Q1. What will be the capacity in MB of the physical memory of a microprocessor with a 24-bit address bus? Write initial and last physical address in Hex.

Q2. Assuming the segments are non-overlapping. Find which segment do the following physical addresses belong to. Find the starting address and highest address of each of these physical addresses.

i) 12345h

ii) 10h

iii) 10010h

iii) FFFFEh

Q3. Show 3 different logical addresses for given physical addresses. In case you cannot find 3 explain why?

i) 12345h

ii) 10h

Q4. Find the smallest and the largest possible segment address for 12345h assuming that it is a part of an overlapping segment.

Q5. Explain why 8AB3Fh cannot be the starting address of an 8086 memory segment given that the memory segmentation is non-overlapping?

Q6. Registers of 8086 microprocessors are 16 bit. The MAR [Memory address register] is 16 bits. So how do we fit 20 bits of data into 16-bit registers?

Q7. A memory location has a physical address of 9A7B1 H. Determine the offset address if the segment number is 40FF H.

Q8. Suppose Physical Address is 33330h and Offset is 0020h. Calculate the segment number.

Q9. If the base address is A4FBh and offset is 012Bh. Then, a) find the physical address?

b) find the 2nd Lowest physical address?,

c) Find the 3rd highest physical address?

Q10. Suppose there are a few registers AX = 1000h BX = 2000h CX = 3000h , DS = 4000h CS = 1100h, IP = 1234h SI = ABCDh. What are the physical addresses of a data segment and code segment for the given data?

Q11. Instead of 64KB, assume the size of each segment for an 8086 is 256 bytes. In that case, deduce the 2nd last address of a segment whose starting address is 10000h.

Q12. Suppose you stored a string instruction in the memory of 8086. There are a few registers AX = 1000h BX = 2000h CX = 3000h DS = 4000h , ES = 1100h IP = 1234h SP = ABCDh. Now find the physical address of where the string instruction is stored in the memory.

Q13. Suppose there is a microprocessor X. The registers of this microprocessor are 10 bits and the address bus is 12 bits. Find out the segment size of this microprocessor.

Q14. What are the advantages of overlapping segmentation compared to non-overlapping segmentation? - Explain

Q15.Explain the operations of the following resistors of 8086 microprocessor:

- SP
- BP
- SI
- DI
- IP