14IT501

Hall Ticket Number:

III/IV B.Tech DEGREE EXAMINATION

November, 2016 **Information Technology**

Fifth Semester **Professional Ethics & Human Values**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. Answer all questions (1X12=12 Marks)

a What are the two approaches to Engineering ethics
b Distinguish between 'morality' and 'ethics'
c How do the human values evolve?
d Define service learning?
e Define 'civic virtue'?
f Compare 'safety' and 'risk'.
g What are the factors that shape self-confidence in a person
h What is 'collegiality'?
i What are the situations when moral dilemmas arise
j What is a white-collared crime?
k Name three conditions for 'duty ethics', as per Immanuel Kant.
l What is the importance of Industrial Standards

UNIT – I

2.a Distinguish between Kohlberg's and Gilligan's approach to ethical (moral) judgments. 8 M
2.b Explain various actions of an engineer leading to dishonesty 4 M

(OR)

3.a What are the general features of morally-responsible engineers? Explain each with appropriate examples. 6 M
3.b What is meant by Professional Responsibility? 6 M

UNIT – II

4.a Explain about customs and religion, confidentiality 6 M
4.b Discuss in detail about the employee rights 6 M

(OR)

5.a What is the importance of 'loyalty' and 'collegiality' in team work 5 M
5.b Discuss in detail the 'risk benefit analysis' and reducing risk. 7 M

UNIT – III

6.a Discuss on the 'intellectual property rights'. 8 M
6.b Write a brief account on 'consulting engineering' 4 M

(OR)

7.a Explain the meaning and relevance of environmental ethics 7 M
7.b Discuss the Ethical Audit Procedure 5 M

UNIT – IV

8.a Write a notes on Bhopal Gas Tragedy 6 M
8.b Write a notes on Code of ethics for Institute of Engineers(India) 6 M

(OR)

9.a Write a notes on The Chernobyl Disaster 6 M
9.b Write a notes on Code of ethics for ACM 6 M

14IT502

Hall Ticket Number:

III/IV B.Tech (Regular) DEGREE EXAMINATION

November, 2016 **Information Technology**

Fifth Semester **COMPILER DESIGN**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. Answer all questions (1X12=12 Marks)

a Differentiate phase and pass of a compiler.

b What are the issues to be considered in top down parsing?

c What is the role of lexical analyzer?

d Differentiate canonical LR and LALR parsing.

e What is handle pruning?

f Differentiate synthesized translation and inherited translation.

g List out different storage allocation strategies.

h Write the contents of a symbol table.

i What are the issues of a source language?

j Give the three address code for the statement " W=-X+Y*Z"

k Write the rules to identify basic blocks.

l What is peephole optimization?

UNIT – I

2.a Draw a transition diagram for recognizing tokens identifier, constant, and relational operator like <, <=, =, >, >=. 6M

2.b What is LEX? Explain in detail LEX source program. 6M

(OR)

3.a What is left recursion? Eliminate left recursion of the following grammar
S → (L) / a, L → L,S / S. 6M

3.b Write the rules to compute first and follow set of a given grammar. Calculate first and follow set of the given grammar S → A, A → aB / Ad, B → bBC / f, C → g. 6M

UNIT – II

4.a Show the following grammar S → AaAb / BbBa, A → ε, B → ε is not SLR (1). 8M

4.b Explain stack implementation of shift reduce parser. 4M

(OR)

5.a Construct an LALR parsing table for the following grammar
D → L : T , L → L, id / id, T → integer. 8M

5.b Discuss in detail construction of syntax trees. 4M

UNIT – III

6.a Consider the following program: 8M

```
Void foo ()
  {
      float a, b, c;      /* level 0 declaration    */
      ……..
      ……..
      {
         float a, b;     /* level '1x' declaration    */
         ……..
         ……..
      }
   {
      int d, e;    /* level '1y' declaration   */
      {
        int f;    /* level '2' declaration    */
        ……
        ……
      }
   }
 }
```

Show the stack position after execution of level 0, level 1x, level 1y and level 2.

