MGM UNIVERSITY, AURANGABAD

Mid Semester Examination – April. 2022

Course: SY-B. Tech (All) **Sem: IV**

Subject Name: Engineering Statistics **Subject Code:** 20UCC401B

Max Marks: 20 **Date:-04/03/2024** **Duration:- 1 Hr.**

Instructions to the Students:

1. All questions are compulsory.
2. Use of Non-Programmable calculator is allowed.
3. Figures to the right indicate full marks.

		(Level/ CO)	Marks
Q. 1	**Attempt the following.**		**6**
1.	The mean and mode of some data are 4 and 10 respectively, it's median will be …. **(a)** 1.5 (b) 5.3 (c) 16 (d) 6	**CO1**	
2.	If mean and coefficient of variation of the data set is 10 and 5 respectively, then the standard deviation is … (a) 10 (b) 0.5 (c) 5 (d)none of these	**CO1**	
3.	A dice is thrown twice. What is the probability of getting sum divisible by three? (a) 11/36 (b) 13/36 (c) 1/36 (d) none of these	**CO2**	
4.	If X is a continuous random variable with probability density function f(x) then … which of the following is equal to 1. (a) $\int_{-\infty}^{+\infty} f(x)\ dx$ (b) $\sum f(x)$ (c) both (a) and (b) (d) none of these	**CO2**	
5.	Suppose 300 misprints are distributed randomly throughout the book of 500 pages. By Poisson's distribution what is the probability that a given page contains exactly 2 misprints? (a) 0.1313 (b) 0.2313 (c) 0.0988 (d) none of these	**CO3**	
6.	Suppose 10% of new scooter will require warranty service within the first month of its sale a scooter manufacturing company sales 1000 scooter in a month then standard deviation is….. (a) 100 (b) 200 (c) 10 d) none of these	**CO3**	
Q.2	**Solve Any Two of the following.**		**6**
(A)	A cyclist pedals from his house to his college at a speed of 10 m.p.h. and back from the college to his house at 15 m.p.h. Find the average speed.	**CO1**	
(B)	Seven employees in a company of 20 are graduates. If 3 are selected out of 20 at random. What is the probability that there is at least one graduate among them?	**CO2**	
(C)	A sample of 100 dry battery cells tested to find length of life produced the following results: M = 12 hours, σ = **3** hours Assuming the data to be normally distributed, what percentage of battery cells expected to have life	**CO3**	

11 MAR 2024/SY/CSE/MSE/II/23-24/CSE

a) more than 15 hours
b) between 10 and 14 hours.
Given data: A(0 to 1)=0.3413, A(0 to 0.67)=0.2487

Q. 3 Solve Any Two of the following. 8

(A) A frequency distribution of heights (recorded to the nearest inch) of 100 male students at MGM University is given in the following Table. Find the standard deviation of the heights of the 100 male students at MGM University. **CO1**

Height (in)	Number of Students
60–62	7
63–65	20
66–68	40
69–71	25
72–74	8

(B) Suppose an item is manufactured by three machines X, Y and Z. All three machines have equal capacity and operated at same rate. It is known that the percentage of defective items produced by X, Y, Z is 2, 7 and 12 percent respectively. All items produced by X, Y, Z are put into one bin. From this bin one item is drawn at random and is found to be defective. What is the probability this item was produced on machine Y? **CO2**

(C) A factory finds that on an average 10% of pens produced by a machine to be defective for certain specified requirement. If 10 pens are selected at random from days product, Use binomial distribution to find the probability that **CO3**

a) exactly three pens are defective
b) 2 or more pens are defective
c) less than 3 pens are defective.

***** End *****

MGM University
Jawaharlal Nehru Engineering College, Aurangabad
Mid Semester Examination – March 2023

Program : B. Tech in Computer Science Engineering **Sem: IV**
Course Name: Design and analysis of Algorithm **Subject Code: 20UCS403D**
Max Marks: 20 **Date:- 05/03/2024** **Duration:- 1 Hr**

Instructions to the students
1. Check that you have received a correct Question paper.
2. Assume suitable data if necessary and mention it clearly
3. Draw neat labeled diagrams wherever necessary

