MOTIHARI COLLEGE OF ENGINEERING, MOTIHARI

Name of Examination:	B.Tech Mid Semester Examination Mar 2023			
Branch:	**CSE**		Semester:	**5th**
Subject Name:	**Software Engineering**		Subject Code:	105504
Time:	2 hours	Full Marks: 20	**Roll NO.**	

Instruction:

a. *There are four questions in this Paper. Question No. 1 is compulsory.*
b. *Students have to attempt either part (a) or (b) from remaining questions. The marks are indicated in the right-hand margin.*
c. *Draw the necessary neat and clean diagram wherever applicable.*
d. *Write to the point only, writing unnecessary and irrelevant things may lead to reduction of marks.*

Q. 1 State, Whether true or false for the following questions.

(a)	Software maintenance costs are expensive in contrast to software development.	1		
(b)	RAD stands for Rapid Application Document.	1		
(c)	A Software Requirements Specification (SRS) document should avoid discussing Non-functional requirement.	1		
(d)	The spiral model was originally proposed by IBM.	1		
(e)	The SRS report is also known as the black box specification of a system.	1		

Q. 2 **(a)** Define software engineering according to IEEE. What is software process and describe the activities in software process. **5** **[CO1,3]**

OR

(b) What are the various phases of Software Development Life Cycle (SDLC)? **5** **[CO1]**

Q. 3 **(a)** Write the advantages and disadvantages of waterfall model. **5** **[CO3]**

OR

(b) Explain incremental model in software engineering **5** **[CO3]**

Q. 4 **(a)** Explain Requirement Engineering (RE) Process in details. **5** **[CO2]**

OR

(b) What is SRS document? List out the characteristics of good SRS document? **5.** **[CO2]**

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MOTIHARI COLLEGE OF ENGINEERING, MOTIHARI

Odd Semester Session 2022-23 Mid Semester Exam

B. Tech. 5th Semester, Computer Science Engineering

Professional Skill Development

Time: 2 Hrs. Maximum Marks 20

Section A

Q1. Attempt all questions: **(1X5 = 5 Marks)**

a What is Skill?

b What do you mean by Attributes?

c Who is public speaker?

d What is Etiquette?

e What is emotional intelligence?

Section B

Q2-Q4 Attempt all questions: **(5X3 = 15 Marks)**

Q2 i) Discuss the preparation process of public speaking?

OR

ii) Discuss the role of gestures and body language in public speaking?.

Q3 i) Discuss the attributes of interpersonal skills?

OR

ii) What is negotiation skill? How it works for a professional?

Q4 i) What is stress management? Discuss the factors causes stress at work place?

OR

ii) Write a resume for the post of software programmer in TCS?

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MOTIHARI COLLEGE OF ENGINEERING, MOTIHARI

Odd Semester Session 2022-23 Mid Semester Exam

B. Tech. 5th Semester, CSE

Subject:-FLAT

Time: 2 Hrs. Maximum Marks 20

Section A

Q1. Attempt all questions: **(1X5 = 5 Marks)**

a. Explain symbol, alphabet.

b. Describe Type 3 grammar.

c. How many tuples use in NDFA.

d. Explain transition state.

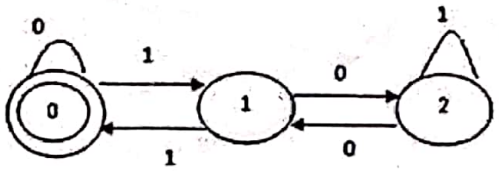
e. How many tuples in regular grammar.

Section B

Q2-Q4 Attempt all questions: **(5X3 = 15 Marks)**

Q2

(i) Convert the following DFA to a regular expression using state elimination method.



OR

(ii) Write the DFA for the following language over Σ = {a, b}

a. L= {awa| w ε(a,b)*}

b. L= {w, |w| mod 3=0}

c. L= {w |w| mod 5=0}

Q3 i) Write differences between NDFA and DFA.

OR

ii) Proof Arden's state elimination method

R=P+RQ is R=PQ*

Q4 i) Explain DFA minimization rules with example.

OR

ii) Convert the following NFA to DFA and informally describe the language it accepts.

	0	1
p	{p,q}	{p}
q	{r,s}	{t}
r	{p,r}	{t}
*s	ϕ	ϕ
*t	ϕ	ϕ

Here,

p, q, r, s and t are states.

0 and 1 are alphabets.

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MOTIHARI COLLEGE OF ENGINEERING, MOTIHARI

Odd Semester Session 2022-23 Mid Semester Exam

B. Tech. 5th Semester, Computer science And Engineering

DATA BASE MANAGEMENT SYSTEM

Time: 2 Hrs. Maximum Marks 20

Section A

Q1. Attempt all questions: **(IX5 = 5 Marks)**

a A database management system **CO2**

(A) Allows simultaneous access to multiple files

(B) Can do more than a record management system

(C) Is a collection of programs for managing data in a single file

(D) None of the above

b A logical schema **CO1**

(A) is the entire database.

(B) Is a standard way of organizing information into accessible parts.

(C) Describes how data is actually stored on disk.

