Assignment

1. Explain Central Processing Unit (CPU), Graphics Processing Unit (GPU) and Tensor processing Unit (TPU) with reference to following.
   (i) Similarity and dissimilarity in Hardware Configuration
   (ii) Application
   (iii) Working
   (iv) Advantages and disadvantages
   (v) with respect to Deep Learning applications
   (vi) Which one is best for weather forecasting, driverless cars, and genetic research? Justify your point technically.
2. Explain Arduino board, Raspberi pi board and Desktop computer with reference to following.
   (i) Similarity and dissimilarity in Hardware Configuration
   (ii) Application
   (iii) Working
   (iv) Advantages and disadvantages
   (v) with respect to Deep Learning applications
   (vi) Which one is best for Sensor monitoring (eg. Temperature, pressure etc.), sensor monitoring, computing and data transmission, big data computing and data transfer? Justify your point technically.
3. What is Three, Two, One and Zero address instructions? A computer uses a memory unit with 256K words of 32 bit each. A binary instruction code is stored in one word of memory. The instruction has four parts: an indirect bit, an operation code, a register code part to specify one of 64 registers, and an address part:

(i) How many bits are there in the operation code, the register code part and the address part?
(ii) Draw the instruction word format and indicate the number of bits in each part.
(iii) How many bits are there in the data and address inputs of the memory?

4. A two word instruction is stored in memory at an address designated by the symbol W. The address field of the instruction (stored at w+1) is designated by the symbol Y . The operand used during the execution of the instruction is stored at an address symbolized by Z. An index register contains the value X. State how Z is calculated from the other addresses if the addressing mode of the instruction is-

(a) Direct
(b) Indirect
(c) Relative
(d) Indexed

(ii) What must the address field of an indexed addressing mode instruction be to make it the same as a register indirect mode instruction?

5. Explain the different functional units of a computer.
   Draw and explain the connection between memory and processor with the respective registers.