8. a) Illustrate the usage of Dialog box with an example program.  
b) Write java programs using the following i) JList ii) JScrollPane. (8M+7M)

Code No: R22052

**R10**

**SET - 4**

**II B. Tech II Semester Regular Examinations August - 2014**  
**OBJECT ORIENTED PROGRAMMING THROUGH JAVA**  
(Com. to CSE, IT, ECC)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) State and explain the atomic elements of Java program.  
b) Explain with an everyday example of usage of classes and objects. (8M+7M)
  
2. a) Explain the primitive data types supported by Java language.  
b) How to overload methods in Java? Explain the concept of 'Using objects as parameters to methods. (8M+7M)
  
3. a) Explain the following i) Access Control ii) "this" Key word  
b) In detail explain about Dynamic method dispatching. (8M+7M)
  
4. a) What is CLASSPATH? Explain its role in finding packages.  
b) What cautions need to be taken while importing Explain with an example program for importing packages? (8M+7M)
  
5. a) What is an exception? Write about the fundamentals of exception handling used in Java.  
b) Explain the process of synchronization provided for multithread programming using Java. (8M+7M)
  
6. a) Write about the applet class and the methods defined by it.  
b) Illustrate with an example applet program how the applets override the methods defined by Applet (8M+7M)
  
7. a) Explain with an example program how to handle mouse and keyboard events.  
b) Write a short note on AWT classes contained in java.awt package. (10M+5M)
  
8. a) How to create menus and menu bars using AWT? Explain.  
b) Write programs using the following i) JTable ii) Checkboxes. (8M+7M)

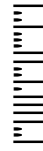
**II B. Tech II Semester Regular Examinations, August -2014**  
**PRINCIPLES OF PROGRAMMIG LANGUAGE**  
(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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- Compare the process of Compilation and Interpretation.
    - What is AST? How it helps in design the Programming language? Give AST for expression  $A = (B+C) * (D/E)$  (8M+7M)
  - Define the terms:
      - life time of the variable
      - Scope and extent
    - What is static binding and dynamic binding (8M+7M)
  - What is meant by attributes? Discuss about it. How space can be managed for the attributes? (15M)
  - What is recursion? Explain its control flow with suitable example.
    - Explain the different forms of statement level sequence control? (8M+7M)
  - What is an activation record? What are its content and uses?
    - Why type checking is required? Give the alternatives for type checking. Explain. (8M+7M)
  - Describe the algorithm used to identify an appropriate handler when an exception is raised in a language.
    - Discuss about genetic sub-routines and modules. (8M+7M)
  - With respect to the object oriented programming, briefly explain the following:
    - Class and instance
    - Object
    - Virtual function
    - Inheritance (15M)
  - Summarize Prolog's facilities for database manipulation. Briefly Explain the usage of assert, retract, and clause. (15M)



Code No: R22056

**R10**

**SET - 2**

**II B. Tech II Semester Regular Examinations, August -2014**

**PRINCIPLES OF PROGRAMMING LANGUAGE**

(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) What is the significance of studying programming language?  
b) Discuss about Context-free grammar and regular expression? Give the parse tree of a following statement:  $A = (B+C) * (D / E)$  (8M+7M)
  
2. a) Consider the following pseudo code.  
Procedure P (A, B: real)  
X: real  
Procedure Q (B, C: real)  
Y: real  
...  
Procedure R (A, C: real)  
Z: real  
... (\*)  
...  
Assuming static scope, what is the referencing environment at the location marked by (\*)?  
b) Define Macro? How to implement the macro? (8M+7M)
  
3. Explain the following:  
i) Attribute grammar  
ii) Action routines (15M)
  
4. a) What is dangling-else problem? Discuss How it can be handled by the programming language.  
b) Describe the characteristics of structured and unstructured control flow. (8M+7M)
  
5. a) Briefly explain about the Records and the Sets data structures  
b) What are primitive and non-primitive data types? Explain. (8M+7M)
  
6. a) Explain in detailed about the different forms of parameters.

Code No: R22056

**R10**

**SET - 3**

**II B. Tech II Semester Regular Examinations, August -2014**

**PRINCIPLES OF PROGRAMMING LANGUAGE**

(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) What are the main features of the programming paradigm with examples?  
b) Define CFG? What does it mean for CFG to be ambiguous? (8M+7M)
2. a) Define data object? Briefly explain the attributes to which a data object may bind to?  
b) What is scope? How to implement the scope rules for a variable? (8M+7M)
3. Explain the role of semantic analyzer in design of PL (15M)
4. a) Discuss the following term:  
i) Dangling pointers  
ii) Tail recursion elimination.  
b) Briefly explain about Iterative control statements and its control flow. (8M+7M)
5. a) What is meant by type checking? Differentiate between static type checking and dynamic type checking and give their relative advantages?  
b) What is meant by activation record? Briefly explain its elements. (8M+7M)
6. a) Describe three alternative means of allocating co-routine stacks. What are their relative strengths and weaknesses?  
b) Explain early binding and late binding. (8M+7M)
7. Why OOP is required? List and explain the vocabulary of OOP. (15M)
8. a) What is unification with respect to Prolog? Briefly Explain.  
b) What is meant by control in Prolog? Briefly explain. (8M+7M)



