

2013

COMPUTER SCIENCE — HONOURS — PRACTICAL

Seventh Paper

(Group – A)

Full Marks – 50

The figures in the margin indicate full marks

[Under 1+1+1 System]

Time : 4 hours

Second Day

Marks Distribution

1. Experiment	:	35
2. Viva-Voce	:	10
3. Sessional	:	05

Experiment

1. Flow Chart / Algorithm	:	05
2. Program	:	10
3. Implementation	:	10
4. Result	:	05
5. Discussions	:	05

Answer *any one* question

1. Write a program in 8085 assembly language to generate a series of Fibonacci numbers upto a given value of N. Store 00 at the end of the series. 35

2. Write a program in 8085 assembly language to add two 16-bit Hexadecimal numbers and subtract 38H from the sum. Store final results in consecutive memory locations. 35

3. Write a program in 8085 assembly language to identify a given byte is palindrome or not. If it is palindrome, then store 01 in a suitable memory location, otherwise store 00. 35

4. Write an assembly language program for 8085 to subtract an 8 - bit number from another 8 - bit number using 2's complement method. If the result is negative save 01H else 00H in a suitable memory location along with the result. Take at least three sets of data.

35

5. Write an assembly language program for 8085 to generate an AP series for n terms and store the series in suitable consecutive memory locations. The common difference (d), the first term (a_0) and the number of terms (n) may be taken at will. But it is essential that the number of terms (n) is less than or equal to ten.

35

6. Write an assembly language program for 8085 to find square root of all ten elements of an array containing 8 - bit elements. If the number is not a perfect square then store number which is close to its square root. Store all the square roots at separate consecutive memory locations.

35

✓ 7. Write an assembly language program for 8085 to count the total number of 1's and 0's of an array containing $(20)_{10}$ elements. Size of each element of the array is of 8 - bit. Store the count of 1's and 0's in different suitable consecutive memory locations.

35

✓ 8. Write an assembly language program for 8085 to generate Fibonacci series containing $(10)_{10}$ terms. Store the terms in suitable consecutive memory locations.

35

9. Write an assembly language program for 8085 to count the total number of elements from an array of $(20)_{10}$ elements which are odd as well as in even parity. Store the total count in a separate suitable memory location.

35

10. Write an assembly language program for 8085 to sort an array of $(20)_{10}$ elements in ascending order, copy the entire array and store all the elements in reverse manner into another suitable consecutive memory locations.

35

11. Write an assembly language program for 8085 to convert a 2-digit BCD number to its corresponding binary equivalent.

35

2013

COMPUTER SCIENCE — HONOURS — PRACTICAL

Seventh Paper

(Group – A)

Full Marks – 50

The figures in the margin indicate full marks

[Under 1+1+1 System]

Time : 4 hours

First Day

Marks Distribution

1. Experiment	:	35
2. Viva-Voce	:	10
3. Sessional	:	05

Experiment

1. Flow Chart / Algorithm	:	05
2. Assembly language programming	:	10
3. Implementation	:	10
4. Result	:	05
5. Discussion	:	05

Answer *any one* question

1. Write an assembly language program for 8085 to find the Greatest Common Divisor (GCD) of two numbers. 35
2. Write an assembly language program for 8085 to multiply a 16 - bit number with an 8 - bit number and subtract 22H from the result. The numbers multiplied must be greater than 22H. Take at least three sets of data. 35
3. Write an assembly language program for 8085 to find the 3rd smallest element from an array of ten (10) elements. The array should have repeated elements. To find the 3rd smallest element the array should not be sorted. 35

4. Write a program in 8085 assembly language to find the value of $Y = a^3 - b^3$, where a and b are two 8-bit data read from the memory. Store the result in the memory location XX60H.

35

5. Write a program in 8085 assembly language to sort $N(> 5)$ numbers using selection sort.

35

6. Write a program in 8085 assembly language to perform M/N , where M is a 16-bit data and N is an 8-bit data. Store the result and the remainder in the two consecutive memory locations.

35

7. Write a program in 8085 assembly language to add 10 BCD numbers stored in ten consecutive memory locations. Note that the final sum is to be less than 9999H.