(D) both (A) and (C)

c The minimal set of super key is called **CO2**

(A) Primary key

(B) Secondary key

(C) Candidate key

(D) Foreign key

d In any hierarchy of data organization, the smallest entity to be processed as a single unit is called **CO1**

(A) Data field

(B) Data record

(C) Data file

(D) Database

e In SQL, which command is used to remove a stored function from the database? **CO3**

(A) Remove Function

(B) Delete Function

(C) Drop Function

(D) Erase Function

Section B

Q2-Q4 Attempt all questions:

(5X3 = 15 Marks)

Q2 (a) Define E-R model with example. Write about different component of ER Model. **CO2**

(b) How to convert an E-R model into relational schema?

OR

(a) What are functional dependencies? Write different types of functional dependencies, **CO3**

(b) Explain 1NF, 2NF, 3NF and BCNF with examples.

Q3 Describe difference between BCNF vs 3 NF. **CO3**

R(ABCDEFGH)
FD :
CH-> G
A->BC
B->CFH
E->A
F->EG

Find the minimal set and define which type of Normalization for above functional dependency and their relational tables after normalization

OR

(a) Describe the detail about different types of constraints that can be specified on a relation. **CO2**

(b) Explain Armstrong rule and their different properties.

Q4 What is FD and their types? **CO3**

Show the relationship between two FD sets. A relation R(A,B,C,D) having two FD sets

FD1 :	FD2 :
A->B,	A->B,
B->C,	B->C,
A->C	A->D

OR

Explain any two out of three

(a) Explain the concept of keys. **CO2**

(b) Explain different types of anomalies with proper examples.

(c) Describe lossless join decomposition.

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MOTIHARI COLLEGE OF ENGINEERING, MOTIHARI

Odd Semester Session 2022-23 Mid Semester Exam

B. Tech. 5th Semester, Computer Science and Engineering

Artificial Intelligence

Time: 2 Hrs. Maximum Marks 20

Section A

Q1. Attempt all questions: **(1X5 = 5 Marks)**

a. Define Artificial Intelligence. **CO 1**

b. What is Turing Test in AI ? **CO 1**

c. What are the applications of AI ? **CO 1**

d. What is Heuristic Search in AI ? **CO 2**

e. Differentiate between Uniformed and Informed Search techniques. **CO 2**

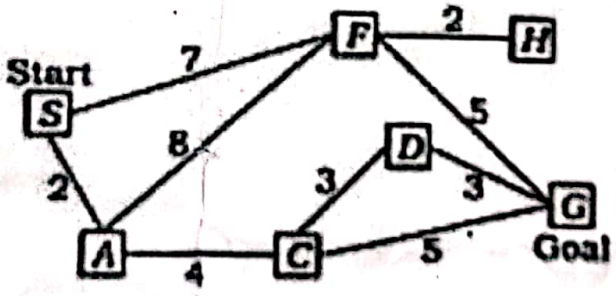
Section B

Q2-Q4 Attempt all questions: **(5X3 = 15 Marks)**

Q2 i) What is Best First Search ? Explain the algorithm with a suitable example. **CO 2**

OR

ii) Suppose that you need to find a path between S and G in the state space defined by the following non-directed graph. The number attached to each edge is the cost of traversing the edge (in either direction). Suppose that a given heuristic function **h** defined according to the following table: **CO 2**



State	S	A	C	D	F	G	H
h	10	5	4	3	4	0	2

(a) Show the search trees generated for this problem using A* search algorithm.

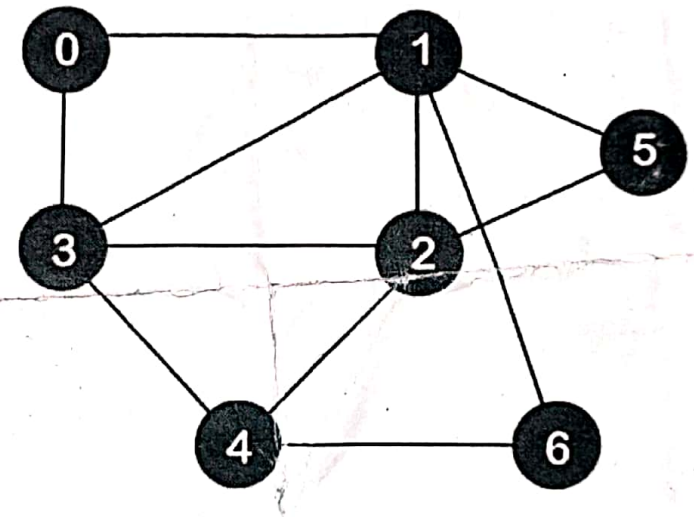
(b) Is this heuristic admissible ? Why ?

Q3 i) Solve the 8-puzzle problem without Heuristic Search technique and with Heuristic Search technique. **CO 1**

OR

CO 1

ii) Find the order of node traversal for the given graph using BFS and DFS (0 is the starting node):



Q4 i) Explain AO* search algorithm in AI with a suitable example. **CO 3**

OR

ii) Explain Alpha – Beta Pruning technique in Game Playing of AI with a suitable example. **CO 3**

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