F. Y. B. Sc. (Computer Science) Semester –II

Regular Semester-End Examination

Subject: Sequential circuits and Computer Organization **Subject Code: USCSEL-122**

Time: 2 Hrs. **Total Marks: 35**

Instructions: (1) All questions are compulsory.

(2) Figures to the right indicate full marks.

(3) Draw neat labelled diagram wherever necessary.

Q.1 Attempt any five **(1X5=5)**

1. Name the fastest and slowest Shift register.
2. Name the memory module at the top of the memory hierarchy.
3. How many flip flops are required for MOD 12 counter?
4. What will be the status of output Q when both inputs R and S are at high voltage.
5. Write two applications of down counter.
6. Name the two instructions used to communicate with stack memory.
7. Compute % hit ratio if number of references to cache memory are 320 and 295 are hits.

Q.2 Attempt any five **(3X5=15)**

1. Draw circuit diagram of RS flip flop and write down its truth table.
2. Explain organization of memory stack.
3. Draw circuit diagram of 3 bit up counter and write its truth table.
4. Draw symbol of JK flip flop, write its truth table and explain how JK flip flop is converted to T flip flop.
5. Draw timing diagram of 3 bit down counter also write its counting sequence.
6. Explain two level memory hierarchy.
7. Explain the concept of address bus, data bus and control bus.

Q.3 Attempt any three **(5X3=15)**

1. Explain working of 4 bit SISO shift register with neat diagram.
2. Draw diagram of interfacing CPU to I/O devices and explain the need of interface unit.
3. Find the number of chips required and Design memory of size 4KX8 using available chip size of 1KX8.
4. Draw diagram and explain 7 registers CPU organization.
5. Draw block diagram of general I/O interface and explain each block of it.