Total No. of Questions: 3

Enrollment No. EN21CS301664

Faculty of Engineering

Mid Sem I Examination March - 2023

CS3CO38 Theory of Computation

Programme: B.Tech. Branch/Specialisation: CSE

Duration: 1.5 Hrs. **Maximum Marks: 30**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	CO	PO	PSO
Q.1	i.	Which of the following is false (a) $\Sigma^*\cup\Sigma'=\Sigma^*$ (b) $\Sigma'\subseteq\Sigma^*$ (c) $\Sigma^*\cap\Sigma'=\Sigma^*$ (d) $\Sigma'.\Sigma'=\Sigma'-\Sigma'$	1	BL_{01}	CO_{03}	PO_{01}	
	ii.	Choose the correct statement from the following (a) Every non RL is infinite (b) Every non RL is finite (c) Every RL is infinite (d) Every RL is finite	1	BL_{01}	CO_{01}	PO_{01}	
	iii.	Which two of the following out of four regular expressions(RE) are equivalent (I) $(00)^*(\varepsilon+0)$ (II) $(00)^*$ (III) 0^* (IV) $0(00)^*$ (a) I & II (b) II & III (c) III & IV (d) I & III	1	BL_{01}	CO_{03}	PO_{01}	
	iv.	If we convert from NFA to DFA then number of states always: (a) Increase (b) Decrease (c) Dependance on Automata (d) None of these	1	BL_{01}	CO_{01}	PO_{02}	
	v.	Myhill-Nerode theorem is used for: (a) Providing regular or non-regular (b) Minimization of FA (d) Finding equivalent classes (d) All of these	1	BL_{02}	CO_{01}	PO_{01}	

	vi.	Which of the following statement is correct (I) NFA is more powerful than DFA (II) NFA and DFA are equivalent in power (III) NFA can accept more no of Languages compared to DFA (a) Only I is correct (b) Only II is correct (c) Only IIII is correct (d) Above all are correct	1	BL_{01}	CO_{01}	PO_{01}
Q.2	i.	What is Finite Automata with tuples?	2	BL_{01}	CO_{01}	PO_{01}
	ii.	Explain regular expression with example.	2	BL_{01}	CO_{02}	PO_{02}
	iii.	Construct FSA for the following language over $\Sigma=\{a,b\}$ (a) $L=\{(ab^*)^*\}$ (b) $L=\{b^*a+b^*\}$	3	BL_{03}	CO_{03}	PO_{03}
	iv.	Explain different closure properties of regular language.	5	BL_{01}	CO_{03}	PO_{01}
OR	v.	Write Difference between Mealy and Moore machine.	5	BL_{02}	CO_{01}	PO_{03}
Q.3	i.	What is Arden's theorem?	2	BL_{01}	CO_{01}	PO_{01}
	ii.	Explain (ε) - NDFA.	4	BL_{01}	CO_{02}	PO_{04}
	iii.	What are the difference between DFA & NFA	6	BL_{01}	CO_{04}	PO_{02}
OR	iv.	State pumping lemma for regular languages. Also proof that $L=\{a^n/n$ is a prime number$\}$ is not regular language.	6	BL_{03}	CO_{01}	PO_{03}

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Enrollment No.

MEDI-CAPS UNIVERSITY
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Faculty of Engineering
Mid Sem I Examination March - 2023
CS3CO35 Microprocessor & Interfacing