6.b Discuss in detail Heap allocation strategy. 4M

(OR)

7.a Describe the representation of scope information in the symbol table. Consider the following program structure and give its symbol table organization: 6M

```
Program main
    Var x, y : integer;
Procedure P
    Var X, a : boolean;
Procedure Q
    Var x, y, z : real;
```

7.b What is the significance of symbol table at runtime and compile time. Discuss it. 6M

UNIT – IV

8.a Write an SDT scheme for Boolean expressions. 6M

8.b Write quadruples, triples for the expression (a + b) * (c + d) – (a + b + c) 6M

(OR)

9.a Construct DAG for the following code: a = a + b, e = a + d + e 6M

9.b Write an algorithm for simple code generation. 6M

14 CS IT 503

Hall Ticket Number:

III/IV B.Tech (Regular) DEGREE EXAMINATION

November, 2016 **Common for CSE & IT**

Fifth Semester **Micro Processors and Micro Controllers**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12=12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. Answer all questions (12X1= 12 Marks)

a) Write about string operations of 8086
b) Draw the flag register of 8086
c) What is meant by pipelining?
d) How many cycles constitute a machine cycle?
e) What is the purpose of HOLD & HOLDA pins?
f) What is Type 0 interrupt?
g) What is the use of priority interrupt controller?
h) Draw the interrupt vector table of 8086?
i) Explain about LOOP instructions of 8051?
j) Write the interrupt priorities of 8051?
k) List the special function registers of 8051?
l) Draw the Program Status Word of 8051?

UNIT – I

2. a) Draw the block diagram of 8086 & Explain about BIU 8M
   b) Differentiate between Procedures and Macros 4M

OR

3. a) Explain the assembly language program development tools 6M
   b) Write an 8086 ALP to find the square root of a given number 6M

UNIT – II

4. a) With a neat sketch explain the read & write cycles of a 8086 based microcomputer system 8M
   b) Write an 8086 ALP to sort the numbers in ascending order 4M

OR

5. a) Draw the pin diagram of 8086 & explain the function of each pin 8M
   b) Draw the interrupt vector table & explain about Type 0, Type 1, Type2 interrupts 4M

UNIT – III

6. a) Explain about 8259 & the command words of 8259 6M
   b) Explain about 8279? With a neat sketch explain how it can be interfaced to 8086 6M

OR

7. a) Explain about 8237 DMA Controller in detail with a neat sketch 6M
   b) Draw the block diagram of 8051 and explain briefly 6M

UNIT – IV

8. a) Explain about addressing modes of 8051 6M
   b) Explain about logical instructions of 8051with example 6M

OR

9. a) Explain about interrupts in 8051 4M
   b) Explain about timers and their operating modes of 8051 8M

14CSIT 504

Hall Ticket Number:

III/IV B.Tech (Regular)DEGREE EXAMINATION

November, 2016 **Common to CSE & IT**

Fifth Semester **Database Management Systems**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. Answer all questions (1X12=12 Marks)

a What is a relational model?
b Write any three advantages of using the DBMS.
c What is the use of Structural Constraints?
d What is the difference between a database schema and a database state?
e What are the Unary Relational Operations?
f What is meant by correlated queries?
g What is an entity type? What is an entity set?
h What is meant by a recursive relationship type?
i What is Normalization? Define 1NF .
j List the desirable properties.
k Define Serializability?
l What is meant by Granularity?

UNIT – I

2.a Discuss the main characteristics of the Database Approach and how it differs from traditional file systems. 6M

2.b Construct ER Diagram for a Banking Enterprise. Identify entities, roles, weak entity sets if any, IS A relationship if any 6M

(OR)

3.a Explain Conceptual database design with ER Model. 6M

3.b Describe in detail about 3-Schema Architecture. 6M

UNIT – II

4 Discuss about SELECT & JOIN, JOIN & DIVISION with examples 12M

(OR)

5 Consider the following schema: 12M

Suppliers(*sid:*integer, *sname:* string, *address:* string) Parts(pid: integer, *pname:* string, *color:* string) Catalog(*sid:*integer,*pid:*integer, *cost:* real)

The key fields are underlined, and the domain of each field is listed after the field name. Therefore *sid* is the key for Suppliers, *pid* is the key for Parts, and *sid* and *pid* together form the key for Catalog. The Catalog relation lists the prices charged for parts by Suppliers.

