



Maratha Vidya Prasarak Samaj's

Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

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Subject:

MICROPROCESSOR

(22415)



SYLLABUS

Chapter No.	Name of chapter	Marks With Option
1	8086 16 bit Microprocessor	20
2	The Art of Assembly Language Programming	12
3	Instruction Set of 8086 Microprocessor	24
4	Assembly Language Programming	28
5	Procedure and Macro	18
Total Marks		102



BOARD THEORY PAPER PATTERN

FOR MIC (22415)

Q.1		Attempt any FIVE	5*2=10
	a)	8086 16 bit Microprocessor	
	b)	8086 16 bit Microprocessor	
	c)	The Art of Assembly Language Programming	
	d)	The Art of Assembly Language Programming	
	e)	The Art of Assembly Language Programming	
	f)	Instruction Set of 8086 Microprocessor	
	g)	Procedure and Macro	
Q.2		Attempt any THREE	3*4=12
	a)	8086 16 bit Microprocessor	
	b)	The Art of Assembly Language Programming	
	c)	Instruction Set of 8086 Microprocessor	
	d)	Assembly Language Programming	
Q.3		Attempt any THREE	3*4=12
	a)	The Art of Assembly Language Programming	
	b)	Instruction Set of 8086 Microprocessor	
	c)	Assembly Language Programming	
	d)	Procedure and Macro	
Q.4		Attempt any THREE	3*4=12
	a)	The Art of Assembly Language Programming	
	b)	Instruction Set of 8086 Microprocessor	
	c)	Assembly Language Programming	
	d)	Assembly Language Programming	
	e)	Procedure and Macro	



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Q.5		Attempt any TWO	2*6=12
	a)	8086 16 bit Microprocessor	
	b)	The Art of Assembly Language Programming	
	c)	Assembly Language Programming	
Q.6		Attempt any TWO	2*6=12
	a)	Instruction Set of 8086 Microprocessor	
	b)	Assembly Language Programming	
	c)	Procedure and Macro	



CLASS TEST - I

PAPER PATTERN

Syllabus

Unit No.	Name of the Unit	Course Outcome (CO)
1	8086 16 bit Microprocessor	CO-415.01
2	The Art of Assembly Language Programming	CO-415.02
3	Instruction Set of 8086 Microprocessor	CO-415.03

Q.1	Attempt any FOUR	4*2=8Marks	Course Outcome (CO)
a)	8086 16 bit Microprocessor		CO-415.01
b)	The Art of Assembly Language Programming		CO-415.02
c)	8086 16 bit Microprocessor		CO-415.01
d)	The Art of Assembly Language Programming		CO-415.02
e)	Instruction Set of 8086 Microprocessor		CO-415.03
f)	8086 16 bit Microprocessor		CO-415.01
g)	Instruction Set of 8086 Microprocessor		CO-415.03
Q.2	Attempt any THREE	3*4= 12Marks	
a)	8086 16 bit Microprocessor		CO-415.01
b)	8086 16 bit Microprocessor		CO-415.01
c)	The Art of Assembly Language Programming		CO-415.02
d)	Instruction Set of 8086 Microprocessor		CO-415.03
e)	The Art of Assembly Language Programming		CO-415.02
f)	Instruction Set of 8086 Microprocessor		CO-415.03
g)	The Art of Assembly Language Programming		CO-415.02



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CLASS TEST - II

PAPER PATTERN

Syllabus

Unit No.	Name of the Unit	Course Outcome (CO)
4	Assembly Language Programming	CO-415.04
5	Procedure and Macro	CO-415.05

Q.1	Attempt any FOUR	4*2= 8Marks	Course Outcome (CO)
a)	Assembly Language Programming		CO-415.04
b)	Procedure and Macro		CO-415.05
c)	Assembly Language Programming		CO-415.04
d)	Procedure and Macro		CO-415.05
e)	Assembly Language Programming		CO-415.04
Q.2	Attempt any THREE	3*4= 12Marks	
a)	Assembly Language Programming		CO-415.04
b)	Procedure and Macro		CO-415.05
c)	Assembly Language Programming		CO-415.04
d)	Procedure and Macro		CO-415.05
e)	Assembly Language Programming		CO-415.04



COURSE OUTCOME (CO)

COURSE: Microprocessor (22415)

PROGRAMME: Computer Technology

CO.NO	Course Outcome
CO-415.a	Analyze the functional block of 8086 microprocessor.
CO-415.b	Write Assembly language program for given problem.
CO-415.c	Use instruction for different addressing modes.
CO-415.d	Develop an assembly program using assembler.
CO-415.e	Develop assembly language programs using procedures, macros and modular programming approach.