Programme: B.Tech. Branch/Specialisation: CSE

Duration: 1.5 Hrs. **Maximum Marks: 30**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q. (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	CO	PO	PSO
Q.1	i.	What is maximum address capacity of 8085 Microprocessor? a. 64KB b. 1 MB c. 4 KB d. 32KB	1	BL02	CO1	PO3, PO11	
	ii.	There are _____ general purpose registers in 8085 processor a. 5 b. 6 c. 7 d. 8	1	BL01	CO1	PO3, PO11	
	iii.	Which of the following interrupt is non-vectored in 8085? a. RST 7.5 b. RST 6.5 c. TRAP d. INTR	1	BL02	CO1	PO3, PO11	
	iv.	What is stored in the H & L general-purpose register? a. Opcode b. Address of memory c. Address of next instruction d. Temporary data	1	BL01	CO2	PO3, PO5, PO11	
	v.	Which of the following is a 2-byte instruction? a. LDA 2500H b.MOV A, B c. IN 01H d. JMP 2085H	1	BL02	CO2	PO3, PO5, PO11	
	vi.	With respect to operating system which of	1	BL01			

	vi.	Which addressing mode execute its instructions within CPU without the necessity of reference memory for operands? a. Implied Mode b. Immediate Mode c. Direct Mode d. Register Mode		BL02	CO2	PO3, PO5, PO11
Q.2	i.	What do you mean by interrupt?	2		CO1	PO3
	ii.	Explain features of DMA operation.	2		CO1	PO3, PO11
	iii.	What is demultiplexing of Address/ Data lines in 8085 Microprocessor, why it is needed.	3		CO1	PO3, PO11
	iv.	Draw and explain architecture of 8085 Microprocessor.	5			PO3, PO11
OR	v.	Explain these PINs of 8085 Microprocessor: READY, ALE, TRAP, HOLD, RES'	5	BL		PO3, PO11
Q.3	i.	What is instruction set? explain.	2	BL02		
	ii.	What is subroutine? explain with example.	4	BL01	CO	
	iii.	Explain addressing modes of 8085 microprocessor with examples.	6	BL02	CO2	
OR	iv.	Explain these instructions with example: ADD, LXI, MOV, PUSH, XCHG, INX				

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Enrollment No.

Faculty of Engineering

Mid Sem I Examination March - 2023

CS3CO37 Advanced Java Programming

Programme: B.Tech. Branch/Specialisation: CSE

Duration: 1.5 Hrs. **Maximum Marks: 30**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	CO	PO	PSO
Q.1	i.	Which of the following cannot be Type parameterized? a) Overloaded Methods b) Generic methods c) Class methods d) Overriding methods	1	BL1	CO1	PO2	
	ii.	Which of this type of parameters is used for a generic class to return and accept any type of object? a) K b) N c) T d) V	1	BL1	CO1	PO2	
	iii.	What is meant by the term generics? a) Class b) Structure c) Interface d) Parameterized types	1	BL1	CO1	PO1	
	iv.	Servlet are used to program which component in a web application? a) client b) server c) tomcat d) applet	1	BL2	CO2	PO4	
	vi.	With respect to operating system which of the following is not a valid process state	1	BL01	CO		

	v.	Which of the following is true about servlets? a) Servlets execute within the address space of web server b) Servlets are platform-independent because they are written in java c) Servlets can use the full functionality of the Java class libraries d) Servlets execute within the address space of web server, platform independent and uses the functionality of java class libraries	1	BL2	CO2	PO1
	vi.	What type of protocol is HTTP? a) stateless b) stateful c) transfer protocol d) information protocol	1	BL2	CO2	PO1
Q.2	i.	Explain the term Wildcards.	2	BL1	CO1	PO1
	ii.	Define Generic class.	2	BL1	CO1	PO1
	iii.	Define Lambda Expressions.	3	BL1	CO1	PO1
	iv.	Differentiate between Upper bounded and lower bounded wildcards	5	BL1	CO1	PO2
OR	v.	How to insert and delete elements from a LinkedList.	5	BL1	CO1	PO2
Q.3	i.	What do you mean by web application?	2	BL2	CO2	PO1
	ii.	Define any three HTTP methods.	4	BL2	CO2	PO1
	iii.	Explain MVC design Pattern with example.	6	BL2	CO2	PO2
OR	iv.	Explain servlet Listeners.	6	BL2	CO2	PO3

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Mid Sem I Examination March -2023