Write the following queries in tuple relational calculus.

i. Find the *names* of suppliers who supply some red part
ii. Find the *sids* of suppliers who supply some red or green part.
iii. Find the *sids* of suppliers who supply some red part or are at 221 Packer Ave
iv. Find the *sids* of suppliers who supply some red part and some green part
v. Find the *sids* of suppliers who supply every red or green part

UNIT – III

6 Describe about Types of Indexes and how they use B-Trees & B+ Trees 12M

(OR)

7.a Differentiate Ordered and Unordered records in files. 6M

7.b Analyze about Normalization and describe briefly about 1NF, 2NF, 3NF. 6M

UNIT – IV

8 Demonstrate Two-phase locking techniques in concurrency control and how time stamp ordering will be used in 2PL. 12M

(OR)

9.a How do you characterize schedules based on Serializability. 8M

9.b Explain about Multiple Granularity Locking mechanism. 4M

CS/IT 311

Hall Ticket Number:

III/IV B.Tech (Supplementary) DEGREE EXAMINATION

November, 2016 **Common for CSE & IT**

Fifth Semester **Professional Ethics & Human Values**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. Write briefly about following: (12X1=12Marks)

a) What are universal values?
b) Define engineering ethics.
c) What are the uses of ethical theories?
d) Define safety and risk.
e) Explain about moral autonomy.
f) Explain the importance of respect for other persons.
g) Define conflict of interest.
h) What do you understand by whistle blowing?
i) Describe the term confidentiality.
j) What do you mean by autonomous computer?
k) What are global issues?
l) Explain duty ethics.

UNIT-I

2) a) Who is a professional? Explain the core qualities of professional practitioners. (6M)
b) Explain the code of ethics. (6M)

(OR)

3) a) Explain the different types of inquiry. (6M)
b) Discuss the Kohlberg's theory of moral development. (6M)

UNIT-II

4) Explain the following concepts of engineering as social experimentation
a) Comparison with standard experiments. (4M)
b) Conscientiousness. (4M)
c) Accountability. (4M)

(OR)

5) a) Discus different type of moral dilemmas. (6M)
b) Describe the risk-benefit analysis. (6M)

UNIT-III

6) a) Explain the various techniques for achieving collegiality. (6M)
b) Describe the concepts of self-interest, customs and religion. (6M)

(OR)

7) a) Discuss about environmental ethics. (6M)
b) Explain briefly about intellectual property rights. (6M)

UNIT-IV

8) a) Explain the various aspects of project realization. (6M)
b) Describe the ethical audit procedure. (6M)

(OR)

9) a) Explain the Chernobyl disaster. (6M)
b) Describe the code of ethics of Institution of Engineers India. (6M)

CS/IT 312

Hall Ticket Number:

III/IV B.Tech (Supplementary) DEGREE EXAMINATION

November,2016 **Common to CSE & IT**

Fifth Semester **Data Communications**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48Marks)

1.Define the following (12X1=12 Marks)

a) Define line of sight transmission.
b) What is wireless propagation?
c) Write the Layers of TCP/IP.
d) What is digital signalling?
e) Write different types of errors in digital data communication.
f) Define wavelength
g) Give the names of error detection methods.
h) What is data rate?
i) Define flow control.
j) What is X.25?
k) Define Ethernet.
l) What is interfacing?

UNIT – I

2.a) Discuss briefly OSI reference model. **(6M)**
b) Explain signalling of Analog and Digital data transmission. **(6M)**

(OR)

3.a) Explain data communication network model. **(6M)**
b) Discuss the guided transmission in case of point to point and multi point configurations. **(6M)**

UNIT – II

4. a) Explain various digital signal encoding formats. **(6M)**
b) Distinguish between Asynchronous and synchronous transmission. **(6M)**

(OR)

5. Explain Amplitude shift keying, frequency shift keying, and Phase Shift keying modulation techniques of Analog signal for digital data. **(12M)**

UNIT – III

6.a) Explain in detail about High-Level Data Link Control (HDLC). **(6M)**
b) Explain sliding window protocol with example. **(6M)**

(OR)

7.a) Explain about frequency division multiplexing. **(6M)**
b) Explain synchronous time division multiplexing. **(6M)**

UNIT – IV

8.a) Explain circuit switching network. **(6M)**
b) Distinguish between circuit switching and packet switching network. **(6M)**

(OR)

9.a) Discuss about different network topologies. **(6M)**
b) Write short note on switches and Bridges. **(6M)**

Hall Ticket Number:

III/IV B.Tech (Regular) DEGREE EXAMINATION

November, 2016 **Common for CSE & IT**

Fifth Semester **Automata Theory & Formal Languages**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12=12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