1. 8086 16-bit Microprocessor

Position in Question Paper

Total Marks: 12

Q.1 a) 2-Marks.

Q.2 a) 4-Marks.

Q.5 a) 6-Marks.

Descriptive Question:

- List any four features of 8086 microprocessors.
- Explain the function of following pins of 8086.
i) MN/MX ii) READY iii) ALE iv) DT/R
- State the function of following pins of 8086 microprocessors.
i) WR ii) M/IO
- Draw the Architecture of 8086 microprocessor & State function of BIU.
- Draw labeled Flag Register of 8086 microprocessors.
- State the use of OF, TF, AF & PF flags in 8086.
- Explain the concept of segmentation in 8086.
- With the help of Diagram, Describe Physical Memory Address generation of 8086.
Calculate the Physical address for given DS=7342H & SI=3216H.
- Describe Concept of pipelining in 8086.
- Difference between Minimum mode & Maximum mode of 8086 microprocessors.

MCQ Question:

- The first micro-processor had a (n) _____.
a) 1-bit data bus
b) 2-bit data bus
c) 3-bit data bus
d) **4-bit data bus**
- _____ processor is first introduced by the Intel in 1971.
a) 8080
b) **4004**
c) 8008
d) 8085
- Which of the following is/are 8-bit microprocessor?
a) 8008
b) 8080
c) 8085
d) **All of the mentioned**
- The limitations of the 8-bit microprocessors was/were is _____.
a) Low speed of execution
b) Low memory addressing capability
c) Less powerful instruction set
d) **All of the mentioned**
- The number of address and data lines of 8085 are _____.
a) 8 and 8
b) **16 and 8**
c) 8 and 16
d) 16 and 16



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6. Intel's 8086 were launched in the year _____.
a) 1971
b) 1972
c) 1974
d) **1978**
7. Which of the microprocessor comprises?
a) Register section
b) One or more ALU
c) Control unit
d) **All of the mentioned**
8. A 16-bits address bus can generate _____ addresses.
a) 32767
b) 25652
c) **65536**
d) None of the mentioned
9. The register of 8086 are _____ bits in size.
a) 8
b) 12
c) **16**
d) 20
10. Which of the following registers are not available in 8086 microprocessors?
a) General data register
b) Segment registers
c) Pointer and Index register
d) **All of the mentioned**
11. Which of the following is a 16-bit register?
a) AL
b) **AX**
c) AH
d) All of the mentioned
12. _____ register is used as a default counter in case of string and loop instructions.
a) AX
b) BX
c) **CX**
d) DX
13. _____ register is used as an implicit operand or destination operand in case of arithmetic instructions and Input-Output instructions.
a) AX
b) BX
c) CX
d) **DX**
14. The number of address and data lines of 8086 _____.
a) 8 and 8
b) 16 and 16
c) **20 and 16**
d) 16 and 20
15. _____ is the most important segment and it contains the actual assembly language instructions to be executed by the microprocessor.
a) Data segment
b) **Code segment**
c) Stack segment
d) Extra segment
16. Base Pointer (BP) contains offset address of _____ segment.
a) **Data segment**
b) Code segment
c) Stack segment
d) Extra segment
17. Instruction Pointer (IP) contains offset address of _____ segment.
a) Data segment
b) **Code segment**



- c) Stack segment
d) Extra segment
18. The Instruction Pointer is _____ bits in length.
a) 8 bits
b) 4 bits
c) **16 bits**
d) 32 bits
19. The index register is used to hold _____.
a) Segment memory
b) Offset memory
c) **Offset address**
d) Segment address
20. SI and DI registers is used to store the offset addresses of _____.
a) CS and DS or ES
b) **DS and DS or ES**
c) DS or ES and CS
d) DS and ES
21. Which of the following is not a machine control flag?
a) Direction flag
b) Interrupt flag
c) **Overflow flag**
d) Trap flag
22. In 8086 the overflow flag is set when _____.
a) The sum is more than 16 bit
b) Carry and sign flags are set
c) **Signed numbers go out of their range after an arithmetic operation**
d) During subtraction
23. Direction flag is used with _____.
a) **String instructions**
b) Stack Instructions
c) Arithmetic Instructions
d) Branch Instructions
24. If there is a carry from lowest nibble during addition, _____ flag sets.
a) Carry
b) **Auxiliary carry**
c) Over flow
d) Sign
25. If _____ flag is set; the processor enters the single step execution mode.
a) Direction
b) **Trap**
c) Interrupt
d) Zero
26. The Intel 8086 microprocessor is a _____ processor.
a) 8 bits
b) 4 bits
c) **16 bits**
d) 32 bits
27. What is /are the improvement is in the architecture of 8086 over 8085 architecture
a) A 16-bit ALU, a set of 16-bit registers
b) Segmented memory addressing
c) Fetched instruction queue for overlapped fetching and execution
d) **All of the mentioned**
28. The BIU prefetches the instruction from memory and store them in _____.
a) **Queue**
b) Register



