Shri Shankaracharya Institute of Professional Management & Technology Department of Computer Science & Engineering

Class Test - I Session - July - Dec 2021 Month - November

Semester – CSE III (A, B & C) Subject – Mathematics III Code – B000311(014)

Time Allowed: 2 Hours Maximum Marks: 40

Q. N.	Questions	Marks	Level of Bloom's taxonomy	COs
	Unit IV			
A.	Write relation of shift operator E with Δ , ∇ , δ & μ .	[4]	Remember	CO4
В.	(i) Apply Newton's forward interpolation formula to find $f(1.5)$, correct upto 3 places of decimal. (ii) Obtain the interpolating polynomial $f(x)$ by applying newtons backward interpolation satisfying the data: $x : 1 $	[8]	Applying	CO4
C.	Find $tan 14^{\circ}$ using Stirling's & $tan 17^{\circ}$ by Bessel's formula. $x^{\circ}: 0 5 10 15 20 25 30$ $tan x^{\circ}: 0.00 \ 0.0875 0.1763 \ 0.2679 \ 0.3640 \ 0.4663 0.5774$	[8]	Applying	CO4
D.	(i) Apply Lagrange's interpolation formula to find interpolating polynomial $f(x)$ satisfying the following data. (ii) Compute $f(0)$ correct up to 3 places of decimals, by applying Newton's Divide difference formula. $\begin{array}{ccccccccccccccccccccccccccccccccccc$	[8]	Applying	CO4
	Unit V		•	
Α.	Apply Euler's method and compute $y(0.4)$ correct up to 4 places of decimals for $\frac{dy}{dx} = \frac{y}{1+x}$, $y(0) = 2$, consider $h = 0.1$.	[4]	Understanding	CO5
В.	Apply Taylor series method to obtain $y(1.1)$, correct upto 4 places of decimal for the equation $\frac{dy}{dx} = x \cdot \sqrt[3]{y}$, $y(1) = 1$.	[8]	Applying	CO5
C.	Apply RK method of fourth order to compute $y(0.2)$, by assuming $h = 0.1$ for the equation $\frac{dy}{dx} + y + xy^2 = 0$, $y(0) = 1$, correct upto four decimal places.	[8]	Applying	CO5
D.	Apply Milne's predictor corrector method for the equation $2\frac{dy}{dx} = (1+x^2)y^2$ to obtain $y(0.4)$, correct upto 4 decimal places. It is given $y(0.1) = 1.06$, $y(0.2) = 1.12$ and $y(0.3) = 1.21$.	[8]	Applying	CO5

SSIPMT

Shri Shankaracharya Institute of Professional Management & Technology

Class Test - I Session-July - Dec, 2021 Month-Nov Department of Computer Science & Engineering

Subject-Principles of Programming Languages Sem- CSE 3rd (A,B&C)

Time Note:	Time Allowed: 2 hrs Max Mat Note: - All questions from PART1 and PART2. Each question of PART1 carries 2 Marks and 8 marks for PART2 Levels of
	Questions
	PARTI
	What is "Encapsulation"? What are the core OOP's Concepts?
C	Difference between Pointer and Reference variable? explain with Example.
D.	Difference between Constructor and Destructor?
	PART II
A.	What is Dynamic Memory Allocation ? write a C^{++} Program for the same.
B.	Explain Nested Class with suitable example
	Explain with neat diagram the compilation Process in
Ç	C++
D.	Write a Program in C++ to demonstrate the use of Operator

Shri Shankaracharya Institute of Professional Management & Technology Department of Computer Science & Engineering

Class Test - I Session-July - Dec, 2021 Month-Nov

Sem- CSE 3rd (A,B&C)
Subject-Principles of Programming Languages

Code-B022313(022)