35

8. Write a program in 8085 assembly language to calculate the sum of the series of odd numbers from the list of given numbers. The length of the list is in the memory location YY00H and the series itself begins from the memory location YY10H. Assume the sum to be 16-bit and store the sum in the memory locations XX00H and XX01H.

35

9. Write an assembly language program in 8085 to generate Fibonacci numbers 1,1,2,3,5,..... upto 20 terms and add those numbers.

35

10. Write an assembly language program in 8085 to arrange a set of 10 numbers in descending order.

35

11. Write an assembly language program in 8085 to find the n th term of an AP series, whose first term (a), common difference (d) and number of terms (n) are given. Show the results for at least 3 sets.

35

12. Write two separate assembly language programs in 8085 to convert :
 (i) Binary to Gray code ; and (ii) Gray to Binary code.

35

2012

COMPUTER SCIENCE—HONOURS—PRACTICAL

Seventh Paper

Group - A

Full Marks – 50

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable

[Under 1+1+1 – 09/New Systems]

Marks Distribution :

1. Experiment	: 35	2. Viva-Voce	: 10
3. Sessional	: 05		

Experiment :

1. Flow chart/Algorithm	: 05	2. Program	: 10
3. Implementation	: 10	4. Result	: 05
5. Discussions	: 05		

Day – 2 (Second Day)

Attempt any one question

1. Given a byte in a suitable memory location. Write a program in 8085 assembly language for the following: (i) if MSB and LSB of the given byte are 0 and 1 respectively, then multiply the given byte by 2 and (ii) if MSB and LSB of the given byte are 1 and 0 respectively, then divide the given byte by 2. Store the result in the two consecutive memory locations.

35

2. Write a program in 8085 assembly language to find the LCM of N ($>=7$) numbers.

35

3. Write a program in 8085 assembly language to convert ASCII to decimal. Show at least four conversions.

35

4. Write a program in 8085 assembly language to split a HEX data into two nibbles and store it in the two memory locations.

35

5. A block of data consisting of 256 bytes is stored in the memory location starting at XX00H. Write a program in 8085 assembly language to relocate in the memory location from XX50H. Do not shift the block or part of the block anywhere else in the memory location.

35

6. Write a program in 8085 assembly language for displaying binary up counter. Counter should count numbers from 00H to FFH and it should increment after every 0.5 sec. Assume that the operating frequency of 8085 is 2 MHz. Display routine is available.

35

7. Write a program in 8085 assembly language to find the frequency of each element in an array of 20 elements. Store each element and its frequency in separate memory locations.

35

8. Write a program in 8085 assembly language to subtract a 2-digit BCD from another 2-digit BCD number. The numbers are stored in two consecutive memory locations.

35

9. Write an assembly language program in 8085 to count the total number of 1's and 0's of an array containing 20 elements. Size of each element of the array is of 8 bit. Store the count of 1's and 0's in different suitable consecutive memory locations.

35

10. Write an assembly language program in 8085 to find the second smallest number from a sequence of 10 odd numbers.

35

11. Write an assembly language program in 8085 to find the factorial of a given number. Assume that the result is less than FFH.

35

12. Write an assembly language program in 8085 to separate the odd and even numbers from an array of 20 numbers. Store the odd numbers first and then the even numbers in consecutive memory locations.

35

2016

COMPUTER SCIENCE — HONOURS — PRACTICAL

Seventh Paper

(Group – A)

Full Marks – 50

The figures in the margin indicate full marks

16, 15, 14, 13, 11, 10, 9, 12

SECOND DAY

Answer *any one* question

Marks Distribution

1.	Lab Notebook	05
2.	Viva voce Exam.	10
3.	Experiment	35
	(a) Flow Chart / Algorithm	05
	(b) Program	10
	(c) Implementation	10
	(d) Result	06
	(e) Discussion	04

1. Write an ALP to arrange an array of 8 bit positive and negative numbers of length 10 in ascending order. Total number of negative numbers should be at least 3.