Q No		C.O	B.L	Marks
Q 1	**Attempt following questions**			1*6
A	Define 'Algorithm'	CO1	Low	
B	Define Min Heap	CO1	Low	
C	Create Max Heap for given element 10,5,15,3,25	CO1	High	
D	Time complexity of Insertion sort is---------	CO1	Medium	
E	What are various design techniques of an Algorithm	CO1	Medium	
F	How many number of comparisons are required in Bubble sort A. n^2 B. n C. n-1 D. n/2	CO2	Low	
Q 2	**Solve any two of the following**			3* 2
(A)	Explain Greedy Method in detail	CO3	Low	
(B)	Find an optimal solution to the knapsack instance n=7,m=15,(P1…P7) =(10,5,15,7,6,18,3) and (w1,…,w7)=(2,3,5,7,1,4,1)	CO3	High	
(C)	Define Job Sequencing with Deadlines. Explain with Example	CO3	Medium	
Q 3	**Solve any one of the following.**			8
(A)	Write an Algorithm for Binary Search	CO2	Medium	4
(B)	Derive its recurrence relation for $T(n) = \begin{cases} T(\lceil n/2 \rceil) + T(\lceil n/2 \rceil) + 2 & n > 2 \\ 1 & n = 2 \\ 0 & n = 1 \end{cases}$	CO2	High	4
	OR			
(C)	What is Divide and conquer technique? Sort following sequence using Quicksort technique. 65,70,75,80,85,60,55,50,45 Comment on its best and worst case time complexity	CO2	High	8
	END			

11 MAR 2024/SY/CSE/MSE/II/23-24/CSE

MGM University

Jawaharlal Nehru Engineering College, Ch.Sambhajinagar

Mid Semester Examination – March 2024

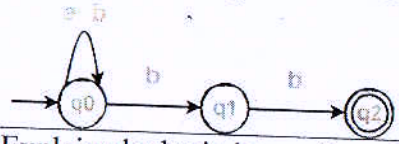
Program : B. Tech in Computer Science & Engineering **Sem:** IV

Course Name: Formal Language Automata Theory **Subject Code**: 20UCS404D

Max Marks: 20 **Date**:- 6th March 2024 **Duration:**- 1 Hr

Instructions to the students:

1. All questions are compulsory
2. Illustrate your answers with neat sketches, diagram, flowcharts etc wherever necessary.

Q.No	Questions MSE	CO	BL	Marks
Q. 1	**Solve all of the following.**			**6**
1	In the ____, the machine only goes to one state for each input character. a) DFA b) NFA	1	1	1
2	Which one of the following languages over the alphabet {0,1} is described by the regular expression: (0+1)*0(0+1)*0(0+1)* ? **The set of all strings,** a) Containing the substring 00. b) Containing at most two 0's. c) Containing at least two 0's. d) That begin and end with either 0 or 1.	2	1	1
3	A→BC B→ x | Bx C → B | D D→ y | Ey E→ z The terminal alphabet of the grammar is , a) {A,B,C,D,E} b) {A,B,C} c) {x,y,z} d) None of the above	3	1	1
4	S →aAB A→aBB | a B→aAB/ b Choose correct statement? Which grammar can derive from above? a) abbb can be derived b) ababb can be derived c) ababab can be derived d) aabbb can be derived	3	1	1
5	Which among the following is the root of the parse tree? (a) Production P (b)Non-terminal V (c)Terminal T (d)Starting symbol S	3	1	1
6	A context free language is called ambiguous if , (a) It has two or more leftmost derivations for some terminal string (b) It has two or more leftmost derivations for some terminal string (c) Both A and B(d) None of these	3	1	1
Q.2	**Solve any two of the following.**			**3*2**
	Convert Following NFA to DFA 	2	2	3
2	Explain algebraic laws of regular expression.	2	2	3
3	Design a FA from given regular expression 10 + (0 + 11)0* 1.	2	2	3
Q.3	**Solve any two of the following.**			**4*2**
1	Explain CFG with suitable example	3	2	4
2	Check whether the given grammar is ambiguous or not- consider string "ab" S → A | B A → aAb | ab B → abB | ∈	3	2	4
3	Derive string "bbaababa" for leftmost derivation ,rightmost derivation and parse tree. Production Rule: S → bB | aA A → b | bS | aAA B → a | aS | bBB	3	2	4

***END**

11 MAR 2024/SY/CSE/MSE/II/23-24/CSE

MGM University
Jawaharlal Nehru Engineering College, ChhSambhajinagar
Mid Semester Examination Feb – 2024

Program : **B. Tech in CSE** Sem:-IV
Course Name: **Object Oriented Programming** Subject Code:- **20UCS405D**
Max Marks: **20** Date:- **7/3/ 2024** Duration:- **1 Hr**

Instructions to the students
1. All questions are compulsory.
2. Draw necessary diagram.