D.	Ç	B.	Þ		D.	C.	В.	.A		Q.N.	Note: -
Write a Program in C++ to demonstrate the use of Operator Overlonding.	С++	Explain Nested Class with suitable example.	What is Dynamic Memory Allocation ? write a $C ++$ Program for the same.	PART II	Difference between Constructor and Destructor?	Difference between Pointer and Reference variable? explain with Example.	What are the core OOP's Concepts?	What is "Encapsulation"?	PARTI	Questions	Note: - All questions from PART1 and PART2. Each question of PART1 carries 2 Marks and 8 marks for PART2
8	[8]	[8]	[8]		[2]	[2]	[2]	[2]		Marks	Marks and
Applying	Understanding	Applying	Applying		Analysis	Analysis	Understanding	Understanding		Levels of Bloom's taxonomy	8 marks for PART2
cos	C04	CO4	CO4		COS	CO4	C04	C04		cos	1

Shri Shankaracharya Institute of Professional Management & Technology

Department of Computer Science & Engineering

Class Test – I Session-July-Dec, 2021 Month-November

Sem-CSE 3rd [A, B & C] Subject- Data Structure & Algorithms Code- B022312(022)

Note: - Solve All questions from PART1 and PART2. Each question of PART1 carries 2 Marks and 8 marks for PART2

Time Allowed: 2 hrs

Q.N.

Questions

Marks

Levels of Bloom's taxonomy

COs

Max Marks: 40

2	Q	22	QI			2			ය			Q2			0		
Define polish notation. Convert the following infix expression to postfix expression using stack. ((A+B)/D)\((E-F)*G)	Design a C Program to create a linked list	Write an algorithm to insert a node after a specific node of the Linked list	Illustrate Asymptotic Notatios: Bigoh, Omega and Theta with proper example.	PARTII	c) O(N2) d) O(M log N)	a) O(N log N) b) O(N)	What is the time complexity of an infix to postfix conversion algorithm?	c) center to right d) center to left to right	a) left to right b) right to left	While evaluating a prefix expression, the string is read from?	c) O(logn) d) O(nlogn)	a) O(1) b) O(n)	What is the time complexity of pop() operation when the stack is implemented using an array?	c) $\theta(n)$ d) $\theta(1)$	a) O(1) b) O(n)	What would be the asymptotic time complexity to add a node at the end of singly linked list, if the pointer is initially pointing to the head of the list?	PARTI
[8]	8	[8]	[8]		[2]			[2]			[2]	3		Z	3		
Applying	Applying	Applying	Applying		Understand			Understand			Understand			Ollderstaller	Independ		
CO2	CO2	C02	C01		C02				C02			C02			2	3	

SSIPMT A

Shri Shankaracharya Institute of Professional Management & Technology Department of Computer Science & Engineering Class Test - I Session-July-Dec, 2021 Month-November

Sem- CSE 3rd [A, B & C] Subject- Data Structure & Algorithms Code- B022312(022)
Time Allowed: 2 hrs

Note: - Solve All questions from PART1 and PART2. Each question of PART1 carries 2 Marks and 8 marks for PART2

Levels of

																	um u/arma	
2	S	22	Q			2			S			Q2	A		Q	2		Q.N.
Define polish notation. Convert the following infix expression to postfix expression using stack. $((A+B)/D)'((E-F)*G)$	Design a C Program to create a linked list	Write an algorithm to insert a node after a specific node of the Linked list	Illustrate Asymptotic Notatios: Bigoh, Omega and Theta with proper example.	PART II	c) O(N2) d) O(M log N)	a) O(N log N) b) O(N)	What is the time complexity of an infix to postfix conversion algorithm?	c) center to right d) center to left to right	a) left to right b) right to left	While evaluating a prefix expression, the string is read from?	c) O(logn) d) O(nlogn)	a) O(1) b) O(n)	What is the time complexity of pop() operation when the stack is implemented using an array?	c) $\theta(n)$	a) O(1) b) O(n)	What would be the asymptotic time complexity to add a node at the end of singly linked list, if the pointer is initially pointing to the head of the list?	PART I	Questions
[8]	[8]	[8]	[8]			7	3		[2]			7	3		1	3		Marks
Applying	Applying	Applying	Applying		Service and analysis of the service	Understand			Understand			Understand			Cirdoromia	Linderstand		Bloom's taxonomy
CO2	CO2	CO2	COI			C02			C02			C02			(<u> </u>		COs

