CBCS SCHEME

USN | | | | | | | | | | | **17CS51**

Fifth Semester B.E. Degree Examination, July/August 2021
Management and Entrepreneurship for IT Industry

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions.***

1 a. Define Management. Explain the functions of Management. **(10 Marks)**
b. What is Planning? Explain vital reasons which suggest the importance of planning. **(10 Marks)**

2 a. Why FW Taylor is called father of Scientific Management? **(10 Marks)**
b. Briefly explain the principles of Organisation. **(10 Marks)**

3 a. With a neat sketch, brief Maslow's Theory of Motivation. **(08 Marks)**
b. Describe any 3 essential factors of Effective Control System. **(06 Marks)**
c. Give importance of communication and coordination. **(06 Marks)**

4 a. Define Leadership. Explain in detail different leadership styles based on authority. **(10 Marks)**
b. Write a note on various sources of recruitment and selection process. **(10 Marks)**

5 a. Define Entrepreneur and explain functions of Entrepreneur. **(10 Marks)**
b. Explain various stages of entrepreneurial process. **(05 Marks)**
c. What are the barriers to entrepreneurship? **(05 Marks)**

6 a. Explain role of Entrepreneurs in economic development of the country. **(10 Marks)**
b. Write a note on Market feasibility study and Technical feasibility study of business opportunity. **(10 Marks)**

7 a. Define a Project and explain Project Identification process. **(12 Marks)**
b. Define ERP. Explain the basic functions of ERP. **(08 Marks)**

8 a. Write a note on Guidance by planning commission for project report. **(10 Marks)**
b. Explain Supply Chain Management. **(10 Marks)**

9 a. Define Small Scale Industry and explain characteristics of SSI. **(10 Marks)**
b. List out loan schemes provided by KSFC to support SSI. **(10 Marks)**

10 a. What is (IPR) Intellectual Property Right? Explain 3 types of patents in detail. **(08 Marks)**
b. Explain functions of DIC. **(06 Marks)**
c. List and explain functions of MSME - DI. **(06 Marks)**

* * * * *

CBCS SCHEME

USN | | | | | | | | | | |

17CS52

Fifth Semester B.E. Degree Examination, July/August 2021
Computer Networks

Time: 3 hrs. Max. Marks: 100

Note: *Answer any FIVE full questions.*

1 a. Explain the interface between the process and the computer Network socket with diagram. **(10 Marks)**

b. Describe persistent and non-persistent connections of HTTP. **(10 Marks)**

2 a. Explain the services offered by DNS and also explain the DNS record and message format. **(10 Marks)**

b. Define File Transfer Protocol, its connections and working. Writ about FTP commands and replies also. **(10 Marks)**

3 a. Explain connection oriented multiplexing and de-multiplexing. **(08 Marks)**

b. Alice wants to communicate Bob over a TCP connection. Design a model showing different stat transition they undergo during i) Connection establishment ii) Data transfer iii) Connection termination. **(08 Marks)**

c. Define rdt_send ( ) and rdt_rcv( ). **(04 Marks)**

4 a. Explain TCP segment and its services with a diagram. **(10 Marks)**

b. What is congestion in a network? How TCP handles congestion. **(10 Marks)**

5 a. What is routing? Explain the structure of router with a neat diagram. **(10 Marks)**

b. Explain the spanning tree algorithm and give its advantages and disadvantages. **(10 Marks)**

6 a. Discuss the IPV6 packet format. **(08 Marks)**

b. Describe Network layer services briefly. **(06 Marks)**

c. How does router determine the replacement VC number for a packet traversing the router? **(06 Marks)**

7 a. Define 5 elements of mobile network architecture. **(10 Marks)**

b. Explain Indirect and Direct Routing to Mobile node. **(10 Marks)**

8 a. What is hand off? What are the steps in accomplishing hand off? **(10 Marks)**

b. Compare mobile IP and GSM mobility. **(05 Marks)**

c. Explain Agent Discovery with diagram. **(05 Marks)**

9 a. Explain PCM Encoder and PCM Decoder. **(07 Marks)**

b. Briefly explain properties of Video and Audio. **(07 Marks)**

c. Describe the DiffServ Internet Architecture. **(06 Marks)**

10 a. Illustrate the interaction between Client and Server for HTTP streaming for Audio and Video. **(08 Marks)**

b. Explain content Distribution Network. **(08 Marks)**

c. Mention limitations of Best – Effort IP service. **(04 Marks)**

* * * * *

CBCS SCHEME

USN | | | | | | | | | | |

17CS53

Fifth Semester B.E. Degree Examination, July/August 2021
Database Management System

