M (Printed Pages 3)

(20514) Roll No. .....

B.Tech. IV Sem.

TU-113

B.Tech. Examination, May 2014

CS

Data Base Mgt. System

BT-408(N)

Time : Three Hours] *[Maximum Marks : 100*

Note: Attempt any **five** questions. **All** questions carry equal marks.

1. What do you mean by DBA? List the functions of DBA. 20

2. What is data dictionary? What are the informations stored in the data dictionary? 20

3. Define the following terms :

   (i) Entity

   (ii) Attribute

   (iii) Relationship

   (iv) Value set

P.T.O.

4. Define the concept of aggregation. Give two example where this concept is useful. 20

5. Define the following terms:

   (i) Foreign key

   (ii) Primary key

   (iii) Super key

   (iv) Condidate key

6. Discuss the two important type of mapping constraints with respect to an E-R enterprise schema. 20

7. What is structured query language? Explain the basic structure of an SQL expression. 20

8. Which commands are DDL part of SQL? Write their syntax. 20

9. What do you mean by view? Discuss the advantages & disadvantages of view in detail. 20

10. Write short notes on following : 20

(a) 3NF

(b) 2NF

(c) BCNF

(d) MVD

M (Printed Pages 4)

(20514) Roll No. .....

B.Tech. IV Sem.

TU-118

B.Tech. Examination, May 2014

C. S.

Software Engg.

[BT-411(N)]

Time : Three Hours] *[Maximum Marks : 100*

Note : (i) Attempt any **five** questions.

(ii) Be precise in your answer.

(iii) All questions carry equal marks.

1. (a) Define the term:

Software, Software engineering, Software components, Software characteristics 2.5×4=10

P.T.O.

(b) Compare and contrast waterfall model with Spiral Model 10

2. (a) Explain the concept of life cycle model. 10

(b) What is Software crisis? Give solutions to it? 10

3. (a) Explain ISO 9000 Model. 10

(b) Explain SEI-CMM Model. 10

4. (a) Draw DFD for the withdraw of money by customer from ATM machine 10

(b) What is the need for feasibility study? What is the outcome of feasibility study? 10

5. (a) Design use-case diagram for user interaction with ATM Machine. 10

(b) Explain sequence diagram with an example.

6. Explain Cyclomatic Complexity and describe any three method to calculate Cyclomatic Complexity using any one example. 20

7. Describe following words : 20

   (i) Abstraction

   (ii) Modularity

   (iii) Cohesion

   (iv) Coupling

8. Describe following testings : 20

   (i) Smoke Testing

   (ii) Regression Testing

   (iii) Stress Testing

   (iv) Acceptance Testing

9. (a) What is the difference between the coding standard and coding guidelines? 10

   (b) What are the common approaches in debugging? 10

10. Using COCOMO, estimate tmg required for following: 20

(i) A semi-detached model of software project of 2K lines

(ii) An embedded model of software of 30K lines

(iii) An organic model of software of 100K lines.

M (Printed Pages 3)

(20514) Roll No. .....

B.Tech. IV Sem.

TU-116

B.Tech. Examination, May. 2014

C. S.

Industrial Psychology

[BT-424(N)]

Time : Three Hours] *[Maximum Marks : 50*

Note : Attempt any five questions. All questions carry equal marks.

1. Define Industrial Psychology. Discuss major influences on Industrial Psychology in detail.
2. Critically evaluate Herzberg's two-factor theory. Compare it with Maslow's theory of need hierarchy.

P.T.O.

3. What do you understand by job satisfaction? What are the factors affecting the job-satisfaction? Elaborate.

4. Give various sources of work stress and the ways to cope with these stresses.

5. Explain the dimensions of organizational culture. Discuss how this culture be created in the organization.

6. What are the characteristics of a good leader. Explain different styles of leadership.

7. What is meant by group-dynamics? Discuss various theories of group formation.

8. What features are included in a work environment? What efforts would you make to create an effective work environment? Elaborate.

9. Describe any two tests to be used in recruiting and selecting the managers in an industry.

10. (a) Accident Proveness

(b) Techniques of performance management.

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(20514) Roll No. .....

B.Tech. IV Sem.

TU-115

B. Tech. Examination, May 2014

C.S.

Theory of Automata & Formal Lang.

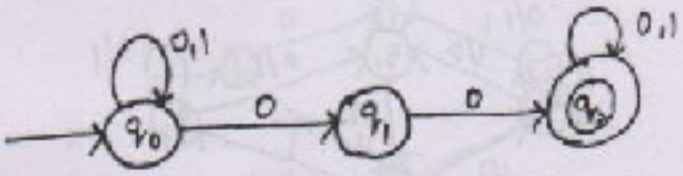
[BT-410(N)]

Time : Three Hours] *[Maximum Marks : 100*

Note : (i) Attempt any **five** questions.

