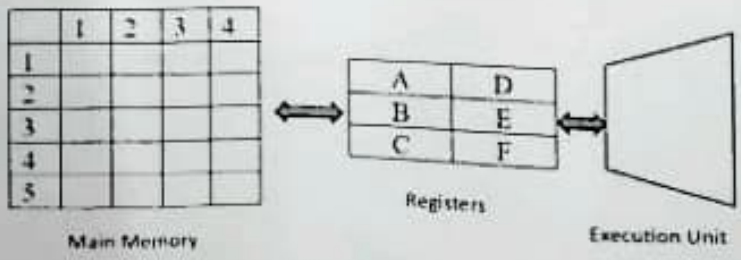
Reg. Number:	

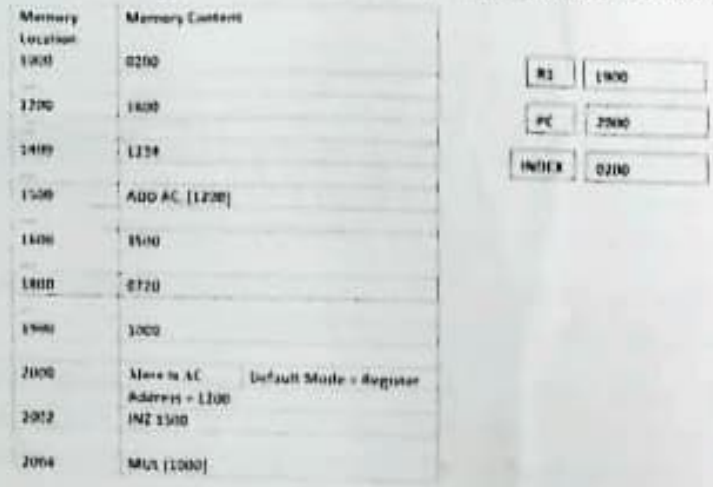
VIT

Vellore Institute of Technology
CHENNAI

Continuous Assessment Test (CAT) – I - August 2024

Programme	:	B. Tech CSE Specialization (BDS)	Semester	:	Fall 24-25
Course Code & Course Title	:	BCSE205L & Computer Architecture and Organization	Class Number	:	CH2024250100678
Faculty	:	Dr. Linda Joseph	Slot	:	E2+TE2
Duration	:	1.30 Hrs	Max. Mark	:	50

Q. No	Sub-division	Question Text	Marks
1		i) A typical processor processes each instruction cycle as two sub cycles and the size of each instruction being 40 bits in word length. For the given pseudocode: BEGIN NUMBER s1, s2, sum INPUT s1, s2 sum=s1+s2 OUTPUT sum END Trace the contents of different registers namely the Program counter, Memory address register, Memory buffer register, Instruction register, Instruction buffer register and Accumulator. [7 marks] ii) Provide valid justifications for why a memory buffer register may be necessary in this architecture. [3 Marks]	10
2		The given diagram below depicts the storage scheme of a generic computer. Use the instructions LOAD, STORE, PROD and MULT tofind out the product of two numbers and then store the result back in to a memory location.  (i) Write down the required sequence of instructions using a	10

		simple and a complex instruction set with a neat architecture diagram. [7 marks] (ii) Differentiate the advantages and disadvantages of the above approaches. [3 marks]	
3		(i) Using the floating-point arithmetic, sum up the numbers $(0.75)_{10}$ and $(-0.275)_{10}$ in binary and show how the output is stored using the IEEE single precision format. [8 Marks] (ii) Determine whether there is any overflow or underflow for the computed output. [2 Marks]	10
4		(i) Perform non-restoring binary division for computing the quotient and the reminder of Dividend: $(1011)_2$ and Divisor: $(0101)_2$. [7 Marks] (ii) List out the differences between the restoring and non-restoring division methods. [3 Marks]	10
5		Calculate the Effective address and content of the accumulator for the instruction "Move to AC" given the following addressing modes: Immediate, Register Indirect, Direct, Indirect and Index Address. 	10

********All the best**********