CS3CO36 Operating System

Programme: B.Tech. Branch/Specialisation: CSE

Duration: 1.5 Hrs. **Maximum Marks: 30**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	CO	PO	PSO
Q.1	i.	For real time operating systems, interrupt latency should be a) Zero b) minimal c) maximum d) depends on scheduling	1	BL_{01}	CO_{01}	PO_{01}	PSO_{04}
	ii.	Which system call can be used by a parent process to determine the termination of child process a) wait b) exit c) fork d) get	1	BL_{01}	CO_{01}	PO_{02}	PSO_{02}
	iii.	The number of processes completed per unit time is known as a) Output b) Throughput c) Efficiency d) Capacity	1	BL_{01}	CO_{01}	PO_{02}	PSO_{01}
	iv.	The interval from the time of submission of a process to the time of completion is termed as a) waiting time b) turn around time c) response time d) throughput	1	BL_{02}	CO_{02}	PO_{03}	PSO_{02}
	v.	Which scheduling algorithm allocates the CPU to the process that request the CPU first a) FCFS b) SJF c) Round Robin d) Priority	1	BL_{02}	CO_{02}	PO_{01}	PSO_{03}
	vi.	With respect to operating system which of the following is not a valid process state	1	BL_{01}	CO_{02}	PO_{03}	PSO_{02}

a) Ready b) Waiting
c)Running d) starving

Q.2	i.	Write down the difference between multiprogramming and time-sharing operating system.	2	BL_{01}	CO_{01}	PO_{02}	PSO_{03}
	ii.	Explain Real time operating system along with its types.	2	BL_{02}	CO_{01}	PO_{01}	PSO_{02}
	iii.	Explain Process Control Block.	3	BL_{02}	CO_{02}	PO_{03}	PSO_{04}
	iv.	Differentiate preemptive and non preemptive scheduling with example.	5	BL_{03}	CO_{02}	PO_{01}	PSO_{02}
OR	v.	Explain the process states with diagram in detail.	5	BL_{02}	CO_{01}	PO_{02}	PSO_{04}
Q.3	i.	Explain process scheduling.	2	BL_{01}	CO_{02}	PO_{01}	PSO_{02}
	ii.	Consider the set of 5 processes whose arrival time and burst time are given below-	4	BL_{02}	CO_{01}	PO_{03}	PSO_{01}

Process Id	Arrival time	Burst time
P1	0	5
P2	1	3
P3	2	1
P4	3	2
P5	4	3

Calculate the average waiting time and average turn around time using round robin CPU scheduling and consider time quantum = 2 unit.

	iii.	Explain Semaphore in detail. Also define its types.	6	BL_{02}	CO_{02}	PO_{03}	PSO_{13}
OR	iv.	Explain Reader Writers Problem in detail along with its pseudocode.	6	BL_{03}	CO_{01}	PO_{02}	PSO_{04}

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Faculty of Engineering

Mid Sem I Examination March - 2023

CS3EL11 Statistical Analysis

Programme: B.Tech. Branch/Specialisation: CSE

Duration: 1.5 Hrs. **Maximum Marks: 30**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	CO	PO	PSO
Q.1	i.	Relation between Mean, Median and Mode for symmetric distribution is given by a) Mean = Median = Mode b) Mean = Median + Mode c) Mean > Median > Mode d) None of these.	1	BL_1	CO_{01}	PO_{01}	PSO_{01}
	ii.	Relationship among the Arithmetic Mean (AM), Geometric Mean (GM) and Harmonic Mean (HM) can be represented by the formula a) AM × HM = GM b) AM^2 = HM × GM c) AM × HM = GM^2 d) None of these.	1	BL_1	CO_{01}	PO_{01}	PSO_{01}
	iii.	The algebraic sum of the deviations of all the variates from their arithmetic mean is equal to the a) zero b) arithmetic mean c) sum of the variates d) None of these.	1	BL_1	CO_{01}	PO_{01}	PSO_{01}

