ITCS 4145/5145/8145
Sample Class Test 1

TWO pages.
Attempt all questions in the spaces provided.   **Name:** ....
Use additional paper if necessary.
You may refer to the materials provided with this test. Do not refer to any other materials.

Mark/30

Qu. 1   Answer each of the following <u>briefly</u>:

(a)   Describe what a scatter routine does.   4

(b)   What is meant by the term *embarrassingly parallel*?   2

(c)   How many steps are needed in the tree implementation of a barrier, given *n* processes?   2

(d)   Name two situations that a pipeline structure can lead to increased execution speed.   4

(e)   What are the general conditions for termination in a work-pool computation?   4

(f)   What does the following code do: 2

```
forall (i = 0; i < n; i++) {
   a[i] = a[i + n];
}
```

Qu. 2   Rank Sort code given below:

```
for (i = 0; i < n; i++) {          /* for each number */
   x = 0;
   for (j = 0; j < n; j++)         /* count number of nos less than it */
      if (a[i] > a[j]) x++;
   b[x] = a[i];                    /* copy number into correct place */
}
```

Write a parallel program in PVM or MPI for Ranksort using 10 processes where n = 100. It is not necessary
maintain the order of identical numbers in the sorted list. Give clear comments explaining the code.   12