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- c) Memory
d) Stack
29. The 8086 fetch instruction one after another from _____ of memory.
a) Data segment
b) **Code segment**
c) Extra segment
d) Stack segment
30. Which is not part of execution unit?
a) ALU
b) **Address conversion mechanism**
c) Flag register
d) General purpose registers
31. The length of pre-decoding instruction byte queue is _____ bytes long.
a) 2
b) 4
c) **6**
d) 8
32. If segment address = 1005 H, offset address = 5555 H, then the physical address is _____.
a) 655A H
b) **155A5 H**
c) 4550 H
d) 56555
33. In a segment if offset is a 16-bit number, then the maximum possible locations are _____.
a) 1 KB
b) 64 bytes
c) **64 KB**
d) 1 MB
34. If the size of the segment is 64 kb, what will be the starting and ending off set addresses of it
a) 0000H to 7FFFH
b) **0000H to FFFFH**
c) 8000H to FFFFH
d) 00000H to FFFFFH
35. Of the segment addresses are assigned as 0000H to F000H and the offset addresses values are from 0000H to FFFFH, then the physical addresses range from _____.
a) 0000H to FFFFH
b) 00000H to F0000H
c) **00000H to FFFFF**
d) 0000H to FFF0H
36. 8086 Microprocessor supports _____ modes of operation.
a) **2**
b) 3
c) 4
d) 5
37. Which of the following is not a Features of 8086?
a) It uses two stages of pipelining
b) It is available in 3 versions based on the frequency of operation
c) Fetch stage can pre-fetch up to 6 bytes of instructions
d) **It has 512 vectored interrupts**
38. 8086 can access up to?
a) 512KB
b) **1Mb**
c) 2Mb
d) 256KB



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39. 8086 has ___ address bus.

a) 16-bit

c) **20-bit**

b) 18-bit

d) 24-bit

40. Which flag is set to 1 when the result of arithmetic or logical operation is zero else it is set to 0?

a) Binary bit

c) Sign flag

b) **Zero flag**

d) Overflow flag



2. The Art of Assembly Language Programming

Position in Question Paper

Total Marks: 08

Q.1 b) 2-Marks.

Q.1 b) 2-Marks.

Q.3 b) 4-Marks.

Descriptive Question:

- Describe the function of following directions
i. DD ii. DB iii. DUP iv. EQU
- State the function of following
i. Editor ii. Assembler iii. Linker iv. Debugger
- Describe following assembler directives
i. Assume ii. Segment
- Draw the flowchart symbols used while developing ALP.

MCQ Question:

- _____ converts the programs written in assembly language into machine instructions.
a) Machine compiler c) **Assembler**
b) Interpreter d) Converter
- The instructions like MOV or ADD are called as _____.
a) **OP-Code** c) Commands
b) Operators d) None of the mentioned
- The alternate way of writing the instruction, ADD #5,R1 is _____.
a) ADD [5],[R1]; c) ADDIME 5,[R1];
b) **ADDI 5,R1;** d) There is no other way
- The directive used to perform initialization before the execution of the code is _____.
a) Reserve c) **Dataword**
b) Store d) EQU
- _____ directive specifies the end of execution of a program.
a) End c) Stop
b) **Return** d) Terminate
- The assembler stores all the names and their corresponding values in _____.
a) Special purpose Register c) Value map Set
b) **Symbol Table** d) None of the mentioned
- The assembler stores the object code in _____.
a) Main memory c) RAM
b) Cache d) **Magnetic disk**
- The coded object modules of the program to be assembled are present in
a) .ASM file b) **.OBJ file**