35

2. Write an ALP to find the value $Z = XY + X$, when X and Y are two 8 bit numbers. They are stored in the locations XX00H and XX02H respectively. Result(Z) should be stored in XX04H.

35

[Turn Over]

Dawood Patel

3. Write an ALP to store 25 consecutive numbers starting from 35H in consecutive memory locations. Find out the even numbers from the array and store in suitable memory locations. 35
4. Write an ALP to generate a sequence of Fibonacci numbers 1, 1, 2, 3, 5, up to N, where N = 15. Find out the odd numbers from the sequence and stored in suitable memory location. 35
5. Write an ALP to find out the number of 0's and 1's in a given three different 10 bits numbers. Find out parity of each number whether it is 'odd' or 'even'. 30+5
6. Write an ALP to find out the prime numbers from 1 to 100. The numbers should be stored in consecutive memory locations. 35
7. (a) Write an ALP to convert a 8-bit binary number to BCD.
(b) Write an ALP to convert a 8-bit binary number to Hex number. 17+18
8. Two binary numbers X & Y are stored in memory locations XX01H and XX02H respectively. Write an ALP to exchange the content of memory locations XX01H & XX02H (without using any additional memory locations) such that XX01H contains Y and XX02H contains X. 35

OFFICE

V(3rd)-Computer Sc.-H/Pr/7A/1st day

2011

COMPUTER SCIENCE — HONOURS — PRACTICAL

Seventh Paper

Group - A

Full Marks - 50

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable

[Under 1+1+1 – New System]

Marks Distribution :

- | | | | | | |
|---------------|---|----|--------------|---|----|
| 1. Experiment | : | 35 | 2. Viva-voce | : | 10 |
| 3. Sessional | : | 05 | | | |

Experiment :

- | | | | | | |
|---------------------------|---|----|------------|---|----|
| 1. Flow chart / Algorithm | : | 05 | 2. Program | : | 10 |
| 3. Implementation | : | 10 | 4. Result | : | 05 |
| 5. Discussions | : | 05 | | | |

Day - 1 (First Day)

Attempt **any one** question

✓ 1. Write a program in 8085 assembly language to find the LCM of N (≥ 7) numbers. 35

✓ 2. Write an assembly language program to find the frequency of each element in an array of 20 elements. Store each element and its frequency in separate memory locations. 35

✓ 3. Design an up-down counter that counts 0 to 9 and 9 to 0 continuously with a two second delay between each count and display the count at any one of the output ports. Also show the delay calculation. 35

[Turn Over]

4. Write a program in 8085 assembly language to multiply 3 BCD numbers read from memory. Note that the final result should be less than 9999H. 35
- ✓ 5. Write a program in 8085 assembly language to test a byte whether it is palindrome or not. If it is palindrome, then store FFH in a suitable memory location otherwise store 00H. 35
6. Write a program in 8085 assembly language to convert ASCII to decimal. 35
- ✓ 7. Assume that the DAA instruction is not present. Write a subroutine program in 8085 assembly language that performs the same task of DAA. 35
8. Write an assembly language program in 8085 to find the value of Y where $Y = a^3 - b^3$, where a and b are two 8-bit data read from memory and result is to be stored in memory location XX60H. 35

2011

COMPUTER SCIENCE — HONOURS — PRACTICAL

Seventh Paper

Group – A

Full Marks – 50

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable

[Under 1+1+1 – New System]

Marks Distribution :

- | | | | | | |
|---------------|---|----|--------------|---|----|
| 1. Experiment | : | 35 | 2. Viva-voce | : | 10 |
| 3. Sessional | : | 05 | | | |

Experiment :

- | | | | | | |
|---------------------------|---|----|------------|---|----|
| 1. Flow chart / Algorithm | : | 05 | 2. Program | : | 10 |
| 3. Implementation | : | 10 | 4. Result | : | 05 |
| 5. Discussions | : | 05 | | | |

Day – 2 (Second Day)

Attempt **any one** question

✓ 1. Write a program in 8085 assembly language to find out the maximum number of given N(>5) numbers.

