# BCSE-II 2020-21 2ⁿᵈ Semester ONLINE Class Test #1

# Computer Architecture

Date: 17 May 2021 **7:30 pm**

Duration:2 hours (including downloading and uploading)        **Full Marks: 30**

**Instructions:** Write your answers on plain paper in your own handwriting. Scan your answer script or take a snapshot. Send the resulting image file by Email to

# asinha180314@gmail.com

Your mail **must** reach the destination **by 9:30 pm, 17 May 2021**

Consider the following MIPS program fragment:

```
-------------------------------------------------------------------
LD      R1, 0(R2)
DSUB    R4, R1, R5
AND     R6, R1, R7
OR      R8, R1, R9
-------------------------------------------------------------------
```

The instruction pipeline has 5 stages: IF, ID, EX, MEM, and WB.
The LD instruction performs IF in cycle-1.

1. On which instruction is the OR instruction dependent ? Explain. (Answer in at most 4 sentences).                                                                       3

2. Can the OR instruction occupy the EX stage in cycle-6 ? Give reasons. (Answer in at most 4 sentences).                                                                  8

3. If the AND instruction occupies the EX stage in cycle-5, can it run correctly ? (Answer in at most 4 sentences).                                                        8

4.  Can the DSUB instruction occupy the EX stage in cycle-4 ? Give reasons. (Answer in at most 4 sentences).                                                               8

5. What is the minimum number of cycles required for this program to complete execution ? Explain. (Answer in at most 3 sentences).                                        3
 ----------------------------------------- END -------------------------------------------------------------