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- c) .EXE file
d) .OBJECT file
9. The advantages of assembly level programming are
a) flexibility of programming is more
b) chances of error are less
c) debugging is easy
d) all of the mentioned
10. The extension that is essential for every assembly level program is
a) .ASP
b) .ALP
c) **.ASM**
d) .PGM
11. The listing file is identified by
a) source file name
b) extension .LSF
c) source file name and an extension .LSF
d) source file name and an extension .LST
12. The extension file that is must for a file to be accepted by the LINK as a valid object file is
a) **.OBJ file**
b) .EXE file
c) .MASM file
d) DEBUG file
13. DEBUG.COM facilitates the
a) debugging
b) trouble shooting
c) **debugging and troubleshooting**
d) debugging and assembling
14. DEBUG is able to troubleshoot only
a) **.EXE files**
b) .OBJ files
c) .EXE file and .OBJ file
d) .EXE flie and .LST file
15. Which method/s of representation of numbers occupies a large amount of memory than others?
a) **Sign-magnitude**
b) 1's complement
c) 2's complement
d) 1's & 2's compliment
16. The purpose of the ORIGIN directive is _____
a) **To indicate the starting position in memory, where the program block is to be stored**
b) To indicate the starting of the computation code
c) To indicate the purpose of the code
d) To list the locations of all the registers used
17. The assembler directives which are the hints using some predefined alphabetical strings are given to
a) processor
b) memory
c) **assembler**
d) processor & assembler
18. The directive used to inform the assembler, the names of the logical segments to be assumed for different segments used in the program is
a) **ASSUME**
b) SEGMENT
c) SHORT
d) DB
19. Match the following
a) DB 1) used to direct the assembler to reserve only 10-bytes



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- b) Does not replace until the test condition is satisfied
c) **Finds the Branch offset and replaces the Branch target with it**
d) Replaces the target with the value specified by the DATAWORD directive
30. assembly language programs are written using
a) hex cod
b) mnemonics
c) ascii code
d) none of these
31. A system program that brings together separately compiled modules of a program into a form language that is suitable for execution.
a) assembler
b) linking cod
c) cross compiler
d) none of these
32. Which of the following system software always resides in the main memory?
a) text editor
b) assembler
c) linker
d) loader
33. Loader is a program that
a) places programs into memory and prepares them for execution
b) automates the translation of assembly language into machine language
c) accepts a program written in a high level language and produces an object program
d) appears to execute a source program as if it were machine language
34. In an absolute loading scheme, which loader function is accomplished by programmer?
a) Linking
b) Allocation
c) Both (a) and (b)
d) Reallocation
35. A loader is a program that
a) program that places programs into memory and prepares them for execution.
b) program that automates the translation of assembly language into machine language.
c) program that accepts a program written in a high level language and produces as object program
d) None of these
36. Which of the following assembler directives are used to define a Procedure in the 8086 microprocessor?
a) PROCEDURE and ENDP
b) STARTP and ENDP
c) PROC and ENDPROC
d) None of the above
37. _____ directive is used to specify and assign the memory required for the block of code.
a) Allocate
b) Assign
c) Set
d) Reserve
38. DEBUG.COM facilitates the
a) debugging
b) trouble shooting
c) debugging and troubleshooting
d) debugging and assembling
39. _____ directive specifies the end of execution of a program.
a) End
b) Return
c) Stop
d) Terminate



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40. To overcome the problems of the assembler in dealing with branching code we use

- a) Interpreter
- b) Debugger

- c) Op-Assembler
- d) Two-pass assembler



3. Instruction Set of 8086 Microprocessor

Position in Question Paper

Total Marks: 16

Q.1 c) 2-Marks.

Q.2 d) 4-Marks.

Q.3 d) 4-Marks.

Q.6 b) 6-Marks.

Descriptive Question:

- List any two addressing modes of 8086 with example.
- Identify the addressing modes of following instruction.
 - MOV AX,2034H
 - MOV AL,[6000H]
 - ADD AL,CL
 - MOV AX,50H[BX] [SI]
- Explain the following instruction of 8086.
 - XLAT
 - XCHG
- Explain with suitable example the instruction given below.
 - DAA
 - AAM
- Differentiate between instruction ROL and RCL.
- Explain LOOP instruction.
- Compare between JMP and CALL instruction.
- State the function of STC and CMC instruction of 8086.
- Describe any two string operation instruction of 8086 with syntax and example.
- Write assembly language instruction of 8086 microprocessors to
 - Multiply 4H by 5H
 - Rotate content of AX by 4 bit towards left

MCQ Question:

- The instruction that is used to transfer the data from source operand to destination operand is
 - data copy/transfer instruction**
 - branch instruction
 - arithmetic/logical instruction
 - string instruction
- Which of the following is not a data copy/transfer instruction?
 - MOV
 - PUSH
 - DAS**
 - POP
- The instructions that involve various string manipulation operations are
 - branch instructions
 - flag manipulation instructions
 - shift and rotate instructions
 - string instructions**
- In PUSH instruction, after each execution of the instruction, the stack pointer is
 - incremented by 1
 - decremented by 1
 - incremented by 2
 - decremented by 2**