35

✓ 2. Write an assembly language program in 8085 to add even parity to a string of 7 bit ASCII characters. The length of the string is in memory location XX40H and the string itself begins in memory location 2041H. Place even parity in the most significant bit of each character.

35

[Turn Over]

3. A set of 16-bit readings is stored in memory locations starting at XX40H. Each reading occupies two memory locations. The number of readings stored is specified by the contents of register B. Write a program in 8085 assembly language to add all readings and store the sum in memory location from XX60H. The maximum limit of a sum is 24 bits.

35

4. Write a program in 8085 assembly language to sort N(>5) numbers using bubble sort.

35

5. A 16 bytes of data are stored in memory locations at XX50H to XX5FH. Write a program in 8085 assembly language to transfer entire block of data to the new memory locations starting at XX80H in reverse order (e.g., Original Data: 27, A3, F5,, 91, 88 and Result: 88, 91,, F5, A3, 27).

35

6. Write an assembly language program to separate odd numbers from a given list of 10 numbers and store them in another list starting from XX00H. Assume the starting address of the 10 number list is YY00H.

35

7. An array of 8-bit numbers is stored in 10 memory location starting from XX00H. Write a program in 8085 assembly language to count all the negative numbers from the array. Store the count in a suitable memory location. Assume that the 8-bit numbers of the array are stored in sign magnitude form.

35

8. Write an assembly language program to find the frequency of each element in an array of 20 elements. Store each element and its frequency in separate memory locations.

35

2011

COMPUTER SCIENCE — HONOURS — PRACTICAL

Seventh Paper

Group - A

Full Marks – 50

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable

[Under 1+1+1 – New System]

Marks Distribution :

1. Experiment	:	35	2. Viva-voce	:	10
3. Sessional	:	05			

Experiment :

1. Flow chart / Algorithm	:	05	2. Program	:	10
3. Implementation	:	10	4. Result	:	05
5. Discussions	:	05			

Day – 3 (Third Day)

Attempt *any one* question

1. Write an assembly language program in 8085 for displaying binary down counter. Counter should count down numbers from FFH to 00H and it should decrement after every 0.5 sec. Assume that the operating frequency of 8085 is 2 MHz. Display routine is available.

35

2. Write a program in 8085 assembly language for shifting a 16-bit binary number by 3-bit to the right.

35

[Turn Over]

3. Write an assembly language program to take five 8-bit numbers, convert each number into decimal form, and store them in separate five consecutive available memory locations.

35

4. Write a program in 8085 assembly language to count the numbers of zeros and ones present in a 16-bit binary number stored in two consecutive memory locations. Store the resulting two counts in two other suitable memory locations.

35

5. Write a program in 8085 assembly language to subtract a 4-digit BCD from another 4 digit BCD number; the numbers are stored in two consecutive memory locations.

35

6. Write a program in 8085 assembly language to split a HEX data into two nibbles and store it in two memory locations.

35

7. Write a program in 8085 assembly language to find all the prime numbers between 25 and 65 (25, 65 are in decimal), and store the prime numbers in consecutive memory locations starting from XX00H.

35

8. Write a program in 8085 assembly language to divide two positive BCD numbers, where the larger number is to be divided by the smaller one.

35

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AF A

O →

2010

COMPUTER SCIENCE — HONOURS — PRACTICAL

Seventh Paper

Group – A

Full Marks – 50

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable

(Under 1+1+1 – New System)

DAY 4 (FOURTH DAY)

Marks Distribution :

- | | |
|------------------------------|-------------------|
| 1. Experiment : 35 | 2. Viva-voce : 10 |
| 3. Laboratory Note Book : 05 | |

Experiment :

- | | |
|--------------------------------|-----------------|
| 1. Flow chart / Algorithm : 05 | 2. Program : 10 |
| 3. Implementation : 10 | 4. Result : 05 |
| 5. Discussion : 05 | |

Answer *any one* question

- | | |
|--|----|
| 1. Write a program in 8085 assembly language to sort N(>5) numbers using selection sort. | 35 |
| 2. Write a program in 8085 assembly language to find GCD of N(>=3) numbers. | 35 |
| 3. Design an up – down counter that counts from 0 to 9 and 9 to 0 continuously with a two second delay between each count and display the count at any one of the output ports. Also show the delay calculation. | 35 |

