

Note:

Answer ALL questions

Assume suitable missing data, if any

Attempt all parts of a question at one place (Marks may not be awarded otherwise)

- 1 Giving reasons explain briefly, why?
 - [a] Bi-directional Tristate buffers are indispensable for bussed architecture in microprocessors(μP).
 - [b] For signed numbers only Arithmetic shift is performed.
 - [c] Fold back in a memory organization is always avoided.
 - [d] EI and DI instructions are mandatory for the Interrupt routine.
 - [e] Stack memory is implemented as LIFO type. 1x5
- 2 [a] Design a memory map with contiguous and sequential memory address range to each memory chips of 4K, 2K, and 2K capacity without fold back for 8085 μP . Draw a neat diagram and show the range assigned to each memory chip. 2.5
 - [b] Draw a neat timing diagram with proper labelling of the instruction 'OUT' 2.5
- 3 [a] Solar insolation data is sampled every 2 minutes from a pyranometer and is stored sequentially for 8 hours of a day. Write an 8085 μP assembly language program to estimate the time of maximum insolation in a day if the data is stored from location 2200_H. 2.5
 - [b] Write an 8085 μP assembly language program to implement eight sample moving averaging over a sequence of 100 sampled data (from 2000_H), working from first eight samples to last eight samples. 2.5
- 4 Explain how a signed number can be expressed in terms of group of 1s. Describe the basic building of Booths' algorithm for multiplication of signed numbers, by explaining the logic and components involved in it. Explain Q15 format for depicting the fractional numbers with an example. Use the algorithm and Q15 format for developing the multiplication for signed fractional numbers. Develop the algorithm in assemble language. Write detailed comments in support of the algorithm. 5