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Shri Shankaracharya Institute of Professional Management & Technology Class Test - I Session-July - Dec, 2021 Month - Nov Department of Computer Science & Engineering

D.	O	B.	Ą		D.	Ċ.	₿.	A.			Note: -	Time A		
What is race condi	Consider following four parrival time and burst time arrival time and burst time Process No. Arriv P1 P2 P3 P4 i) Obtain a Gantt chart us non-preemptive schedulir waiting time. ii) Obtain a Gantt chart us preemptive scheduling an around time waiting time	What is need of p process life cycle	List 5 different services and explain why OS is c		What is Process Control Block?	What is System Cal	What is kernel m	What do you mean l			All questions from PAR	Time Allowed: 2 hrs	Sem- CSE 3rd	
What is race condition? Explain the critical-section problem.	Consider following four process with the process arrival time and burst time in millisecond. Process No. Arrival Time Process No. Arrival Time Burst Time Pl 0 5 P2 1 2 P3 2 6 P4 3 Obtain a Gantt chart using Shortest Job First (SJF) non-preemptive scheduling and compute average waiting time. ii) Obtain a Gantt chart using Round Robin (RR) preemptive scheduling and compute average turn around time waiting time.	What is need of process swapping? Explain the process life cycle with proper state transitions.	List 5 different services provided by operating sys and explain why OS is called as resource manager?		ntrol Block?	What is System Call? Explain with suitable example.	What is kernel mode and user mode?	What do you mean by operating system?		Questions	TI and PART2. Each qu		rd [B] Subject-Operating System	
ical-section problem.	th the process econd. Burst Time 5 2 2 6 4 est Job First (SJF) npute average d Robin (RR) e average turn	Explain the transitions.	provided by operating system alled as resource manager?	PART II		ole example.	?		PART I		All questions from PART1 and PART2. Each question of PART1 carries 2 Marks and 8 marks for PART2			
[8]	[8]	[8]	[8]		[2]	[2]	[2]	[2]		Marks	2 Marks and		Code-B022315(022)	-
Understanding	Applying	Analysis	Analysis		Understanding	Analysis	Understanding	Understanding		Levels of Bloom's taxonomy	18 marks for PART2	Max Marks: 40	15(022)	
CO3	CQ2	C02	C01		C02	C01	001	CO1		COs	2.	¥: 40		

SSIPMT A Shri Shankaracharya Institute of Professional Management & Technology Class Test - I Session-July - Dec, 2021 Month - Nov Department of Computer Science & Engineering

Time Allowed: 2 hrs Sem-CSE 3rd [B] Subject-Operating System Code-B022315(022) Max Marks: 40