[Turn Over]

4. Write a program in 8085 assembly language to find the factorial of a positive number N. Read N from a memory location. 35
5. Write a program in 8085 assembly language to subtract a 2-digit BCD from another 2-digit BCD number; the numbers are stored in two consecutive memory locations. 35
6. Write a program in 8085 assembly language to convert 16-bit binary code to excess-3 code. Show at least four conversions. 35
7. Write a program in 8085 assembly language to calculate the sum of series of even numbers from the list of numbers. The length of the list is in memory location XX00H and the series itself begins from memory location XX01H. Assume the sum to be 8-bit number, so you can ignore carries and store the sum at memory location XX10H. 35
8. Write a simple program to split a HEX data into two nibbles and store it in two memory location. 35

2010

COMPUTER SCIENCE — HONOURS — PRACTICAL

Seventh Paper

Group – A

Full Marks – 50

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable

(Under 1+1+1 – New System)

DAY 3 (THIRD DAY)

Marks Distribution :

- | | | | |
|-------------------------|------|--------------|------|
| 1. Experiment | : 35 | 2. Viva-voce | : 10 |
| 3. Laboratory Note Book | : 05 | | |

Experiment :

- | | | | |
|---------------------------|------|------------|------|
| 1. Flow chart / Algorithm | : 05 | 2. Program | : 10 |
| 3. Implementation | : 10 | 4. Result | : 05 |
| 5. Discussion | : 05 | | |

Attempt ***any one*** question

1. Write a program in 8085 assembly language to sort N(>5) numbers using bubble sort. 35
2. Write a program in 8085 assembly language to find the LCM of N(>=5) numbers. 35
3. A string of ten data bytes is stored starting from memory location XX40H. The string includes some zero values. Write a program in 8085 assembly language to eliminate zero values from the string. 35

[Turn Over]

4. Write a program in 8085 assembly language to convert 16-bit binary code to Gray code. Show at least four conversions.

35

5. Write a program in 8085 assembly language which is palindrome from a given data set.

35

6. Write a program in 8085 assembly language to convert ASCII to decimal.

35

7. Write a program in 8085 assembly language to calculate the sum of series of odd numbers from the list of numbers. The length of the list is in memory location YY00H and series itself begins from memory location YY01H. Assume the sum to be 16-bit. Store the sum at memory locations XX00H and XX01H.

35

8. Assume that the DAA instruction is not present. Write a subroutine in 8085 assembly language that performs the same task as DAA.

35

2010

COMPUTER SCIENCE — HONOURS — PRACTICAL

Seventh Paper

Group – A

Full Marks – 50

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable

(Under 1+1+1 – New – System)

Marks Distribution :

- | | | | |
|-------------------------|------|--------------|------|
| 1. Experiment | : 35 | 2. Viva-voce | : 10 |
| 3. Laboratory Note Book | : 05 | | |

Experiment :

- | | | | |
|---------------------------|------|------------|------|
| 1. Flow chart / Algorithm | : 05 | 2. Program | : 10 |
| 3. Implementation | : 10 | 4. Result | : 05 |
| 5. Discussion | : 05 | | |

Day –2 (Second Day)

Attempt *any one* question

- | | |
|--|----|
| 1. Write a program in 8085 assembly language for shifting a 16-bit binary number by 3-bit to the right. | 35 |
| 2. Write a program in 8085 assembly language to swap two 16-bit numbers. Numbers are given in two consecutive memory locations. | 35 |
| 3. Sixteen bytes of data stored in memory locations at XX50H to XX5FH. Write a program in 8085 assembly language to transfer entire block of data to new memory locations starting at XX80H in reverse order. (e.g, Data (Original) : 27, A3,F5,..... 91, 88 and Result : 88, 91, F5, A3, 27). | 35 |

[Turn Over]

4. Write a program in 8085 assembly language to perform M/N where M is 16-bit data and N is 8-bit data. Result and remainder is stored in two consecutive memory locations.