Code No: R22056

**R10**

**SET - 4**

**II B. Tech II Semester Regular Examinations, August -2014**

**PRINCIPLES OF PROGRAMMING LANGUAGE**

(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) Explain the two approaches to bridge the gap between High level languages and machine level languages? Compare.  
b) What are the formal methods for describing the syntax of programming languages?  
(8M+7M)
2. a) What are the scope rules for designing the programming language  
b) Difference between static and dynamic binding. (8M+7M)
3. Discuss about the various attributes of a good language and explain the process of evaluating attributes with example. (15M)
4. a) Explain the break and continue statements in loops with the help of pseudo code.  
b) Explain special cases in loops (8M+7M)
5. a) Discuss the significance of holes in the records. Why they do and what problem do they cause?  
b) Discuss the comparative advantages of structural and name equivalence for types. Name three languages that use each approach. (8M+7M)
6. a) Explain the various parameter passing methods. Discuss their features.  
b) Explain the difference between virtual and non-virtual methods. (8M+7M)
7. a) What is inheritance with respect to OOP? What are its benefits?  
b) Differentiate between public and private base classes (8M+7M)

**II B. Tech II Semester Regular Examinations August - 2014**  
**SOFTWARE ENGINEERING**  
(Computer Science and Engineering)

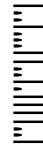
Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) Define software. List and explain about the elements of a software process.  
b) How does a framework activity change as the nature of the project changes?
2. a) Which model couples the iterative nature of prototyping with the controlled and systematic aspect of the waterfall model? Explain its key features.  
b) Give the classification of software system requirements.
3. a) What checks are done during requirements validation? Explain various techniques used for requirements validation.  
b) Which model shows how data flows through a sequence of processing steps? Give the data flow diagram of order processing.
4. a) Briefly describe each of the four elements of the design model.  
b) What is an architectural pattern? How can the architectural style be assessed?
5. a) Briefly explain the steps in user interface design evaluation cycle.  
b) Using UML graphical notation for object classes, design the following object classes identifying attributes and operations.  
- A Bank account  
- An ATM
6. a) What are the differences between alpha testing, beta testing, stress testing and smoke testing?  
b) What is a good test? Give the characteristics of testability.
7. a) How will you measure software quality? Explain.  
b) Briefly explain about RMMM plan. List various components of risk information sheet.
8. a) Why is review important for assessing quality? List the review metrics that are to be collected for each review that is conducted.  
b) Can a program be correct and still not be reliable? Explain.



Code No: R22051

**R10**

**SET - 2**

**II B. Tech II Semester Regular Examinations August - 2014**

**SOFTWARE ENGINEERING**

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

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Answer any **FIVE** Questions

All Questions carry **Equal** Marks

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1. a) What is software engineering? Briefly explain five generic process frame work activities.  
b) What formal techniques are available for assessing the software process? Explain them.
2. a) Briefly explain about various phases of Unified process.  
b) What are non functional requirements? List various types in it. Briefly explain about the metrics used for specifying non-functional requirements.
3. a) What is meant by feasibility study? Give the general process model of the requirements elicitation and analysis process.  
b) Which model describes how a system responds to internal or external events? Give the state machine model of a simple microwave oven.
4. a) Why is quality so important in software design? Explain with examples.  
b) Is it necessary to assess an architectural style that is adopted for design? Justify.
5. a) What is the goal of user interface design? What do we need to know about the environment as we begin UI design?  
b) Using UML graphical notation for object classes, design the following object classes identifying attributes and operations.
  - A Telephone
  - An ATM
6. a) What errors are commonly found during unit testing and top-down integration?  
b) What is a flow graph? How can cyclomatic complexity be calculated?

Code No: R22051

**R10**

**SET - 3**

**II B. Tech II Semester Regular Examinations August - 2014**

**SOFTWARE ENGINEERING**

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

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Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) What is a process model? How do process models differ from one another?  
b) Compare and contrast personal and team process models.
2. a) What is the oldest paradigm for software engineering? Why does the waterfall model sometimes fail?  
b) What are system requirements? What notations are used for requirements specifications?
3. a) Briefly explain the requirements engineering process.  
b) Based on your experience with a bank ATM, draw a data-flow diagram modeling the data processing involved when a customer withdraws cash from the machine.
4. a) Discuss the importance of data abstraction in the software design process.  
b) List the differences between data flow architecture and data centered architecture.
5. a) Under what circumstances might you develop a design where objects execute concurrently?  
b) How do we learn what the user wants from the User Interface?
6. a) What guidelines lead to a successful software testing strategy?  
b) What is a test case? How test cases can be derived?
7. a) Describe the differences between project metrics and process metrics.  
b) What is risk projection and how the consequences of risk be assessed?
8. a) Explain the differences between an error and a defect? Why can't we wait until testing to find and correct all software errors?

Code No: R22051

**R10**

**SET - 4**

**II B. Tech II Semester Regular Examinations August - 2014**

**SOFTWARE ENGINEERING**

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

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Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) Why is it important to understand the customer's problem before creating a software solution?  
b) What is a process? What are the generic framework activities that are present in every software process?
2. a) Briefly explain about incremental process models.  
b) What is Software requirements document? Give the structure of it.
3. a) Explain about the requirements of elicitation and analysis in detail.  
b) Develop an object model, including a class hierarchy diagram and an aggregation diagram showing the principal components of a personal computer system and its system software.
4. a) How are the concepts of coupling and cohesion related to software module size?  
b) What is an architectural style? Briefly explain about layered architectures with example.
5. a) Using examples, explain the difference between an object and an object class.  
b) How do we determine the format and aesthetics of content displayed as part of the User Interface?
6. a) What is the overall strategy for software testing? When to stop testing?  
b) What is a graph matrix? Explain its usage in testing. How can equivalence classes be defined for testing?
7. a) What is the difference between metrics and measurements? Give metrics for maintenance.