(ii) Be precise in your answer.

1. (a) Consider the following FA. Let $\Sigma = \{0,1\}$.



P.T.O.

Check the acceptability of following strings : 10

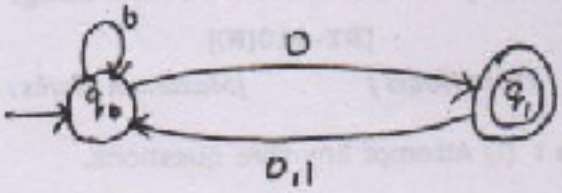
(i) 0101

(ii) 00

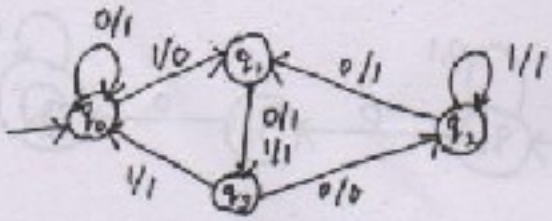
(iii) 0011

(iv) 1010

(b) Construct DFA equivalent to following NFA. 10



2. (a) Construct the Moore machine equivalent to the following Mealy machine : 10



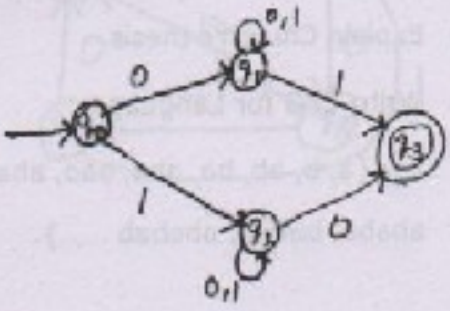
(b) Construct an FA over $\Sigma = \{0,1\}$ such that every string accepted by FA contains no runs of length less than four. 10

3. (a) Construct a D.F.A. for the regular expression : 10

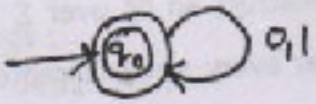
$r = 10 + (0 + 11)\,0^* 1$

(b) With the use of pumping Lemma show that the set $L = \{a^{i^2} \mid i \geq 1\}$ is not regular. 10

4. (a) With the help of Arden's theorem find the regular expression equivalent to following FA : 10



(b)



Find the regular expression equivalent to the diagram. 10

5. (a) Construct a D.F.A. for the Language :

$L = \{(ab)^i b^{2j} \mid i \geq 1, j \geq 1\}$. 10

(b) Design a D.F.A. for the Language : 10

L{w|every run of a's has length either two or three}.

6. (a) Explain post correspondence problem. 10

(b) Explain Church's thesis. 10

7. (a) Write CFG for Language 10

L = {a, b, ab, ba, aba, bab, abab, baba, ababa, babab, abababab .....}.

(b) Let us consider the grammar with productions 10

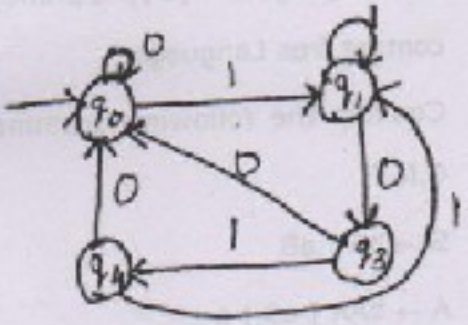
$S \rightarrow aA \mid bB$

$A \rightarrow aAA \mid aAB \mid a$

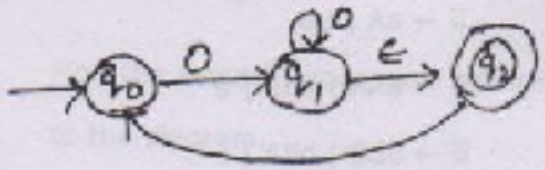
$B \rightarrow bBB \mid bBA \mid b$

Find an equivalent grammar in CNF.

8. (a) State and prove Arden's theorem. Find the regular expression for given transition diagram. 10



(b) Convert the following NFA with E-move to equivalent NFA. 10



1

9. (a) What do you mean by ambiguous grammar? Show that $S \rightarrow aSb \mid SS \mid \wedge$, is an ambiguous grammar. 10

(b) By using pumping lemma, Show that the Language $L = \{a^p / p \text{ is prime}\}$ is not context free Language. 10

10. (a) Convert the following grammar into C.N.F. 10

$S \rightarrow bA \mid aB$

$A \rightarrow bAA \mid aS \mid a$

$B \rightarrow aBB \mid b$

(b) Convert the grammar into G.N.F. 10

$S \rightarrow ABb \mid a$

$A \rightarrow aaA \mid B$

$B \rightarrow bAb$.