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III/IV B.Tech (Supplementary) DEGREE EXAMINATION

April, 2017

Fifth Semester

Time: Three Hours

Answer Question No.1 compulsorily.

Answer ONE question from each unit.

1. Answer all questions

- a. Define courage
- b. What is meant by commitment
- c. Define character
- d. Explain the self interest
- e. Define models
- f. Explain job related risk
- g. What is empathy
- h. Explain Human relation at work
- i. Define discrimination
- j. Define occupational crime
- k. Define Civic virtue
- l. What is the importance of Industrial Standards

Common for CSE &IT

Professional Ethics & Human Values

Maximum : 60 Marks

(1X12 = 12 Marks)

(4X12=48 Marks)

(1X12=12 Marks)

UNIT I

- 2.a Explain the values, ethics and valuing time. 6 M
- 2.b Explain core qualities of professional practioners 6 M

(OR)

- 3.a Explain the theory of moral development 6 M
- 3.b Discuss the various types of inquiry 6 M

UNIT II

- 4.a Describe risk - benefit analysis 8 M
- 4.b Explain in detail about self – confidence 4 M

(OR)

- 5.a Explain the role of engineering as responsible experimenters 7 M
- 5.b What are the steps in confronting the ‘moral dilemma’? 5 M

UNIT III

- 6.a Write a brief report on the ‘Three-Mile Island’ 6 M
- 6.b Explain the basic attitudes toward responsibility 6 M

(OR)

- 7.a What is the importance of ‘loyalty’ and ‘collegiality’ in team work? 5 M
- 7.b Discuss on the ‘intellectual property rights’. 7 M

UNIT IV

8. Explain Code of Ethics of different institutes in India. 12 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

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III/IV B.Tech (Supplementary) DEGREE EXAMINATION

April, 2017

First Semester

Time: Three Hours

Common for CSE & IT

Data Communications

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 meant by Data Communication?
- b. What is the need for Protocol architecture?
- c. Define Channel Capacity.
- d. Compare analog and digital data.
- e. Write various types of errors.
- f. What is interface?
- g. What is multiplexing?
- h. Write short notes on XDSL.
- i. Describe Data Link control.
- j. Uses of Bridges.
- k. What is meant by token ring?
- l. Write various topologies.

UNIT I

- 2.a Explain OSI reference model in detail. 6M
- 2.b Describe Digital Data Transmission. 6M

(OR)

- 3.a Describe Various Guided Transmission media with examples. 6M
- 3.b Explain Line of sight Transmission. 6M

UNIT II

- 4.a Explain Digital Data and Digital Signal in detail. 6M
- 4.b Explain Analog Data and Analog signals in detail. 6M

(OR)

- 5.a Describe various Error Detection Methods. 6M
- 5.b Explain Asynchronous and Synchronous Transmission in detail. 6M

UNIT III

- 6.a Write short notes on Flow control and Error control. 6M
- 6.b Explain High-Level Data Link Control in detail. 6M

(OR)

- 7.a Describe Synchronous Time Division Multiplexing in detail. 6M
- 7.b Explain Statistical Time Division Multiplexing. 6M

UNIT IV

- 8.a Write about Circuit switching networks. 6M
- 8.b Explain LAN protocol architecture. 6M

(OR)

- 9.a Explain the Emergence concept of High Speed LANs. 6M
- 9.b Describe Fibre Channel. 6M

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III/IV B.Tech (Supplementary) DEGREE EXAMINATION

March, 2017

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 Answer all questions

(1X12=12 Marks)

- a) What are the Components of Finite Automata Model?
- b) List the operations on Strings and Languages?
- c) Draw an NFA accepting the set of all strings whose second symbol from last is 1.
- d) Give the DFA accepting the language over the alphabet 0, 1 that have the set of all strings such that the no. of zero's is divisible by 5 and the no. of 1's is divisible by 3.
- e) What are the operators of Regular Expressions?
- f) Write Regular Expression for the language that has the set of all strings of 0's and 1's such that no prefix has two more 0's than 1's, not two more 1's than 0's.
- g) What is Arden's Theorem?
- h) What are the uses of Context free grammars?
- i) State the equivalence of acceptance by final state and empty stack.
- j) State the pumping lemma for CFL's.
- k) Define Modified PCP?
- l) What properties of recursive enumerable sets are not decidable?

UNIT I

2 a) Construct NFAs for the following languages

- i. The set of strings over alphabet {0,1,.....,9} such that the final digit has appeared before.
- ii. The set of strings over alphabet {0,1,.....,9} such that the final digit has not appeared before.
- iii. The set of strings of 0's and 1's such that there are two 0's separated by a number of positions that is a multiple of 4. Note that 0 is an allowable multiple of 4.

