

CO QUIZ 1 SOLUTION
(each question is of 10 marks)

Answer 1:-

(2 mark for each difference)

Macro	Procedure
The sequence of instruction written within the macro definition to support modular programming	Set of instruction which can be called repetitively that performs a specific task.
Requires more memory	Requires less memory
Do not require CALL and RET instructions	Requires RET and CALL instructions
The machine code is generated each time the macro is called	Machine code is generated only once.
Macro executes faster than a procedure	The procedure executes slower than macro

Answer 2:-

The instruction register (IR) is the part of a CPU's control unit that holds the instruction currently being executed or decoded. **(3 marks)**

In the fetch cycle:-The next instruction is fetched from the memory address that is currently stored in the program counter and stored into the instruction register. **(3 marks)**

In the execute cycle:-The function of the instruction is performed. If the instruction involves arithmetic or logic, the ALU is utilized. **(1 mark)**

In the decode cycle:-During this stage, the encoded instruction present in the instruction register is interpreted by the decoder. **(3 marks)**

Answer 3:-

According to the definition of Computer architecture, it is a set of rules and methods that describe the functionality, organization, and implementation of computer systems. **(2 marks)**

So RISC (Reduced Instruction Set Architecture) has also these properties of architecture
(2 marks for full form of RISC)

(6 marks where each point is of 2 marks)

- Simple and fixed-length instructions for the pipeline.
- Use limited addressing modes
- each instruction executes in a single clock cycle

Answer 4:-

A register is one of a small set of data holding places that are part of the computer processor.

(3 marks for definition)

A register may hold an instruction, a storage address, or any kind of data (such as a bit sequence or individual characters). **(5 marks for explanation)**

Eg:- the ALU register is instruction register to store instruction. **(2 marks for eg.)**

Answer 5:-

Register-register instructions use 0 memory operands out of a total of 3 operands. The advantages are:-

- The instructions are simple and fixed in length **(6 marks)**
- The corresponding code generation model is simple
- All instructions take a similar number of clock cycles for execution
- **Registers are faster for data accessing in compare to access direct memory locations.**

(4 marks)

Answer 6:-

The I/O bus of a computer provides an efficient mode of communication between the central system and the outside environment. It handles all the input-output operations of the computer system **(5 marks)**

Input devices: Allows user input, from the outside world to the computer. Example: Keyboard, Mouse etc.

Output devices: Allows information output, from the computer to the outside world. Example: Printer, Monitor etc

(5 marks)

Answer 7:-

(2.5 marks for each point)

BASIS FOR COMPARISON	CALCULATOR	COMPUTER
Complexity of calculation	Moderate	high
Memory	less	more

multi-tasking	Cannot be performed	Can be easily performed
Programming language	No concept of programming language	It has lots of programming language.

Answer 8:-

1. It is very difficult to program in machine language. The programmer has to know the details of hardware to write the program. **(4 marks)**
2. The programmer has to remember a lot of codes to write a program which results in program errors. **(3 marks)**
3. It is difficult to debug the program. **(3 marks)**

Answer 9:-

Assembler directives (pseudo-opcodes, pseudo-operations), are commands given to an assembler "directing it to perform operations other than assembling instructions. **(3 marks)**

Assembler directives are commands inserted in PIC source code that control the operation of the assembler. They are not part of the program itself and are not converted into machine code. **(4 marks)**

Eg: **#include** allows any file to be embedded within a program **(3 marks)**

Answer 10:-

An arithmetic logic unit (ALU) is a combinational digital electronic circuit. It represents the **fundamental building block of the central processing unit (CPU) of a computer. (2 marks)**

ALU:- Arithmetic Logic Unit **(2 marks)**

The purpose of the ALU is to perform mathematical and logical operations. **(3 marks)**

Mathematical operations:- Multiplication, division, , subtraction, addition. **(3 marks)**

Logical Operations:- NOT, AND, OR