35

5. Write a program in 8085 assembly language to divide two positive BCD numbers, where the larger number is to be divided by the smaller one.

35

6. Write a program in 8085 assembly language to multiply the 8-bit unsigned number in memory location XX00H by the 8-bit unsigned number in memory location XX01H. Store the 8 least significant bits of the result in memory location YY00H and the 8 most significant bits in memory location YY01H.

35

7. Write an 8085 assembly language program to add even parity to a string of 7-bit ASCII characters. The length of the string is in memory location XX40H and the string itself begins in memory location 2041H. Place even parity in the most significant bit of each character.

35

8. Write a program in 8085 assembly language for displaying binary up counter. Counter should count numbers from 00H to FFH and it should increment after every 0.5 sec. Assume that the operating frequency of 8085 is 2MHz. Display routine is available.

35

2010

COMPUTER SCIENCE — HONOURS — PRACTICAL

Seventh Paper

Group – A

Full Marks – 50

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable

(Under 1+1+1 – New – System)

Marks Distribution :

1. Experiment	: 35	2. Viva-voce	: 10
3. Laboratory Note Book	: 05		

Experiment :

1. Flow chart / Algorithm	: 05	2. Program	: 10
3. Implementation	: 10	4. Result	: 05
5. Discussion	: 05		

Day –1 (First Day)

Attempt *any one* question

1. Write a program to add 10 BCD numbers stored in ten consecutive memory locations. Note that the final sum is to be less than 9999H. 35
2. Write a program in 8085 assembly language to find out the maximum number of given N(>5) numbers. 35
3. Write a program in 8085 assembly language to find all the prime numbers between 15 and 50 (15, 50 are in decimal), and store the prime numbers in consecutive memory locations starting from XX00H. 35

[Turn Over]

4. Write a program in 8085 assembly language to find value of Y where $Y = a^2 + b^2$, where a and b are two 8-bit data read from memory and result is to be stored in memory location XX60H.

35

5. Write a program in 8085 assembly language to multiply 3 BCD numbers read from memory. Note that the final result is to be less than 9999H.

35

6. A set of 16-bit readings is stored in memory locations starting at XX40H. Each reading occupies two memory locations. The number of readings stored is specified by the contents of register B. Write a program in 8085 assembly language to add all readings and store the sum in memory location from XX60H. The maximum limit of a sum is 24 bits.

35

7. Write an assembly language program to separate even numbers from a given list of 10 numbers and store them in another list starting from XX00H. Assume the starting address of the 10-number list is YY00H.

35

8. Write a program in 8085 assembly language for a block of data consisting of 256 bytes stored in memory location starting at XX00H. This block is to be shifted (relocated) in memory location from XX50H onwards. Do not shift the block or part of the block anywhere else in the memory.

35

2009

COMPUTER SCIENCE – HONOURS – PRACTICAL

Seventh Paper

Group – A

(Microprocessor Programming & I/O Interfacing)

Full Marks – 50

*The questions are of equal value
Candidates are required to give their answers in their own words as far as practicable*

(Under 1+1+1 – New System)

DAY 1 (FIRST DAY)

Marks Distribution :

- | | | | |
|-------------------------|------|--------------|------|
| 1. Experiment | : 35 | 2. Viva-Voce | : 10 |
| 3. Laboratory Note Book | : 05 | | |

Experiment :

- | | | | |
|------------------------|------|------------|------|
| 1. Flowchart/Algorithm | : 05 | 2. Program | : 10 |
| 3. Implementation | : 10 | 4. Result | : 05 |
| 5. Discussion | : 05 | | |

Attempt Any One Question

1 ✓ A single byte number is stored at a suitable user's memory location. Write an assembly language program (ALP) to find the square of this number by repeated addition method. Store the result in two other consecutive user's memory locations. Choose the single byte number such that the result becomes a two-byte number.

2 ✓ Write an assembly language program to find the number of positive, negative, and odd numbers from an array of data. Store the results in consecutive user's memory locations.