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions.***

1 a. Define DBMS. Discuss the advantages of DBMS over traditional file system. **(06 Marks)**
b. What are the responsibilities of DBA and Database Designers? **(04 Marks)**
c. With an aid of a neat diagram, describe a Three – Schema Architecture and Data Independence. **(10 Marks)**

2 a. What are Structural constraints on a relation type? Explain with examples. **(05 Marks)**
b. What is a Weak Entity type? Explain the role of partial key in design of weak entity type. **(05 Marks)**
c. Design an ER – Diagram for a UNIVERSITY database schema and indicate all key and cardinality constraints. **(10 Marks)**

3 a. List and explain characteristics of Relations. **(05 Marks)**
b. List Set theory operations used in relational data model. Explain any two with examples. **(05 Marks)**
c. Briefly discuss the different type of Update Operations on relational database. Show an example of a violation of the referential integrity in each of the update operations. **(10 Marks)**

4 a. Explain the following SQL commands : CREATE , INSERT , SELECT and UPDATE. Give their syntax and atleast one example for each. **(14 Marks)**
b. Write the SQL statement for the :
i) Show the resulting salaries if every employees working on the 'Product X' project is given a 10% raise.
ii) Retrieve all employees in department 5. Whose salary is between $ 30,000 and $ 40,000.
iii) Retrieve the name and address of all employees who work for the 'Research' department. **(06 Marks)**

5 a. Explain how the group by clause works. What is the difference between the WHERE and HAVING clause? **(05 Marks)**
b. What is a View? Explain how view's are created and dropped. **(05 Marks)**
c. Explain with an example constraints as Assertions and Actions as trigger. **(10 Marks)**

6 a. What is a CURSOR? Explain with example, retrieving multiple tuples with embedded SQL. **(10 Marks)**
b. Explain the concept of Create, Passing parameter, Call stored procedure from JDBC. **(10 Marks)**

7 a. Briefly explain the informal design guidelines used as measure to determine the quality of relations schema design. **(08 Marks)**
b. Define the 1NF, 2NF and 3NF with a suitable example for each. **(12 Marks)**

8 a. Write an Algorithm to find a minimal cover for a set of functional dependencies. **(06 Marks)**

b. Find the minimal cover of G : The given set of FDs be G : {A → BCDE , CD → E}. **(04 Marks)**

c. Define Multi – valued dependency. Explain 4NF with an example. **(10 Marks)**

9 a. Discuss ACID properties of a database transaction. **(04 Marks)**

b. Explain the following with suitable example :

i) The lost update problem ii) The Temporary update (dirty read) problem. **(06 Marks)**

c. What is Schedule? Explain Conflict Serialization schedule with example. **(10 Marks)**

10 a. Briefly explain the two phase locking protocol used in concurrency control. **(10 Marks)**

b. Explain the following with an example :

i) NO – UNDO / REDO Recovery based on deferred update.

ii) Shadow paging. **(10 Marks)**

* * * * *

CBCS SCHEME

USN | | | | | | | | | | |

17CS54

Fifth Semester B.E. Degree Examination, July/August 2021
Automata Theory and Computability

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions.

1 a. Define the following terms with examples:
(i) Alphabet (ii) Strings (iii) Kleene's closure
(iv) Languages (v) Concatenation **(05 Marks)**

b. Draw a DFA to accept the following languages.
(i) L = {w ∈ {a – z}*, all five vowels a, e, i, o and u occur in w in alphabetical order}
(ii) L = {w ∈ {a, b}*, set of all strings containing the substring "aab"} **(06 Marks)**

c. Convert the following ∈-NFA to its equivalent DFA. [Refer Fig.Q1(c)]

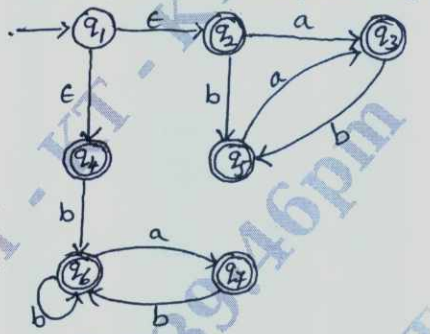

Fig.Q1(c) **(09 Marks)**

2 a. Obtain a DFA to accept the following language.
L = {w ∈ {a, b}*, $N_a(w)$ mod 5 = 0 and $N_b(w)$ mod 3 = 0} **(06 Marks)**

b. Give the differences between DFA, NFA and ∈-NFA. **(05 Marks)**

c. Minimize the following DFSM. [Refer Fig.Q2(c)]