5. The instruction, MOV AX, 0005H belongs to the address mode
- a) register
 - b) direct
 - c) **immediate**
 - d) register relative
6. Which of the following instruction is not valid?
- a) MOV AX, BX
 - b) **MOV DS, 5000H**
 - c) MOV AX, 5000H
 - d) PUSH AX
7. The instruction that is used for finding out the codes in case of code conversion problems is
- a) XCHG
 - b) **XLAT**
 - c) XOR
 - d) JCXZ
8. The instruction that pushes the contents of the specified register/memory location on to the stack is
- a) PUSHF
 - b) POPF
 - c) **PUSH**
 - d) POP
9. The instruction, "INC" increases the contents of the specified register or memory location by
- a) 2
 - b) 0
 - c) **1**
 - d) 3
10. In POP instruction, after each execution of the instruction, the stack pointer is
- a) incremented by 1
 - b) decremented by 1
 - c) **incremented by 2**
 - d) decremented by 2
11. The instruction in which adjustment is made before performing the operation is
- a) AAA
 - b) AAS
 - c) AAM
 - d) **AAD**
12. The instruction that loads effective address formed by destination operand into the specified source register is
- a) **LEA**
 - b) LDS
 - c) LES
 - d) LAHF
13. The instruction that loads the AH register with the lower byte of the flag register is
- a) SAHF
 - b) AH
 - c) **LAHF**
 - d) PUSHF
14. The instruction, MOV AX, [2500H] is an example of
- a) immediate addressing mode
 - b) **direct addressing mode**
 - c) indirect addressing mode
 - d) register addressing mode
15. The instruction that loads the flag register completely from the word contents of the memory location is
- a) PUSH
 - b) POP
 - c) PUSHF
 - d) **POPF**
16. The instruction that adds immediate data/contents of the memory location specified in an instruction/register to the contents of another register/memory location is
- a) SUB
 - b) **ADD**



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- c) MUL
d) DIV
17. The instruction that supports addition when carry exists is
a) ADD
b) **ADC**
c) ADD & ADC
d) None of the mentioned
18. The instruction that subtracts 1 from the contents of the specified register/memory location is
a) INC
b) SUBB
c) SUB
d) **DEC**
19. The instruction that enables subtraction with borrow is
a) DEC
b) SUB
c) **SBB**
d) None of the mentioned
20. Which of the following is a mnemonic?
a) ADD
b) ADC
c) **AAA**
d) ADD & ADC
21. In general, the source operand of an instruction can be
a) memory location
b) register
c) immediate data
d) **all of the mentioned**
22. In general, the destination operand of an instruction can be
a) memory location
b) register
c) immediate data
d) **memory location and register**
23. The instructions that are used for reading an input port and writing an output port respectively are
a) MOV, XCHG
b) MOV, IN
c) IN, MOV
d) **IN, OUT**
24. In the RCL instruction, the contents of the destination operand undergo function as
a) **carry flag is pushed into LSB & MSB is pushed into the carry flag**
b) carry flag is pushed into MSB & LSB is pushed into the carry flag
c) auxiliary flag is pushed into LSB & MSB is pushed into the carry flag
d) parity flag is pushed into MSB & LSB is pushed into the carry flag
25. During comparison operation, the result of comparing or subtraction is stored in
a) memory
b) registers
c) stack
d) **no where**
26. The instruction, MOV AX, 1234H is an example of
a) register addressing mode
b) direct addressing mode
c) **immediate addressing mode**
d) based indexed addressing mode
27. The flag that acts as Borrow flag in the instruction, SBB is
a) direction flag
b) **carry flag**
c) parity flag
d) trap flag
28. The instruction that is used to convert the result of the addition of two packed BCD numbers to a valid BCD number is
a) **DAA**
b) DAS
c) AAA
d) AAS



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29. The ROR instruction rotates the contents of the destination operand to
- a) left
 - b) right**
 - c) left and then right
 - d) right and then left
30. If the data is present in a register and it is referred using the particular register, then it is
- a) direct addressing mode
 - b) register addressing mode**
 - c) indexed addressing mode
 - d) immediate addressing mode
31. The instruction, CMP to compare source and destination operands it performs
- a) addition
 - b) subtraction**
 - c) division
 - d) multiplication
32. Match the following
- | | |
|-------------|---|
| A) MOVSB/SW | 1) loads AL/AX register by content of a string |
| B) CMPS | 2) moves a string of bytes stored in source to destination |
| C) SCAS | 3) compares two strings of bytes or words whose length is stored in CX register |
| D) LODS | 4) scans a string of bytes or words |
- a) A-3, B-4, C-2, D-1
- b) A-2, B-1, C-4, D-3
- c) A-2, B-3, C-1, D-4
- d) A-2, B-3, C-4, D-1**
33. NOP instruction introduces
- a) Address
 - b) Delay**
 - c) Memory location
 - d) None of the mentioned
34. Which of the following is not a machine controlled instruction?
- a) HLT
 - b) CLC**
 - c) LOCK
 - d) ESC
35. If the offset of the operand is stored in one of the index registers, then it is
- a) based indexed addressing mode
 - b) relative based indexed addressing mode
 - c) indexed addressing mode**
 - d) none of the mentioned
36. The instruction that converts the result in an unpacked decimal digits is
- a) AAA
 - b) AAS
 - c) AAM
 - d) All of the mentioned**
37. If the offset of the operand is stored in one of the index registers, then it is
- a) based indexed addressing mode
 - b) relative based indexed addressing mode
 - c) indexed addressing mode**
 - d) none of the mentioned
38. The Carry flag is undefined after performing the operation
- a) AAA
 - b) ADC
 - c) AAM
 - d) AAD**
39. The instruction, MOV AX,[BX] is an example of
- a) direct addressing mode
 - b) register addressing mode**



