Question Model (Second Semester)

Microprocessor

Long Answer Question

1. Draw logical block diagram of 8086 microprocessor and explain its segmented memory structure.
2. What is machine cycle and instruction cycle? Draw a timing diagram for STA 2000h memory instruction. (Choose any memory locations for loading STA 2000h instruction)
3. Write an assembly language program to sort an array in ascending order using 8 bit microprocessor. (Assume appropriate array data and address where minimum array size of 10 should be considered).
4. Explain instruction cycle, machine cycle and T-states. Draw timing diagram of IN instruction with brief description.
5. Draw block diagram of 80286 Microprocessor and explain its main four functional sub-units. Differentiate between Real Address Modes and Protected Virtual Address Mode.
6. Explain LXI and CMP instruction. Write and assembly language program for 8 bit microprocessor to divide 8 bit data stored in 8051 and store the quotient in 8052 and remainder in 8053.
7. Draw block diagram of 80386 and explain its functional units.
8. Describe the working mechanism of DMA. Draw the internal architecture of the 8237 DMAC along with a timing diagram illustrating the process of DMA transfers.
9. Write an assembly language program to find the greatest number in an array in using 8 bit microprocessor. (Assume appropriate array data and address where minimum array size of 20 should be considered).
10. Draw block diagram of 80286 and explain its functional units.
11. Explain instruction cycle, machine cycle and T-states. Draw timing diagram of STA instruction. Make necessary assumptions.
12. Write an assembly language program to find the smallest number in an array using 8 bit microprocessor.(Assume appropriate array data and address where minimum array size of 15 should be considered.)
13. Draw the block diagram of 8086 microprocessor and explain each block.
14. Ten number of 8-bit data stored at memory location 6000H. Write a program for 8085 microprocessor to calculate the sum of odd numbers and store the sum of odd numbers and store the sum of 6010H. (The sum may exceed 8-bits).
15. What are the instructions available in 8085 microprocessor for arithmetic and logic operation? Explain each with example. Also mention, how the flags are affected by each instruction.

Shorts Question

1. What are the basic features of SAP-1 computer? Explain.
2. Draw the timing diagram of instruction MVI B, 9 bit stored a memory location 4050H and explain it.
3. Observe the following program and write the content of Accumulator, register B and flags after execution of each instruction. (Assume initially all flags are reset).

MVI A, 58H

MVI B, 67H

ADD B

ANI 3AH

HLT

1. What is CALL operation? How it differs with JUMP operation? Explain.
2. Explain the function of following signals: ALE, READY, RD and IO/M
3. Write an assembly language program for 8086 microprocessor to display “Computer Science and Information Technology”.
4. What are the registers available in 8086 microprocessor? Mention the function of each register.
5. What is the importance of interrupt in microprocessor based system? Explain how interrupt controller(8259) can be used to handle interrupts.
6. What are the differences between parallel and serial communication? Explain RS 232 interface.
7. Explain briefly on keyboard and display controller.
8. Differentiate between vectored and non-vectored interrupts. Where and how 8259 PIC can be used to handle interrupts.
9. Explain the addressing modes of 8085 microprocessor with examples.
10. Write an ALP for 8086 to read a string and display the string in uppercase.
11. What is system bus? Explain different types of system bus in detail.
12. How DTE and DCE are wired using RS-232 cable. Explain the process of double handshake I/O.
13. What is instruction set? Explain various kind of instructions of 8085 microprocessor.
14. What is mean by memory interfacing? Explain the address decoding process in the 8085 microprocessor.
15. Explain how pipelining is achieved in 8086 microprocessor.
16. Write short notes on.
17. Von Neumann architecture
18. Macro Assembler
19. Explain the addressing modes of 8086 microprocessor with examples.
20. Write an ALP for 8086 to read string and print it in the reverse order.
21. Differentiate between PUSH and POP instruction with example illustrating the use of these instruction.
22. Write the process of address and data separation in DE-multiplexed address/data bus in 8085 microprocessor.
23. What is CALL operation? How does it differ with JUMP operation?
24. Differentiate between synchronous and asynchronous serial communication. Show DTE-DTE and DTE-DCE connection according to RS-232 serial communication standard.
25. What is flag? Explain the flags that are present in 8085 microprocessor.
26. What is instruction set? Explain various kinds of instructions of 8086 microprocessor.
27. Write short notes on:
28. Harvard architecture
29. GDT and LDT
30. What are different modes of parallel communication? Construct a control word for 8255 for following configuration:

Port A and Port Cupper –mode 0

Port B and Port Clower – mode 0

Port A and Port Cupper as input port

Port B and Port Clower as output port

1. Differentiate between interrupt based I/O and DMA based I/O. Explain basic DMA operation in brief.
2. Differentiate between PUSH and POP instruction with example illustrating the use of these instructions.
3. Write an assembly language program for 16 bit microprocessor to reverse the string “This is Microprocessor”.
4. What is the use of AD7-AD0 in 8085 microprocessor? Explain address de-multiplexing process in 8085 microprocessor with suitable diagram.
5. What is mean by addressing mode?
6. Explain all the addressing mode available in 8085 microprocessor.
7. Explain Register Organization in 80386 microprocessor.
8. Draw a logic diagram showing generation of memory and I/O read/write control signals in 8085 microprocessor.
9. Write short notes on (any two):
10. Program Counter
11. Von-Neumann Architecture
12. Interrupt Masking
13. Draw pin diagram of 8085 microprocessor with appropriate labelling.
14. Specify the output in PORT 1 after the execution of the following program. Write comments for each instruction.

MVI A, AAH

MOV B, A

RRC

XRA B

OUT PORT1

HLT

1. What is DMA? Explain the sequence of events that occurs during DMA operation?
2. What is addressing mode? Explain different addressing mode in 8085 microprocessor.
3. Write a program to reverse a given a string using 16 bit microprocessor.
4. Explain memory interfacing in 8085 microprocessor along with appropriate diagram.
5. What are the different operating modes in 80286 microprocessor? Explain in brief about each mode.
6. “Interrupt based I/O is efficient compared to polled I/O”. Justify this statement with general working mechanism in both methods.
7. Write short notes( Any two):
8. Macro Assembler
9. BSR Mode
10. System Bus

**OOP**

Group A

1. What is object oriented programming? Explain objects, class, encapsulation, data hiding, inheritance and polymorphism.
2. Explain operator overloading. Write a program that overloads insertion and extraction operators.
3. What is inheritance? Explain the ambiguities associated with multiple inheritance with suitable example programs.
4. Write a program according to the specification given below.

* Create a class Account with data members acc no, balance and min\_balance(static)
* Include methods for reading and displaying values of objects.
* Define static member function to display min\_balance.
* Create array of objects to store data of accounts and read and display values of each object.

1. What is meant by type conversion? Define two way of converting one user defined data type (object) to another user defined object? Write a program that converts object of another distance class with data members feet and inch. (Assume 1m=3.3 feet and 1cm=0.4 inch)
2. How ambiguity arises in multipath inheritance? How can you remove this type of ambiguity? Explain with suitable example.
3. Write a program according to the specification given below.

* Create a class Teacher with data members tid & subject and ember functions for reading and displaying data members.
* Create another class staff with data members sid & position and member function for reading and displaying data members.
* Derive a class Coordinator from Teacher and staff and the class must have its own data member department and member functions for reading and displaying data members.
* Create two object for Coordinator class and read and display their details. (show solution)

1. Explain the concept of operator overloading? List the operators that cannot be overloaded. Write programs to add two object of distance class with data members feet and inch by using member function and friend function. (Show solution)
2. Explain types of polymorphism briefly. Write down roles of polymorphism. How can we achieve dynamic polymorphism briefly. Write down roles of polymorphism. How can we achieve dynamic polymorphism? Explain with example.
3. Discuss the feature of Object-Oriented Programming. Differentiate between Object Oriented Programming and any other programming language that you know.
4. How can you convert the user defined data type into primitive data type and vice verse? Explain both conversion and routine with suitable example.
5. Create a class stack with suitable data members and member functions to push and pop the elements of the stack. Add the exception when user tries to add item while the stack is full and when user tries to delete item while the stack is empty. Throw exception in both of the cases and handles these exception. Show solution
6. Explain the concept of user-defined to user-defined data conversion rotine located in the destination class.
7. Depict the difference between private and public derivation. Explain derived class constructor with suitable program.
8. Briefly explain the hierarchy of stream classes. Write a program that overloads extraction and insertion operators.

