

Computer Organization and Design

[Time:2.30 Hrs]

[Marks:75]

Please check whether you have got the right question paper.

- N.B:
1. All question is compulsory.
 2. Figures to the right indicate full marks.
 3. Students answering in the regional language should refer in case of doubt to the main text of the paper in English.

Q1. Attempt any four of the following (20M)

- A. Define logic gates. Explain NAND and NOR gates.
- B. Why NAND and NOR gates are called as Universal gates.
- C. Define and explain Full Adder.
- D. Solve $\bar{x}yz + \bar{x}\bar{y}z + x\bar{y}z + \bar{x}yz + xyz + \bar{x}yz$ with Kmap
- E. Define number system. Explain Binary and Decimal number system.
- F. Explain steps to convert Binary number to Decimal number.
Solve $(1011.11)_2$
- G. Define register. Write note on shift register
- H. Define Flip Flop. Explain basic S-R Flip flop.

Q2. Attempt any four of the following (20M)

- A. Explain Big Endian and Little Endian.
- B. Define stack. Explain PUSH and POP operations on stack.
- C. Write note on Assembler Directives.
- D. Explain the following commands 1. MOV A, B 2. ADD B
- E. Compare RAM and ROM.
- F. Distinguish between Hardwired Control Unit and Micro programmed Control Unit.
- G. Compare RISC and CISC.
- H. Define Addressing mode. Explain Index mode.

Q3. Attempt any four of the following. (20M)

- A. Draw and explain Main hardware components of a processor.
- B. Write note on Register File.
- C. Explain the execution of this instruction Load R5, X(R7)
- D. What is interrupt? Why is it necessary?
- E. Define Bus. Explain types.
- F. Explain ALU with proper diagram.
- G. Write note on Moore machine with example
- H. Write note on MAR and MDR

Q4. Attempt any three of the following. (15M)

- A. Convert $(4563)_{10} = (?)_2$
- B. Explain the following commands. 1. INC D 2. DEC H
- C. Convert $(1101101.1101)_{10} = (?)_2$
- D. Explain basic functional units of computer
- E. Write note Program Counter and Stack Pointer
- F. Write a note on Datapath.