6M

b) Construct deterministic finite automata DFA, equivalent to the NFA given below. $M = (\{q_0, q_1, q_2, q_3\}, \delta, q_0, \{q_3\})$, where δ is defined in the following transition table

δ	0	1
q_0	{ q_0, q_1 }	{ q_0 }
q_1	{ q_2 }	{ q_1 }
q_2	{ q_3 }	{ q_3 }
q_3	\emptyset	{ q_2 }

6M

(OR)

3 a) Design DFA for the following over {0,1}

4M

- i. All string containing not more than three 0's
- ii. All strings that has at least two occurrences of 1 between any two occurrences of 0

b) Consider the following ϵ -NFA

8M

	ϵ	a	b	c
$\rightarrow p$	\emptyset	{ p }	{ q }	{ r }
q	{ p }	{ q }	{ r }	\emptyset
r	{ q }	{ r }	\emptyset	{ p }

- i. Compute ϵ -closure of each state
- ii. Give all the strings of length three or less accepted by the automaton

UNIT II

4 a) Construct transition diagram of a finite automaton corresponding to the regular expression $(ab+c^*)^*b$. 6M

- b) Construct a minimum state automaton equivalent to a given automaton M whose transition table is given below.(where * indicates final state)

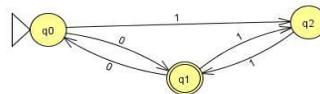
6M

State	Input	
	a	b
→q ₀	q ₀	q ₁
q ₁	q ₂	q ₅
q ₂	q ₃	q ₄
q ₃	q ₀	q ₅
q ₄	q ₀	q ₆
q ₅	q ₁	q ₄
q ₆ *	q ₁	q ₃

(OR)

- 5 a) Obtain the regular Expression denoting the language accepted by the following DFA

8M



- b) Find whether the languages $\{ww, w \text{ is in } (1+0)^*\}$ and $\{1^k \mid k=n^2, n \geq 1\}$ are regular or not.

4M

UNIT III

- 6 a) Write the CFG to generate the set $\{a^m b^n c^p \mid m + n = p \text{ and } p \geq 1.\}$

4M

- b) Construct the grammar for the following PDA.

8M

$$M = (\{q_0, q_1\}, \{0, 1\}, \delta, q_0, z_0, \Phi) \text{ and where } \delta \text{ is given by}$$

$\delta(q_0, 0, z_0) = \{(q_0, Xz_0)\}$	$\delta(q_0, 0, X) = \{(q_0, XX)\}$
$\delta(q_0, 1, X) = \{(q_1, \epsilon)\}$	$\delta(q_1, 1, X) = \{(q_1, \epsilon)\}$
$\delta(q_1, \epsilon, X) = \{(q_1, \epsilon)\}$	$\delta(q_1, \epsilon, z_0) = \{(q_1, \epsilon)\}$

(OR)

- 7 a) Let G be the grammar $S \rightarrow aS/aSbS/\epsilon$. Prove that $L(G) = \{x \mid \text{each prefix of } x \text{ has at least as many a's as b's}\}$

4M

- b) Explain the Construction of an equivalent grammar in CNF for the grammar $G = (\{S, A, B\}, \{a, b\}, P, S)$ where $P = \{S \rightarrow bA|aB, A \rightarrow bAA|aS|a, B \rightarrow aBB|bS|b\}$

8M

UNIT IV

- 8 a) State Pumping lemma for context free language σ show that language $\{a^i b^j c^i \mid i \geq 1, \text{ and } j \geq 1\}$ is not context-free.

6M

- b) Construct turing machine for the language $L = \{a^n b^n c^n \mid n \geq 1\}$ over the alphabet $\{a, b, c\}$.

6M

(OR)

- 9 a) Find whether the following languages are recursive or recursively enumerable.

- (i) Union of two recursive languages.
- (ii) Union of two recursively enumerable languages.
- (iii) L if L and complement of L are recursively enumerable.
- (iv) L_u

6M

- b) Let $\Sigma = \{0, 1\}$. Let A and B be the lists of three strings each, defined as

	List A	List B
i	W _i	X _i
1	1	111
2	10111	10
3	10	0

6M

Does this PCP have a solution?

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III/IV B.Tech (Supplementary) DEGREE EXAMINATION**April, 2017****Fifth Semester****Time:** Three Hours*Answer Question No.1 compulsorily.**Answer ONE question from each unit.***Common for CSE/IT
Operating Systems****Maximum : 60 Marks**

(1X12 = 12 Marks)

(4X12=48 Marks)

1. Answer the following

- a. Define a System Call.
- b. Differentiate Multiprogramming and Muti-tasking.
- c. List out the components of Process Control Block.
- d. What is a semaphore?
- e. What is meant by critical Section?
- f. Define throughput.
- g. Define Deadlock.
- h. Mention necessary conditions for deadlock occurrence.
- i. What is a dirty-bit?
- j. List out attributes of a file.
- k. How the logical address is different from physical address?
- l. What do you mean by preemptive scheduling?