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- c) register relative addressing mode
- d) register indirect addressing mode**

40. The instruction that pushes the flag register on to the stack is

- a) PUSH
- b) POP
- c) PUSHF**
- d) POPF



4. Assembly Language Programming

Position in Question Paper

Total Marks: 20

Q.2 d) 4-Marks.

Q.3 d) 4-Marks.

Q.5 b) 6-Marks.

Q.5 b) 6-Marks.

Descriptive Question:

1. Write an ALP to add the series of 5 numbers.
2. Write an ALP for 8086 to multiply two 16 bit numbers.
3. Write an ALP to subtract two 8 bit numbers.
4. Write an ALP for 8086 to perform BCD addition of two numbers.
5. Write an ALP for 8086 to find largest number in array.
6. Write an ALP to sort an array of 10 no.s in ascending order.
7. Write an ALP to check number to be odd or even.
8. Write an ALP to find length of string.
9. Write an ALP to count number of '0' in 16 bit number stored in AX register.

MCQ Question:

1. The disadvantage of machine level programming is
 - a) time consuming
 - b) chances of error are more
 - c) debugging is difficult
 - d) all of the mentioned**
2. The coded object modules of the program to be assembled are present in
 - a) .ASM file
 - b) .OBJ file**
 - c) .EXE file
 - d). OBJECT file
3. The advantages of assembly level programming are
 - a) flexibility of programming is more
 - b) chances of error are less
 - c) debugging is easy
 - d) all of the mentioned**
4. The extension that is essential for every assembly level program is
 - a) .ASP
 - b). ALP
 - c) .ASM**
 - d). PGM
5. The directory that is under work must have the files that are related to
 - a) Norton's editor
 - b) Assembler
 - c) Linker
 - d) All of the mentioned**
6. The listing file is identified by
 - a) source file name
 - b) extension. LSF
 - c) source file name and an extension. LSF
 - d) source file name and an extension. LST**



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7. The extension file that is must for a file to be accepted by the LINK as a valid object file is
- a) **.OBJ file**
 - b) .EXE file
 - c). MASM file
 - d) DEBUG file
8. The listing file contains
- a) total offset map of a source file
 - b) offset address and labels
 - c) memory allot for different labels
 - d) **all of the mentioned**
9. DEBUG.COM facilitates the
- a) debugging
 - b) trouble shooting
 - c) **debugging and trouble shooting**
 - d) debugging and assembling
10. DEBUG is able to troubleshoot only
- a) **.EXE files**
 - b) .OBJ files
 - c) .EXE file and .OBJ file
 - d) .EXE flie and .LST file
- 11.Assembly languages were developed to provide?
- a) mnemonics
 - b) symbols
 - c) **Both A and B**
 - d). None of the above
12. A program that is responsible for this conversion is known as?
- a) Compiler
 - b) **Assembler**
 - c) Interpreter
 - d) Interrupts
13. Assembly language is often termed as?
- a) **low-level language**
 - b) middle-level language
 - c) high-level language
 - d) None of the above
14. An assembly language program is a series of statements, which are either assembly language instructions such as ADD and MOV, or statements called?
- a) Functions
 - b) Files
 - c) Program
 - d) **Directives**
15. Which directive is the most widely used data directive in the assembler?
- a) AB
 - b) QB
 - c) PB
 - d) **DB**
- 16.Labels in Assembly Language, the first character should be in alphabetical character; it cannot be a number.
- a) **TRUE**
 - b) FALSE
 - c) Can be true or false
 - d) Cannot say
17. The mnemonics and operands fields together perform the real work of the program and accomplish the tasks.
- a) **Yes**
 - b) No
 - c) Can be yes or no
 - d) Cannot say
- 18.A string is a collection of characters. Each Character is an of byte length which is stored at successive locations. In the 8086 microprocessor, which characters are considered in the string?
- a) EBCDIC characters
 - b) **ASCII characters**
 - c) String does not treat characters
 - d) None of the above



