SSN COLLEGE OF ENGINEERING, KALAVAKKAM – 603 110
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
B.E. Computer Science and Engineering
CS6801 MULTICORE ARCHITECTURES & PROGRAMMING

Date: 26-2-2018, 8.00-9.30 AM **UNIT TEST – 3-Answer Key** **Max. Marks: 50**
Academic Year: 2017-2018 EVEN **Batch: 2014-2018**
Semester: 8 **Faculty: Dr.DVVPrasad / K.Lekshmi**

Qn. No	Part - A	Marks	(KL,COn)
1.	What is Guided Scheduling the iterations are also broken up into chunks of chunk size consecutive iterations. In a guided schedule, each thread also executes a chunk, and when a thread finishes a chunk, it requests another one. In a guided schedule, as chunks are completed, the size of the new chunks decreases	2	K1,CO3
2.	What are Pragmas ? Pragmas are preprocessor directives. # pragma Added to a system to allow behaviors that aren't part of the basic C specification.	2	K1,CO3
3.	What is MPI? In message-passing programs, a program running on one core-memory pair is usually called a process. Two processes can communicate by calling functions using send and receive functions. The implementation of message-passing can be done by MPI, which is an abbreviation of Message-Passing Interface. MPI is not a new programming language. It defines a library of functions that can be called from C, C++, and Fortran programs	2	K1,CO4
4.	Suppose comm._sz = 4 and suppose that x is a vector with n = 14 components. How would the components of x be distributed among the processes in a program that used a block-cyclic distribution with blocksize b= 2? Process 0 : x0, x1, x8, x9 Process 1 : x2, x3, x10, x11 Process 2 : x4, x5, x12, x13 Process 3 : x6, x7	2	K3,CO3
5.	What is REDUCTION CLAUSE Give its Syntax. The syntax of the reduction clause is reduction(<operator>: <variable list>)	2	K1,CO3

Part – B Answer all questions (16+16+8)

6.	Explain in detail the OpenMP Implementation of Odd-Even Transposition sort.	16	K2,CO3

OR

7.	Explain the OpenMP Program Execution model. Refer Standard Text book	16	K1,CO5
8.	Explain the MPI Program Execution model. Refer Standard Text book	16	K1,CO4
	OR		
9.	Write an OpenMP implementation of finding the area of a Trapezoid. Refer Standard Text book	16	K2,CO3

10.	Consider the loop
	a[0] = 0;
	for(i=1; i<n; i++)
	a[i] = a[i-1] + i;
	
	There is clearly loop carried over dependency, as the value of a[i] can't be computed without the value of a[i-1]. Can you see any way to eliminate this dependency and parallelize the loop?
	Soln:
	a[0] = 0
	a[1] = a[0]+1 = 0 + 1
	a[2] = a[1] + 2 = 0 + 1 + 2
	a[3] = a[2] + 3 = 0+1+2+3
	a[4] = a[3] + 4 = 0+1+2+3+4
	
	$a[i] = \frac{i*(i+1)}{2}$
	So we can rewrite the code as
	
	for(i=0;i<n;i++)
	a[i] = i*(i+1)/2
	
	So the openMP parallel code is
	
	#pragma omp parallel for num_thread(thread_count) \
	default(none), private(i), shared(a,n)
	
	for(i=0;i<n;i++)
	a[i] = i*(i+1)/2
		8	K3,CO4

	OR		
11.	Write a note on OpenMP Directives. Refer Standard Text book	8	K1,CO3

*************B E S T O F L U C K************

Prepared by	

Reviewed by HoD, CSE