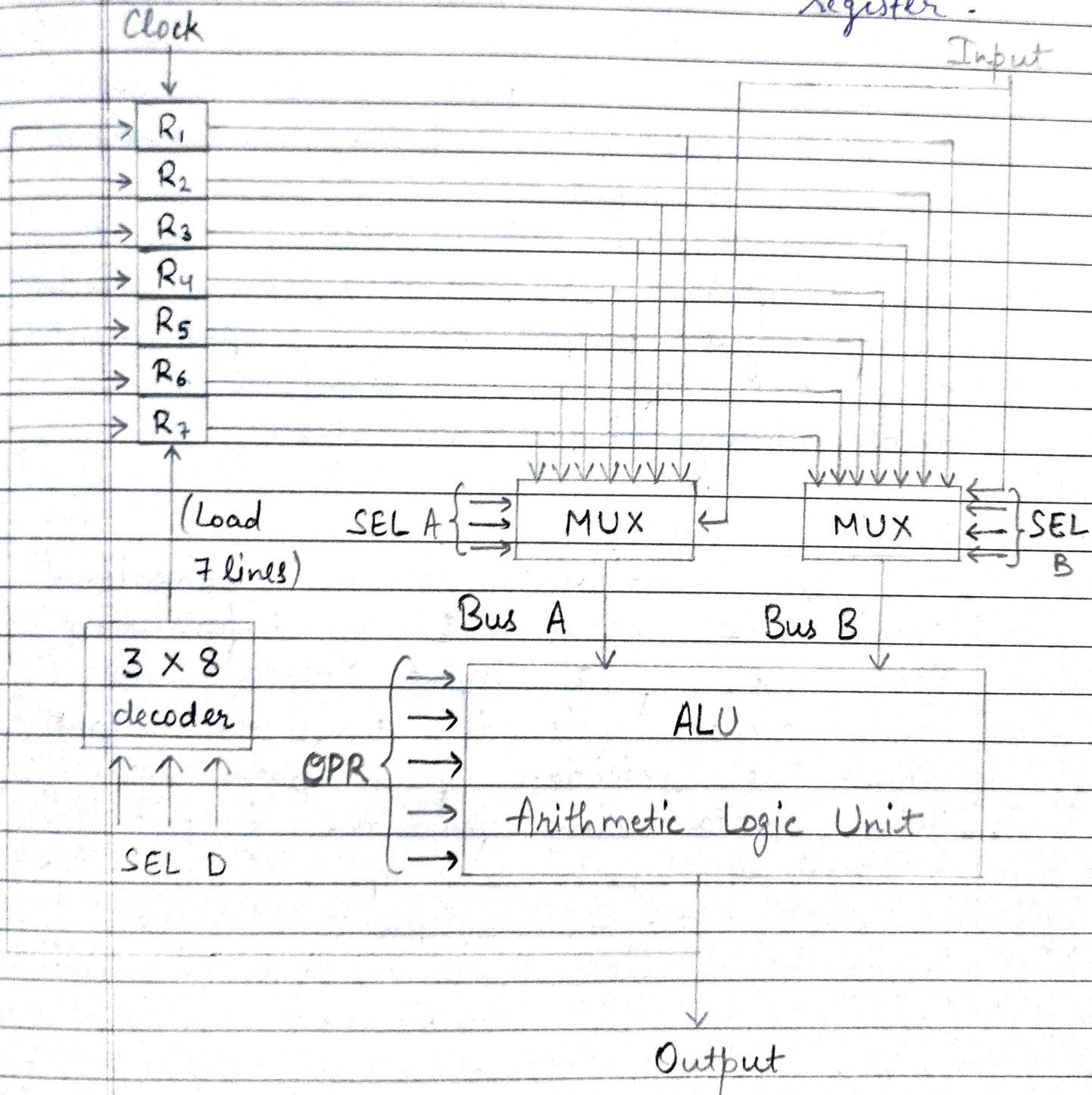


Assignment No. 1

Ques - Explain the diagram -

A bus organization for seven CPU register -



Ans -

Decoder -

A decoder is a combinational circuit that converts binary information from the n coded inputs to a maximum of 2^n unique outputs.

The n -to- m line decoders, where $m \leq 2^n$. Their purpose is to generate the 2^n (or fewer) binary combinations of the n input variables.

In 3-to-8 line (3×8) decoder has three data inputs, A_0 , A_1 and A_2 , are decoded into eight outputs, each output representing one of the combinations of the three binary input variables.

Multiplexer (Mux) -

A multiplexer is a combinational circuit that receives binary information from one of 2^n input data lines and directs it to a single output line. The selection of a particular input data line for the output is determined by a set of selection inputs.

A 2^n -to-1 multiplexer has 2^n input data lines and n input selection lines whose bit combinations determine which input data are selected for the output.

Arithmetic Logic Unit (ALU) -

The ALU performs the all arithmetical calculations and logical operations. Control unit controls the operations and processing in our computer and the memory unit contains the programs and data that are used for processing.

The control unit and ALU are also called Microprocessor Unit (MPU) and are fabricated ϕ on a single chip called microprocessor.

Control Word -

The Central Processing Unit uses 14 binary selection inputs and all of them are combined at one place to form a control word.

Thus a control word consists of 14 bits and four fields. These four fields are SEL A, SEL B, SEL D and OPR.

SEL A -

It is a MUX A selector which is used to place the contents of selected register into bus A.

SEL B -

It is the MUX B selector which is used to place the contents of selected

register into bus B.

SEL D -

It is the decoder destination selector and it transfers the contents of the output bus into the required selected register.

OPR -

It is the ALU operation selector and it provides the arithmetic operation to be performed.