Total No. of Questions: 3

Programme

Duration

iv. A variate which can take infinite number of values in a given interval $a \le x \le b$ is called - | 1 | BL1 | CO01 | PO01 | PSO0

a) Discrete random variate
b) Continuous random variate
c) General random variate
d) None of these.

v. Let x be a continuous random variable with probability density unction $f(x)$, then mathematical expectation $E(x)$ of x with certain restrictions is given by | 1 | BL1 | CO01 | PO01 | PSO03

a) $E(x) = \int_{'}^{'} xf(x)dx$

b) $E(x) = \int_{'}^{'} f(x)dx$

c) $E(x) = \int_{'}^{'} xdx$

d) None of these.

vi. The conditional probability for the event E_1 when the event E_2 has already happened denoted by- | 1 | BL1 | CO01 | PO01 | PSO03

a) $P(E_2/E_1)$ b) $P(E_1 * E_2)$
c) $P(E_1/E_2)$ d) None of these.

Q.2 i. Write the formula to calculate the mode for a frequency distribution of continuous series. | 2 | BL2 | CO01 | PO01 | PSO03

ii. From the following table giving the heights of students calculate the quartile range, semi quartile range and coefficient of quartile deviation: | 4 | BL2 | CO01 | PO01 | PSO03

Height (c.m.)	Number of students
158	21

159	25
160	28
161	18
162	20
163	22
164	24
165	23
166	18
Total	199

iii. Find the missing frequencies of the following distribution whose median is 46. **6** BL: CO: PO: PSO:

Variable	Frequency
10-20	12
20-30	30
30-40	?
40-50	65
50-60	?
60-70	25
70-80	18
Total	229

OR iv. The following table gives goal scored by two teams A and B in a football season. Find the team which is more consistent in its performance **6** BL: CO: PO: PSO:

Number of goals scored	Number of football matches played	
	Team A	Team B
0	27	17
1	9	9
2	8	6
3	5	5
4	4	3

Q.3	i.	A drawer contains 50 bolts and 150 nuts. Half of the bolts and half of the nuts are rusted. If one item is chosen at random, what is the probability that it is rusted or is a bolt?	2	BL_3	CO_{03}	PO_{03}	PSO_{03}
	ii.	Define probability density function (p.d.f.). Is the function $f(x) = \begin{cases} 3(3-x) & 0 < x < 3 \\ 0 & otherwise \end{cases}$ p.d.f. or not?	4	BL_2	CO_{03}	PO_{03}	PSO_{03}
	iii.	Define cumulative distribution function. If $f(x) = \frac{c}{1+x^2}, -\infty < x < \infty$, then find c and obtain corresponding distribution function.	6	BL_3	CO_{03}	PO_{02}	PSO_{03}
OR	iv.	Define expectation for Discrete random variable. Calculate the expected value of the number of points that will be obtained in a single throw with an ordinary die. Find variance also.	6	BL_3	CO_{03}	PO_{02}	PSO_{03}

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Faculty of Engineering

Mid Sem I Examination March - 2023

CS3CO39 Database Management System

Programme: B.Tech. Branch/Specialisation: CSE

Duration: 1.5 Hrs. **Maximum Marks: 30**

			Marks	BL	CO	PO	PSO
Q.1	i.	Who created the first DBMS? a) Edgar Frank Codd b) Charles Bachman c) Charles Babbage d) Sharon B. Codd	1	BL1	CO1	PO1	
	ii.	Which type of data can be stored in the database? a) Image oriented data b) Text, files containing data c) Data in the form of audio or video d) All of the above	1	BL2	CO1	PO1	
	iii.	Which of the following is not a type of database? a) Hierarchical b) Network c) Distributed d) Decentralized	1	BL2	CO1	PO1	
	iv.	Which of the following is used to denote the selection operation in relational algebra? a) Pi (Greek) b) Sigma (Greek) c) Lambda (Greek) d) Omega (Greek)	1	BL1	CO2	PO1	