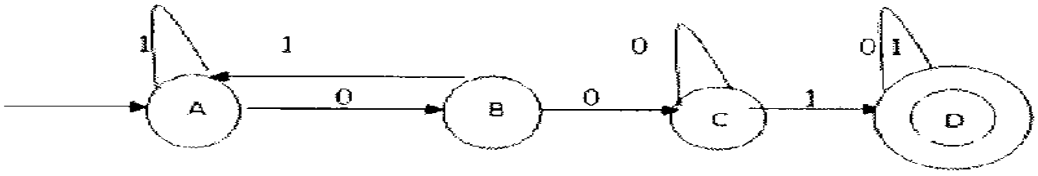
1. Define the following (12X1= 12 Marks)

a) Define String, Alphabet and Language.
b) What are the applications of automata theory?
c) What are the components of Finite automaton model?
d) Construct a r.e for the language which accepts all strings with at least two c's over the set Σ={c,b}.
e) What are the applications of pumping lemma?
f) What is the closure property of regular sets?
g) What are the uses of Context free grammars?
h) What is an ambiguous grammar?
i) Compare NFA and PDA.
j) What are the properties of CFL?
k) What are the techniques for Turing machine construction?
l) When we say a problem is decidable? Give an example of undecidable problem?

UNITI

2. a) Design Deterministic Finite Automata to accept strings with a's and b's such that number of a's are divisible by 3. (6M)

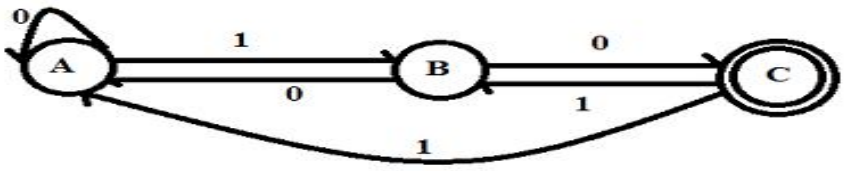
b) Describe finite state machine and tell whether the string 1010011is acceptedby the following finite automata. If accepted write the state sequence. (6M)



(OR)

3. a) Define NFA and DFA, write significant differences between them. (6M)

b) Convert the following NFA to DFA. (6M)



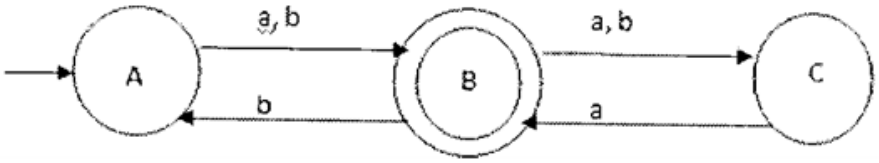
UNIT-II

4. a) Consider the two regular expressions (6M)
r=0*+1*, s=01*10*+1*0+(0*1)*

i) Find a string corresponding to r but not to s.

ii) Find a string corresponding to s but not to r.

b) Find the Regular expression for the following finite automaton (6M)



(OR)

5. a) Prove the following regular expression identities: (6M)

(i) 1 + (1 + 0)(1 + 0)* 1 = 0* 1

(ii) 1 + 1* (011)* (1* (011)*)* = (1 + 011)*

b) Define the language square as follows: (6M)

square = {a^n where n is a square, n>0}

Using the pumping lemma to prove that square is non-regular.

UNIT- III

6. a) Convert the following grammar to CNF (6M)

S→ABA|AB|BA|AA|B

A→aA|a

B→bB|b

b) Consider the following context free grammar: (6M)

E→I|E+E|E*E|(E)

I→ a|b|Ia|Ib|I0|I1

Find the leftmost derivation, rightmost derivation, and parse tree for the string: a*(a+b00).

(OR)

7. a) Define a PDA. Design a PDA for L={xcx^r /x∈{a,b}*} (6M)

Process the string "abbacabba"

Note: x^r stands for reverse of a string x.

b) Design PDA for the grammar G = (V_n, Vt, P, S) where V_n = {S} V_t = {a,b,c} and P is defined as

S→ aSa, S→bSb, S→c (6M)

UNIT-IV

8. a) What is instantaneous description of a TM? Briefly explain. (6M)

b) Design a Turing Machine for the language L={SS|S is a string from an alphabet {a,b}*} (6M)

(OR)

9. a) What are Undecidable Problems? Explain With Examples. 6M)

b) State and explain the Undecidability of post correspondence problem. (6M)