UNIT I

- 2.a What are the services of operating system? 6M
- 2.b Draw and explain process state transition diagram. 6M

(OR)

- 3.a Define Inter-process Communication. Explain its concept. 6M
- 3.b Explain how to implement threads UNIX. 6M

UNIT II

4. Explain different types of CPU scheduling algorithms with suitable example. 12M

(OR)

- 5.a Define Monitor. Explain its concept with suitable example. 6M
- 5.b Write and explain Producer - Consumer classical synchronization problem. 6M

UNIT III

- 6.a Explain in detail about deadlock detection techniques. 6M
- 6.b What is segmentation? Explain its concept. 6M

(OR)

- 7.a Describe demand-paging Memory Management technique. 6M
- 7.b Consider the reference string: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2,1, 2, 0, 1, 7, 0,1 for a memory with three frames. Trace FIFO, optimal, and LRU page replacement algorithms. 6M

UNIT IV

- 8.a Explain the concept of directory structures. 6M
- 8.b Discuss in detail about various file access methods. 6M

(OR)

- 9.a How to provide protection to a file system? Explain. 6M
- 9.b Explain about various file allocation methods. 6M

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III/IV B.Tech (Supplementary) DEGREE EXAMINATION**April, 2017****Fifth Semester****Time:** Three Hours**Common for CSE & IT****Database Management Systems****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)

- Roles of a Database Administrator
- Schema
- Weak Entity Set
- Multi-Valued Attribute
- Candidate Key
- Nested Query
- Record Types
- Index
- Functional Dependency
- Atomicity
- Exclusive Lock
- Shadow Paging.

UNIT I

- Discuss the main characteristics of the database approach and how it differs from traditional file systems. 6M
 - What is meant by data independence? Explain the difference between physical independence & logical data independence. 6M

(OR)

- Describe the Classification of Database Management Systems. 6M
 - Construct an E-R diagram for university registrar's office. The office maintains data about each class, including the instructor, the enrolment and the time and place of the class meetings. For each student class pair, a grade is recorded. Determine the entities and relationships that exist between the entities. Also construct the tabular representation of the entities and relationships. 6M

UNIT II

- Differentiate between entity and referential integrity constraints. 6M
 - Consider the following database relations. Write SQL statements given below: 6M
S (S#, SNAME, SCITY) P (P#, PNAME, PCITY)
J (J#, JNAME, JCITY) SPJ (S#, P#, J#, QTY)
 - Get J# values for projects using one part available for supplier?
 - Get P# values for part supplied to any project in London by a London supplier.
 - Get JNAME for projects supplied by at least one supplier not in the same city.

(OR)

- What is a view? Discuss the problems that may arise when one attempts to update a view. 4M
 - Briefly explain the following with examples 8M
 - RENAME
 - CROSS JOIN

UNIT III

- Briefly explain different types of single level ordered Indexes. 6M
 - Compare BCNF and 3NF with an example. 6M

(OR)

- What is normalization? Why it is required? 4M
 - Define 4NF. Why is it useful? 8M

UNIT IV

- Describe the Dirty-Read problem. 4M
 - What is the two-phase locking protocol? What are the variations of it? How does it guarantee serializability? 8M

(OR)

- Explain about Recovery Techniques based on Deferred Update. 6M
 - Discuss about Granting and Revoking Privileges in detail. 6M

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III/IV B.Tech (Supplementary) DEGREE EXAMINATION

April, 2017

Fifth Semester

Time: Three Hours

Information Technology

Web Technologies

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 the use of Class in CSS?
- b) What are the benefits of JavaScript?
- c) List and describe different types of CSS.
- d) Write a program to demonstrate onclick event.
- e) What are the methods in window object?
- f) What are the rules to construct an xml document?
- g) What are the technologies used by Ajax?
- h) List different types of web servers.
- i) Write about ruby language.
- j) What is JSP?
- k) Define post
- l) What are the types of tags in JSP

UNIT I

- 2 a) Write a java script program to search for a particular pattern using the necessary Javascript Object methods. 6M
 - b) Describe the different ways that styles can be added to a web page. 6M
- (OR)**
- 3 a) Write about methods of String Object in JavaScript. 6M
 - b) What is array in JavaScript and write simple Javascript program to create and access the elements of an array. 6M

UNIT II

- 4 a) Explain about Event Handling with suitable examples. 6M
 - b) Design an XML application to display book details. 6M
- (OR)**
- 5 a) What is DOM? And write about frames collection. 6M
 - b) What is DHTML? Write the features of DHTML. 6M

UNIT III

- 6 a) What are the different ready states of a request in AJAX? Explain. 6M
 - b) Explain about XMLHttpRequest types. 6M
- (OR)**
- 7 a) Explain about 3-tier web architecture. 6M
 - b) What is Ruby on Rails? How would you declare and use a constructor in Ruby? 6M

UNIT IV

- 8 a) List the various components of JSP. Explain about any two components. 6M
 - b) Discuss the parameter passing in servlets. 6M
- (OR)**
- 9 Explain in detail about validation using validator components and custom validators. 12M