D.	0		В.	A.		D.	C	B.	A.		Q.N.
What is race condit	Process No. Arrival time and burst time and burst time p1 P1 P2 P3 P4 i) Obtain a Gantt chart us non-preemptive schedulin waiting time. ii) Obtain a Gantt chart us preemptive scheduling around time waiting time	Consider following	What is need of p process life cycle	List 5 different so and explain why		What is Process Control Block?	What is System Call	What is kernel mo	What do you mean b		Au quesuons from PAK
What is race condition? Explain the critical-section problem.	Process No. Arrival Time Burst Time P1 0 5 P2 1 2 P3 2 6 P4 i) Obtain a Gantt chart using Shortest Job First (SJF) non-preemptive scheduling and compute average waiting time. ii) Obtain a Gantt chart using Round Robin (RR) preemptive scheduling and compute average turn around time waiting time.	Consider following four process with the process	What is need of process swapping? Explain the process life cycle with proper state transitions.	List 5 different services provided by operating sys and explain why OS is called as resource manager?		ntrol Block?	What is System Call? Explain with suitable example	What is kernel mode and user mode?	What do you mean by operating system?		Questions
cal-section problem.	Burst Time 5 6 4 2 2 bst Job First (SJF) apute average 4 Robin (RR) average turn	h the process	Explain the ransitions.	different services provided by operating system plain why OS is called as resource manager?	PART II		ole example.	?		PART I	Au questions From FAKLL and FAKLL Dated questions of FAKLL curries a frames unto a frame of the property of th
8	©		[8]	[8]		[2]	[2]	[2]	[2]		Marks
Understanding	Applying		Analysis	Analysis		Understanding	Analysis	Understanding	Understanding		Levels of Bloom's taxonomy
СОЗ	CO		C02	CO1		C02	COI	CO1	CO1		COs

SSIPMT Shri Shankaracharya Institute of Professional Management & Technology Class Test - I Session - July - Dec, 2021 Month - November Department of Computer Science & Engineering

Sem-CSE 3rd [A & C] Subject-Name- Operating System Subject-Code- B022315(022) Marks: 40

Time	
Allowed:	
2 hrs	
Max	

								7.	6.	5. 1		4.	3. E	2. E	F		Q.N.	Note: - Al
Cartain Anarosa Turn Around Time and	P4	Р3	P2	P1	PROCESS	Consider a sys Burst time, Pri	b. What is PCB? Discuss its major fields	detail.	What is a Cri problem.	Define Race Condition with example		show how com	Enumerate the neat sketch.	Explain about 1	Iow Buffering			Note: - All Questions are compulsory
	2	2	3	4	BURST	stem with a orities and a	B? Discuss i	ss state diag	tical Section	ondition wit		munication	different op	he dual moo	can improv			compulsory.
	4	3	1	0	ARRIVAL TIME	set of proces	ts major field	ram. expiam	n also explai	h example.		takes place t	erating syste	de operation	e the perforr		Questions	
	2	3	11	4 H	PRIORITY	sses P1, P2, being mentic	ds.	cacii ii alisiii	n me souum		Secti	hrough a Mes	m structures	in OS with a	nance of a Co	Section - A	ins	
						Consider a system with a set of processes P1, P2, P3, P4 and their CPU Burst time, Priorities and arrival times being mentioned as below-		a. Draw process state diagram. Explain caun uansinon among uron medetail.	What is a Critical Section also explain the solution to Critical Section also explain the solution and them in		Section - B	Show how communication takes place through a Message Passing System.	Enumerate the different operating system structures and explain with a neat sketch.	Explain about the dual mode operation in OS with a neat block diagram.	How Buffering can improve the performance of a Computer system?	on - A		
		[8]						[8]	[2]	[2]		[8]	[8]	[2]	[2]		Marks	
***		Applying			Sp.		The same of the sa	Understanding	Understanding	Understanding		Understanding	Understanding	Understanding	Understanding		Bloom's taxonomy	Levels of
***		202	3		**************************************			C02	CO2	202		C02	COI	C01	CO1		COs	



Shri Shankaracharya Institute of Professional Management & Technology

Department of Computer Science & Engineering

Class Test - I Session - July - Dec, 2021 Month - November

Sem- CSE 3rd [A & C] Subject-Name- Operating System Subject-Code- B022315(022) Time Allowed: 2 hrs Max Marks: 40