	v.	Which is a join condition contains an equality operator: a) Equijoins b) Cartesian c) Natural d) Left	1	BL1	CO2	PO3
	vi.	Which is a unary operation: a) Selection operation b) Primitive operation c) Projection operation d) Generalized selection	1	BL1	CO2	PO1
Q.2	i.	Write any four differences between the data and information.	2	BL4	CO1	PO2
	ii.	Explain the two tier and three tier architecture of DBMS in detail with a suitable diagram.	4	BL4	CO1	PO3
	iii.	Write any six differences between conventional file systems and database management systems.	6	BL5	CO1	PO2
OR	iv.	Explain entity relationship model in detail with suitable examples.	6	BL6	CO1	PO3
Q.3	i.	Define the relational algebra.Also write the types of operations of relational algebra.	2	BL4	CO2	PO2
	ii.	Explain the inner join and its types in detail with examples.	4	BL4	CO2	PO2
	iii.	Explain the SQL.Also explain the languages of SQL (DDL, DML, DCL) in detail with examples.	6	BL6	CO2	PO3
OR	iv.	Explain the basic operations of relational algebra with examples.	6	BL4	CO2	PO2

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Faculty of Engineering

Mid Semi Examination March -2023

CS3EL12 Cloud Computing

Programme: B.Tech. Branch/Specialisation: CSE

Duration: 1.3Hrs. **Maximum Marks: 30**

			Marks	BL	CO	PO	PSO
Q.1	i.	Cloud is a parallel and distributed computing system consisting of a collection of inter-connected and virtualised computers defined by a) NIST b) Buyya c) Berkeley d) Whatis.com	1	BL_{01}	CO_{01}	PO_{01}	PSO_{01}
	ii.	A ___ shares the cloud infrastructure across the several organizations that has a common concern. a) Private Cloud b) Community Cloud c) Public Cloud d) Hybrid Cloud	1	BL_{01}	CO_{01}	PO_{01}	PSO_{01}
	iii.	The ability to apply a quantifiable methodology that allows for the basis of an adaptive introspection with in a real time infrastructure. a) Scalability b) Reliability c) Elasticity d) Portability	1	BL_{01}	CO_{01}	PO_{01}	PSO_{01}
	iv.	A group of separate hosts can be tied together and represented to guests as a single virtual host is called. a) Association b) Join c) Aggregation d) None of these	1	BL_{01}	CO_{01}	PO_{01}	PSO_{01}
	v.	In a scheme, the VM is installed as a Type I Hypervisor directly onto the hardware. a) Para virtualization b) Emulation c) Full virtualization d) None	1	BL_{01}	CO_{01}	PO_{01}	PSO_{01}

			Marks	BL	CO	PO	PSO
	vi.	A service model in which data analytics and business intelligence (BI) processes take place on vendor-managed infrastructure rather than a company's on-premise servers. a) Cloud Provider b) Third Party c) Cloud Analytics d) None	1	BL	CO	PO	PSO
Q.2	i.	Enlist and explain the requirements that need to be considered for cloud services.	2	BL	CO	PO	PSO
	ii.	Write historical development of cloud computing and compare it with distributed computing?	2	BL	CO	PO	PSO
	iii.	Distinguish between the definitions of cloud computing as a service and cloud computing as a platform.	3	BL	CO	PO	PSO
	iv.	Briefly summarize the Cloud Computing Reference Model with example.	5	BL	CO	PO	PSO
OR	v.	Explain the role of cloud computing in Protein Structure.	5	BL	CO	PO	PSO
Q.3	i.	How dual boot is different from Virtualization? Explain.	2	BL	CO	PO	PSO
	ii.	Point out open challenges in Cloud which affect Cloud interoperability and portability.	4	BL	CO	PO	PSO
	iii.	Differentiate Full Virtualization and Para Virtualization with examples.	6	BL	CO	PO	PSO
OR	iv.	Describe different component of Cloud Architecture with Neat diagram.	6	BL	CO	PO	PSO