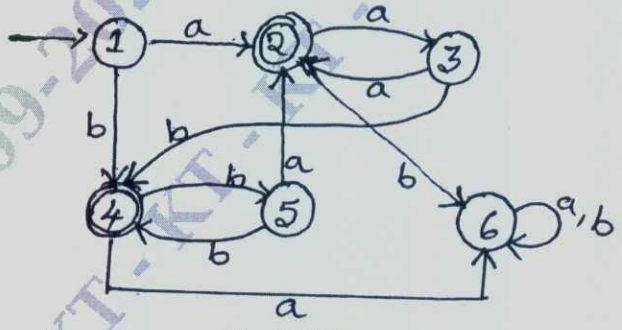

Fig.Q2(c) **(09 Marks)**

3 a. Obtain a regular expression for each of the following languages:
(i) L = {w|w∈{a, b}* with atleast three consecutive zero's} **(03 Marks)**
(ii) L = {w∈{a, b}* set of all strings starting with a and ending with b} **(03 Marks)**
(iii) L = {w|w∈{a, b}* whose second symbol from the right end is 'a'} **(04 Marks)**

b. Obtain the regular expression for the following FSM using Kleene's theorem.

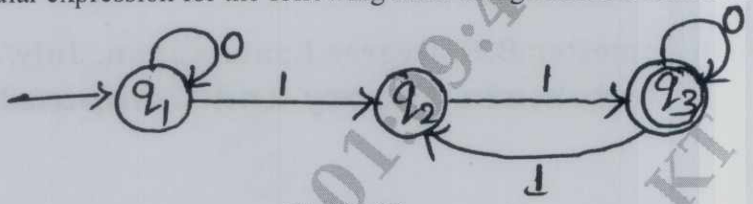

Fig.Q3(b) **(10 Marks)**

4 a. Show that the following languages are not regular:
(i) $L = \{a^n b^n \mid n \geq 0\}$ (ii) $L = \{1^p \mid p \text{ is prime}\}$ **(08 Marks)**

b. Simplify the following regular expression $((a^* \cup \phi)^* \cup aa)\ (b \cup bb)^*\ b^*\ ((a \cup b)^* b^* \cup ab)^*$ **(06 Marks)**

c. If L_1 and L_2 are regular languages, then prove that $L_1 \cup L_2$, $L_1 \cdot L_2$ and L_1^* are regular languages. **(06 Marks)**

5 a. Obtain a grammar to generate each of the following languages:
(i) $L = \{a^n b^{2n} : n \geq 0\}$
(ii) $L = \{ww^R \text{ where } w \in \{a, b\}^*\}$ **(05 Marks)**

b. If the following grammar ambiguous?
$S \rightarrow aS|X$
$X \rightarrow aX|a$ **(05 Marks)**

c. Convert the following grammar to Chomsky Normal Form (CNF).
$S \rightarrow aACa$
$A \rightarrow B \mid a$
$B \rightarrow C \mid c$
$C \rightarrow cC \mid \in$ **(10 Marks)**

6 a. Define PDA and obtain a PDA to accept a string of balanced parenthesis. **(04 Marks)**

b. Construct a PDA to accept the language $L = \{wcw^R \mid w \in \{a, b\}^*\}$. Draw the graphical representation of this PDA. Show the moves made by this PDA for the string "abCba" **(10 Marks)**

c. Convert the following grammar into equivalent PDA.
$E \rightarrow E + T$
$E \rightarrow T$
$T \rightarrow T * F$
$T \rightarrow F$
$F \rightarrow (E)$
$F \rightarrow id$ **(06 Marks)**

7 a. If L_1 and L_2 are Context Free Languages (CFL's), then prove $L_1 \cup L_2$, $L_1 \cdot L_2$ and L_1^* are context free languages. **(05 Marks)**

b. State and prove pumping lemma for context free languages and show that $L = \{a^n b^n c^n \mid n \geq 0\}$ is not context free. **(10 Marks)**

c. Explain with neat diagram the working of turing machine model. **(05 Marks)**

8 a. Explain with neat diagram, the model of Linear Bounded Automata (LBA). **(06 Marks)**

b. Design a TM (Turing Machine) that accepts $L = \{0^n1^n \mid n \geq 1\}$. **(06 Marks)**

c. Consider the turing description given in the following table. Draw the computation sequence of the input string "00". **(08 Marks)**

Present State	Tape symbols		
	b	0	1
$\rightarrow q_1$	1 L q_2	0 R q_1	
q_2	b R q_3	0 L q_2	1 L q_2
q_3	-	b R q_4	b R q_5
q_4	0 R q_5	0 R q_4	1 R q_4
q_5	0 L q_2		