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lculate Aver	P4	P3	P2	P1	PROCESS	nsider a syst rst time, Pric	b. What is PCB? Discuss its major fields	detail.	Draw process	What is a Criti problem.	Define Race Condition with example		w how com	Enumerate the c neat sketch.	olain about th	w Buffering		Q.N.
age Waiting	2	2	3	4	BURST A	em with a s rities and ar	? Discuss its		state diagra	cal Section	ndition with		nunication t	lifferent ope	ne dual mode	can improve		
P e				F	et of process rival times b	major field		ım. Explain	also explair	example.		akes place th	rating syster	operation i	the perform		Questions	
age Turn Arc	2	3	11	4 H	PRIORITY	ses P1, P2, F eing mention	S.		each transition	the solution		Section - B	rough a Mes	n structures a	n OS with a	ance of a Co	Section - A	ns
ound Time, and						Consider a system with a set of processes P1, P2, P3, P4 and their CPU Burst time, Priorities and arrival times being mentioned as below-			a. Draw process state diagram. Explain each transition among them in	What is a Critical Section also explain the solution to Critical Section problem.		on - B	Show how communication takes place through a Message Passing System.	Enumerate the different operating system structures and explain with a neat sketch.	Explain about the dual mode operation in OS with a neat block diagram.	How Buffering can improve the performance of a Computer system?	in - A	
		[8]						[8]		[2]	[2]		[8]	[8]	[2]	[2]		Marks
		Applying						Understanding		Understanding	Understanding		Understanding	Understanding	Understanding	Understanding		Levels of Bloom's taxonomy
		C02						C02		CO2	C02		C02	001	001	COI		COs

Shri Shankaracharya Institute of Professional Management & Technology Sem-CSE 3rd [A, B & C] Subject- Digital Electronics & Logic Design Code- B022314(022) Class Test - I Session-July-Dec, 2021 Month-November Department of Computer Science & Engineering Max Marks: 40

Solved Two Que. From each part. Each que. Carries Equal Marks.

Time Allowed: 2 hrs

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A Seven bit even parity hamming code is reieved as 01011110. What is the correct	'NAND' & 'NOR' gates are called universed gates. Justify	Reduce the following equation using Quine McCluskey method of minimization $F(A, B, C,D) = \sum m(1, 2, 3, 5, 9, 12, 14, 15) + \sum d(4, 8, 11)$	PART II	Design a BCD to Excess-3 Code converter.	Design a Full-subtractor using two half-subtractors & an OR gate	Design a 2 bit Comparator using Logic gates.	PARTI	Questions	Note: - Solved Two Que. From each part. Each que. Curres Extens
[01]	[01]	[10]		[10]	[10]	[10]		Marks	
Applying	Understand & Applying	Understand & Applying		Understand & Applying	Understand & Applying	Understand & Applying		Levels of Bloom's taxonomy	
CO3	C02	CO1		C02	C03	C02		COs	

Shri Shankaracharya Institute of Professional Management & Technology Department of Computer Science & Engineering

Class Test - I Session-July-Dec, 2021 Month-November

Time Allowed: 2 hrs Sem-CSE 3rd [A, B & C] Subject- Digital Electronics & Logic Design Code- B022314(022) Max Marks: 40

Note: - Solved Two Que. From each part. Each que. Carries Equal Marks.

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8	8	Q		ପ୍ତ	8	Q		Q.N.	
A Seven bit even parity hamming code is reieved as 0101110. What is the correct	'NAND' & 'NOR' gates are called universed gates. Justify	Reduce the following equation using Quine McCluskey method of minimization $F(A, B, C,D) = \sum m(1, 2, 3, 5, 9, 12, 14, 15) + \sum d(4, 8, 11)$	PART II	Design a BCD to Excess-3 Code converter.	Design a Full-subtractor using two half-subtractors & an OR gate	Design a 2 bit Comparator using Logic gates.	PARTI	Questions	The state of the s
[10]	[10]	[10]		[10]	[01]	[0]		Marks	-
Understand & Applying	Understand & Applying	Understand & Applying		Understand & Applying	Understand & & Applying	Understand & Applying		Levels of Bloom's taxonomy	
C03	C02	CO1		C02	C03	C02		COs	