NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
CYCLE TEST-I

Subject Code/ Name: CSPC34/ Computer Organization **Date: 8/ 9/ 2023**
Marks: 15 **Time: 11 AM – 12 PM**

Answer all the Questions

1. Assume a 15 cm diameter wafer has a cost of 12, contains 84 dies, and has 0.20 defects/cm2. Assume a 20 cm diameter wafer has a cost of 15, contains 100 dies, and has 0.031 defects/cm2.
   1. Find the yield for both wafers.
   2. Find the cost per die for both wafers.
   3. If the number of dies per wafer is increased by 10% and the defects per area unit increases by 15%, find the die area and yield. (3)

2. What is the *stored-program concept*? Explain briefly. (2)

3. What is pseudo-direct addressing in MIPS? Give an example. (2)

4. Briefly describe how synchronization is performed in MIPS with an example. (2)

5. In the following code segment, i, j and k are variables. If the three variables i through k correspond to the five registers $s0 through $s2, what is the compiled MIPS code for the following C statements? (3)

```
if (i==j && i==k)
    i++;
 else
    j++;
j=i+k;
```

6. Using a table, calculate 16 divided by 5. You should show the contents of each register on each step. Assume both inputs are unsigned 5-bit integers. (3)