Group B

1. Write a member function called reverseit() that reverses a string (an array of character.) use a for loop that swaps the first and last characters, then the second and next-to-last characters and so on. The string should be passed to reverseit() as an argument. Show solutions
2. What is the principle reason for using default arguments in the function? Explain how missing arguments and default arguments are handled by the function simultaneously? Show solutions
3. “An overloaded function appears to perform different activities depending the kind of data send to it” Justify the statement with appropriate example.
4. Explain the default action of the copy constructor. Write a suitable program that demonstrates the technique of overloading the copy constructor.
5. Briefly explain types of inheritance used in object oriented programming.
6. Create a real scenario where static data members are useful. Explain with suitable example.
7. Create a function called swaps() that interchanges the values of the two arguments sent to it (pass these arguments by reference). Make the function into a template, so it can be used with all numerical data types( char, int, float and so on). Write a main() program to exercise the function with several types. Show solution
8. Explain how exceptions are used for handling C++ error in a systematic and OOP-oriented way with the design that includes multiple exceptions.
9. How is character I/O different from Binary I/O? Explain with examples.
10. “Concept of friend in against the philosophy of Object Oriented Programming”. Explain. Show solution
11. Explain about the importance of constructors and destructors with their execution sequence. Show solution
12. What is template? How can you differentiate a function template from a class template? Explain. Show solution
13. Explain about this pointer with suitable example.
14. Write a C++ program containing a possible exception. Use a try block to throw it and a catch block to handle it.
15. Differentiate between compile time polymorphism and run time polymorphism.
16. What is container class? Differentiate container class from inheritance.
17. Write a program to demonstrate the use of default argument in functions.
18. How can you differentiate a macro with an inline function? Are they same or different? Justify.
19. Define the various ambiguity situations that may occur during the process of inheritance. How can you resolve that ambiguity situation?
20. How object oriented programming differs from object based programming language? Discuss benefits of OOP.
21. What is the use of new and delete operators? Illustrate with example. What are advantages of new malloc.
22. What is meant by return by reference? How can we return values by reference by using reference variable? Illustrate with examples.
23. What is destructor? Write a program to show the destructor call such that it prints the message “memory is released”. Show solution
24. What is this pointer? How can we use it for name conflict resolution? Illustrate with example. Show solution
25. How can you define catch statement that can catch any type of exception? Illustrate the use of multiple catch statement with example. Show solution
26. Which functions can be used for reading and writing object? Describe briefly. Write a program that read values of two objects of student class(assume data members are sid, sname, and level) and display the data in monitor.
27. Write short notes on:
28. Cascading of IO operators
29. Pure Virtual Function
30. What is structured programming? Discuss characteristics and problems associated with structured programming.
31. What is the use of get and getline functions? Explain with suitable example.
32. What is meant by pass by reference? How can we pass arguments by reference by using reference variable? Illustrate with example.
33. What is constructor? Explain the concept of default and default copy with suitable example.
34. What is the concept of friend function? How it violates the data hiding principle? Justify with example.
35. What is exception? Why exception handling is better to use? Explain exception handling with try… catch by using suitable example.
36. When class templates are useful? How can you define a class that can implement stack with integer as well as sack of strings? Illustrate with example.
37. What is meant by stream? Write a program that reads content of file data.txt and displays the content in monitor.
38. Write short notes on:
39. Manipulators
40. Protected Access Specifier
41. Explain the purpose of a namespace with suitable example.
42. What is the purpose reason for passing arguments by reference? Explain with suitable code.
43. Why constructor is needed? Explain different types of constructors with example.
44. Write a program that illustrates the conversions between objects of different classes having conversion function in source object.
45. Explain the difference between private and public inheritance with suitable diagram.
46. Why friend function is required? Discuss with example.
47. How late binding is different from early binding. Write a program that explains late binding using virtual function.
48. Why do we need exceptions? Explain “exceptions with arguments” with suitable program.
49. What are the advantages of using the stream classes for I/O? write a program that writes object to a file.