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19. While performing any of the MOVE instructions over Strings, i.e. MOVSB, MOBSW or MOVSDB, by default, the data is transferred from -

- a) **DS:SI to ES:DI**
- b) ES:DI to DS:SI
- c) ES:SI to DS:DI
- d) None of the above

20. Which of the following is the correct code for repeating the MOVSB instructions 10 times?

- a) REPEAT MOVSB 10
- b) **REP 10 MOV SBCX=10**
- c) REP MOVSB
- d) None of the above

21. Which of the following flags gets affected when a compare instruction, i.e. CMPSB, CMPSW or CMPSD is executed?

- a) Direction Flag (DF)
- b) Trap Flag (TF)
- c) Interrupt Flag (IF)
- d) **Zero Flag (ZF)**

22. At a time, on how many bits can we operate while performing any string operation?

- a) 8 bits
- b) 16 bits
- c) 32 bits
- d) **All of the above**

23. The instruction that is used to transfer the data from source operand to destination operand is

- a) **data copy/transfer instruction**
- b) branch instruction
- c) arithmetic/logical instruction
- d) string instruction

24. Which of the following is not a data copy/transfer instruction?

- a) MOVB.
- b) PUSH
- c) **DAS**
- d) POP

25. The instructions that involve various string manipulation operations are

- a) branch instructions
- b) flag manipulation instructions
- c) shift and rotate instructions
- d) **string instructions**

26. Which of the following instruction is not valid?

- a) MOV AX, BX
- b) **MOV DS, 5000H**
- c) MOV AX, 5000H
- d) PUSH AX

27. _____ converts the programs written in assembly language into machine instructions.

- a) Machine compiler
- b) Interpreter
- c) **Assembler**
- d) Converter

28. The instructions like MOV or ADD are called as _____

- a) **OP-Code**
- b) Operators
- c) Commands
- d) None of the mentioned

29. The alternate way of writing the instruction, ADD #5,R1 is _____

- a) ADD [5],[R1];
- b) **ADDI 5,R1;**
- c) ADDIME 5,[R1];
- d) There is no other way

30. The assembler directive EQU, when used in the instruction: Sum EQU 200 does

- a) Finds the first occurrence of Sum and assigns value 200 to it
- b) **Replaces every occurrence of Sum with 200**



- a) c) Re-assigns the address of Sum by adding 200 to its original address
d) Assigns 200 bytes of memory starting the location of Sum
31. The purpose of the ORIGIN directive is _____
a) **To indicate the starting position in memory, where the program block is to be stored**
b) To indicate the starting of the computation code
c) To indicate the purpose of the code
d) To list the locations of all the registers used
32. The directive used to perform initialization before the execution of the code is _____
a) Reserve
b) Store
c) **Dataword**
d) EQU
33. _____ directive is used to specify and assign the memory required for the block of code.
a) Allocate
b) Assign
c) Set
d) **Reserve**
34. _____ directive specifies the end of execution of a program.
a) End
b) **Return**
c) Stop
d) Terminate
35. The last statement of the source program should be _____
a) Stop
b) Return
c) OP
d) **End**
36. When dealing with the branching code the assembler _____
a) Replaces the target with its address
b) Does not replace until the test condition is satisfied
c) **Finds the Branch offset and replaces the Branch target with it**
d) Replaces the target with the value specified by the DATAWORD directive
37. The assembler stores all the names and their corresponding values in _____
a) Special purpose Register
b) **Symbol Table**
c) Value map Set
d) None of the mentioned
38. The assembler stores the object code in _____
a) Main memory
b) Cache
c) RAM
d) **Magnetic disk**
39. The utility program used to bring the object code into memory for execution is _____
a) **Loader**
b) Fetcher
c) Extractor
d) Linker
40. To overcome the problems of the assembler in dealing with branching code we use _____
a) Interpreter
b) Debugger
c) Op-Assembler
d) **Two-pass assembler**



5. Procedure and Macro

Position in Question Paper

Total Marks: 12

Q.1 d) 2-Marks.

Q.4 d) 4-Marks.

Q.5 b) 6-Marks.

Descriptive Question:

1. Explain re-entrant and recursive procedure
2. State the functions of following directives
a. PROC b. ENDP
3. Compare FAR and NEAR procedure
4. Define MACRO. List 4 advantages of it
5. Describe MACRO with syntax and example
6. Write an ALP using macro to perform following operations $x=(a+b)*(c+d)$
7. What do you mean by procedure? With 2 advantages.