Q No		C.O	B.L	Marks
Q 1	**Tick the right answer.**			**1*6=6**
1.	**Select the valid Statement** a)char[ ] ch = new char(5) b) char[ ] ch = new char[5] c)char[ ] ch = new char( ) d) char[ ] ch = new char [ ]	1	1	1
2.	**Can we overload main() method in java?** a) Yes , we can have many number of main() methods in a class by method overloading b) No we can not overload main method	1	1	1
3.	**What is the length of an array whose first Index is denoted by i and last index is denoted by j?** a) length of an array = i+j b) length of an array = j-i-1 c) length of an array = j-i d) length of an array = j-i+1	1	1	1
4.	**Identify the modifier which can not be used for Constructor** a) private b) public c) protected d) Static	1	1	1

5.	**Write the output of following program**
	`public class Test`
	`{`
	`public static void main(String[] args) {`
	`String str = "Hello";`
	`str += "World!";`
	`System.out.println(str.length());`
	`}}`
	a)12 b)5 c)11 d)Compile time error
		1	1	1

6.	**Write the output of following program**
	`public class Test {`
	`public static void main(String[] args) {`
	`String str = null;`
	`System.out.println(str.valueOf(10));`
	`}}`
	a) Compile Error b) 10
	c) NullPointerException d) null
		1	1	1

Q 2	**Solve any two of the following.**			**3 * 2=6**
(A)	What is package? Explain any two built in packages?	2	2	3
(B)	How can we implement multiple inheritances in java by interface?	2	2	3
(C)	Write a Java program to create an interface Rectangle and Circle with the getAreaRectangle() and getAreaCircle() method respectively. Create one class shape which implements both interfaces.	2	2	3
Q 3	**Solve any two of the following.**			**4*2 =8**
(A)	Explain exception handling in java by using try catch block with example.	3	3	4
(B)	Distinguish between process and thread.	3	3	4
(C)	Write a program to create an user defined exception.	3	3	4

09.2.24 11 MAR 2024/SY/CSE/MSE/II/23-24/CSE

MGM University
Jawaharlal Nehru Engineering College, ChhSambhajinagar
Mid Semester Examination –March 2024

Program : **B. Tech in CSE** Sem:- **IV**
Course Name: **Microprocessor and Microcontroller** Subject Code:-**20UCS406D**
Max Marks: **20** Date:- **08 /03/24** Duration:- **1 Hr**

Instructions to the students
1. All questions are compulsory.
2. Draw necessary diagram.

Q No		C.O	B.L	Marks
Q 1	**Tick the right answer.**			**1*6=6**
1.	Identify the odd man out A)Parity Flag B) Direction Flag C) Zero Flag D) Overflow Flag	1	Low	1
2.	Address of next instruction hold by _____register A)IP B) IR C) SI D) DI	1	Medium	1
3.	The BIU prefetches the instruction from memory and store them in------- A) queue B)register C) memory D) stack	1	High	1
4.	The _____ address of a memory is a 20 bit address for the 8086 microprocessor A) Physical B) Logical C) Both A and B D) none of these	1	Low	1
5.	The IP is bits in length A) 8 bits B) 4 bits C) 16 bits D) 32 bits	1	Medium	1
6.	8086 can access up to? A) 512KB B) 1Mb C) 2Mb D) 256KB	1	High	1
Q 2	**Solve any two of the following.**			**3 * 2=6**
(A)	Explain the following instruction of 8086 with example. LOOP, AAA, XCHG	2	Low	3
(B)	Differentiate Procedure and Macro.	2	Medium	3
(C)	Write an assembly language program using procedure.	2	High	3
Q 3	**Solve any one of the following.**			**4*2 =8**
(A)	Explain full, block and partial address decoding techniques.	3	Low	4
(B)	Design 8086 based system for interfacing of 8K SRAM (using two 4 KB chips), indentify the no. of address line required and starting-ending address of each RAM and prepare address map.	3	Medium	4
(C)	Design 8086 based system for interfacing of 8K EPROM (using two 4 KB chips) and 8 K RAM (using two 4 KB chips), Consider the end address of EPROM as FFFFFH	3	High	4

11 MAR 2024/SY/CSE/MSE/II/23-24/CSE