9 a. M is a turing machine represented by the transition diagram. Obtain the computation sequence of M for processing the input string "0011". {Refer Fig.Q9(a)]

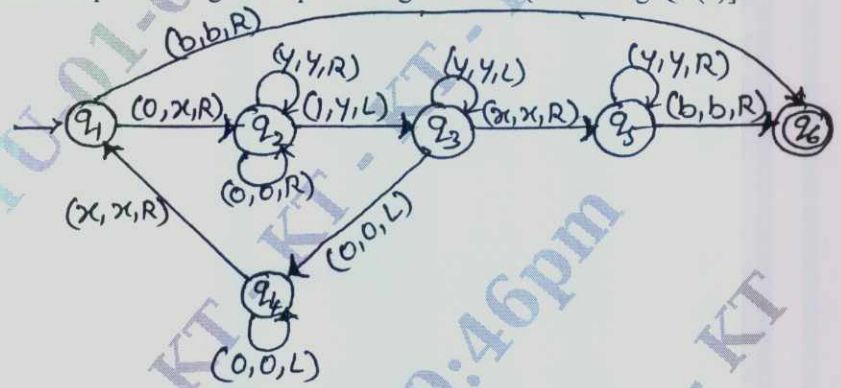

Fig.Q9(a) **(06 Marks)**

b. Design a Turing Machine (TM) to recognize all strings consisting of an even number of 1's. **(04 Marks)**

c. Design a Turing Machine (TM) to recognize the language. $L = \{1^n2^n3^n \mid n \geq 1\}$ **(10 Marks)**

10 Write short notes on:

a. Decidable and undecidable languages **(05 Marks)**

b. Halting problem of TM **(05 Marks)**

c. Post-correspondence problem **(05 Marks)**

d. Church-Turing thesis **(05 Marks)**

* * * * *

CBCS SCHEME

USN | | | | | | | | | | |

17CS562

Fifth Semester B.E. Degree Examination, July/August 2021
Artificial Intelligence

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions.

1 a. What is Artificial Intelligence? Explain. **(06 Marks)**

b. A water jug problem: Two Jugs of 4L and 3L capacity (No marker on it). How can you get exactly 2L of water into 4L jug? Write both production rule and solution. **(10 Marks)**

c. What is meant by uniformed search? Explain Depth-first-search strategy. **(04 Marks)**

2 a. What is an AI technique? Explain. **(06 Marks)**

b. Write a note on Production System. **(06 Marks)**

c. Crypt arithmetic problem:

SEND
+ MORE
MONEY

Initial state: No two letters have same value. Sum of digits must be shown. **(08 Marks)**

3 a. Explain mapping between Facts and representation with example. **(05 Marks)**

b. Explain Forward and Backward reasoning. **(05 Marks)**

c. Translate following into First Order Logic:
(i) All pompeins were Romans.
(ii) All Romans are either loyal to Caesar or hated him.
(iii) Everyone is loyal to someone.
(iv) Was Macrus loyal to Caesar?
(v) All pompeins died when the voleano errupted in 79AD. **(10 Marks)**

4 a. Explain Inheritable knowledge. **(06 Marks)**

b. Consider following sentences:
(i) John likes all kind of food.
(ii) Apple and Chicken are food.
(iii) Anything anyone eats and is not killed by is food.
(iv) Bill eats peanuts and is still alive.
(v) Sue eats everything bill eats.
Using resolution prove that "John likes Peanuts". **(10 Marks)**

c. Write a note on Matching. **(04 Marks)**

5 a. Explain logics for Non-Monotonic reasoning. **(06 Marks)**

b. What is Bayesian Network? Explain semantics of it. **(08 Marks)**

c. Explain slot as full-fledged objects. **(06 Marks)**

6	a.	Explain implementation of Breadth-first search.	(08 Marks)
	b.	State Baye's theorem. How it is used in statistical reasoning?	(08 Marks)
	c.	Write a note on Semantic Nets.	(04 Marks)
7	a.	Explain Conceptual dependency.	(08 Marks)
	b.	What is global ontology? Explain.	(06 Marks)
	c.	Write about iterative deepening.	(06 Marks)
8	a.	Explain CYC and its motivations.	(10 Marks)
	b.	Explain Min Max search procedure.	(10 Marks)
9	a.	Explain various steps in natural language understanding process.	(10 Marks)
	b.	Write a note on Knowledge Acquisition.	(10 Marks)
10	a.	Explain how decision trees are used in learning.	(06 Marks)
	b.	What are the capabilities expected from expert systems.	(08 Marks)
	c.	Explain the process of learning from examples.	(06 Marks)

* * * * *