MCQ Question:

1. If a number of instructions are repeating through the main program, then to reduce the length of the program, _____ is used.
a) Procedure
b) subroutine
c) **macro**
d) none of the mentioned
2. The process of assigning a label or macro name to the string is called
a) initialising macro
b) initialising string macro
c) defining a string macro
d) **defining a macro**
3. A macro within a macro is called
a) macro-within-macro
b) **nested macro**
c) macro-in-macro
d) none of the mentioned
4. A macro can be defined as
a) beginning of a program
b) end of a program
c) after initialisation of program
d) **anywhere in a program**
5. A macro can be used as _____
a) in data segment
b) to represent directives
c) to represent statements
d) **all of the mentioned**
6. The end of a macro can be represented by the directive.
a) END
b) ENDS
c) **ENDM**
d) ENDD
7. Inserting the statements and instructions represented by macro, directly at the place of the macro name, in the program, is known as
a) **calling a macro**
b) inserting a macro



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- c) initializing a macro
d) none of the mentioned
8. The time required for execution of a macro is _____ that of the procedure.
a) greater than
b) **less than**
c) equal to
d) none of the mentioned
9. Which of the following statements is incorrect?
a) complete code of instruction string is inserted at each place, wherever the macro name appears
b) macro requires less time of execution than that of procedure
c) **macro uses stack memory**
d) macro name can be anything except registers and mnemonics
10. The beginning of the macro can be represented as
a) START
b) BEGIN
c) **MACRO**
d) None of the mentioned
11. A microprocessor is a chip integrating all the functions of a CPU of a computer.
a) multiple
b) **single**
c) double
d) triple
12. Microprocessor is a/an circuit that functions as the CPU of the compute
a) **electronic**
b) mechanic
c) integrating
d) processing
13. Microprocessor is the of the computer and it perform all the computational tasks
a) main
b) **heart**
c) important
d) simple
14. The purpose of the microprocessor is to control
a) **memory**
b) switches
c) processing
d) tasks
15. The first digital electronic computer was built in the year
a) 1950
b) 1960
c) **1940**
d) 1930
16. In 1960's Texas institute invented
a) **integrated circuits**
b) microprocessor
c) vacuum tubes
d) transistors
17. The intel 8086 microprocessor is a processor
a) 8 bit
b) **16 bit**
c) 32 bit
d) 4 bit
18. The microprocessor can read/write 16-bit data from or to
a) **memory**
b) I/O device
c) processor
d) register
19. In 8086 microprocessors, the address bus is bit wide
a) 12 bit
b) 10 bit
c) 16 bit
d) **20 bit**
20. The work of EU is
a) encoding
c) **decoding**



- b) processing
d) calculations
21. The 16-bit flag of 8086 microprocessors is responsible to indicate
a) the condition of result of ALU operation
b) the condition of memory
c) the result of addition
d) the result of subtraction
22. The OF is called as
a) overflow flag
b) overdue flag
c) one flag
d) over flag
23. The IF is called as
a) initial flag
b) indicate flag
c) interrupt flag
d) inter flag
24. The register AX is formed by grouping
a) AH & AL
b) BH & BL
c) CH & CL
d) DH & DL
25. The SP is indicated by
a) single pointer
b) stack pointer
c) source pointer
d) destination pointer
26. The BP is indicated by
a) base pointer
b) binary pointer
c) bit pointer
d) digital pointer
27. The SS is called as
a) single stack
b) stack segment
c) sequence stack
d) random stack
28. INC destination increments the content of destination by
a) 1
b) 2
c) 30
d) 41
29. IMUL source is a signed
a) multiplication
b) addition
c) subtraction
d) division
30. destination inverts each bit of destination
a) NOT
b) NOR
c) AND
d) OR
32. The JS is called as
a) jump the signed bit
b) jump single bit
c) jump simple bit
d) jump signal it
33. Instruction providing both segment base and offset address are called
a) below type
b) far type
c) low type
d) high type
34. The conditional branch instruction specify for branching
a) conditions
c) instruction



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- b) address
35. The microprocessor determines whether the specified condition exists or not by testing the
- a) carry flag
b) conditional flag
- d) memory
c) common flag
d) sign flag
36. The LES copies to words from memory to register and
- a) DS
b) CS
c) **ES**
d) DS
37. The translates a byte from one code to another code
- a) **XLAT**
b) XCHNG
c) POP
d) PUSH
38. The contains an offset instead of actual address
- a) SP
b) **IP**
c) ES
d) SS
39. The 8086 fetches instruction one after another from memory
- a) **code segment**
b) IP
c) ES
d) SS
40. The BIU contains FIFO register of size 6 bytes called
- a) **Queue**
b) stack
c) segment
d) register