3 ✓ Write an assembly language program to search for the even numbers from a given set of numbers stored in the consecutive user's memory locations and arrange those even numbers in a descending order.

4 ✓ Write an assembly language program to generate a sequence of Fibonacci numbers up to a value of N, which is stored in a user's memory location. Store the results in the consecutive user's memory locations.

[Turn Over]

5. Let P,Q,R and S are the four 8-bit numbers available from four registers of the 8085 CPU. Write an assembly language program to find $(P*Q+R*S)$. Store the result in suitable user's memory locations. Use subroutine for the product. You may use either Shift-and-Add or repeated addition method.

6. Write an assembly language program to find the output of the Boolean expression

$$Z = ABC\bar{C} \oplus A\bar{B}C + \bar{A}BC \oplus ABC$$

where A, B, and C are all 8-bit numbers.

7. Write an assembly language program to compute the factorial of an integer N stored in a user's memory location. Store the result in two other consecutive user's memory locations. Choose the value of N such that the result becomes a two-byte number.

8. Write an assembly language program to average the scores of the number of 10 students in a class. Also find the number of students who have scored below 30.

P (II/3rd) – Computer Sc H/Pr/7A/ Third Day

2009

COMPUTER SCIENCE – HONOURS – PRACTICAL

Seventh Paper

Group – A

Full Marks – 50

The figures in the margin indicate full marks

(Under 2+1 and 1+1+1 – Old - System)

Marks Distribution :

- | | | |
|----|-----------------------|------|
| 1. | Flowchart / Algorithm | : 05 |
| 2. | Program | : 10 |
| 3. | Implementation | : 10 |
| 4. | Result | : 05 |
| 5. | Discussion | : 05 |
| 6. | Viva Voce | : 10 |
| 7. | Lab. Note Book | : 05 |

DAY 3 (THIRD DAY)

Attempt **any one** question

- | | | |
|----|--|-------|
| 1. | Write an assembly language program to find the largest number from a set of 10 elements and check whether it is a palindrome or not. | 25+10 |
| 2. | Write a program to add two three-byte numbers and save their sum in consecutive memory locations. | 35 |
| 3. | Write a program to count the number of ones and number of zeros in a set of ten numbers. | 35 |
| 4. | An array contains 25 numbers. Write an assembly language program to add the even positional numbers, of the array. | 35 |
| 5. | Write an assembly language program to count the negative, positive, and even parity numbers from a set of 20 elements. | 35 |

[Turn Over]

- ✓ 6. Write an assembly language program to perform the following logical operations on two 8-bit numbers. 15+10+10
- AND operation of these two numbers,
 - Complement the result obtained in Question 6(a), and
 - Perform OR operation with one of the taken numbers and the result obtained in question 6(b).
7. Write an assembly language program to add two 16-bit hexadecimal numbers and subtract 48H from the sum. 25+10
8. Write an assembly language program to generate a Fibonacci sequence in the range from 100 to 200 (both inclusive). 35
9. Write an assembly language program to find the average of a set of ten hexadecimal numbers. 35
10. Write an assembly language program to arrange a list of ten decimal numbers in descending order, and find the second smallest number from the list. 25+10

2009

COMPUTER SCIENCE – HONOURS – PRACTICAL

Seventh Paper

Group – A

Full Marks – 50

The figures in the margin indicate full marks

(Under 2+1 and 1+1+1 – Old - System)

Marks Distribution :

- | | | | |
|----|-----------------------|---|----|
| 1. | Flowchart / Algorithm | : | 05 |
| 2. | Program | : | 10 |
| 3. | Implementation | : | 10 |
| 4. | Result | : | 05 |
| 5. | Discussion | : | 05 |
| 6. | Viva Voce | : | 10 |
| 7. | Lab. Note Book | : | 05 |

DAY 2 (SECOND DAY)

Attempt *any one* question

1. An array contains 25 numbers. Write an assembly language program to replace the odd positioned numbers with 00H, and then find the second highest number and store it in a separate memory location.

35

2. Write an assembly language program to find the smallest number from a set of 20 numbers and also find its frequency. Store the smallest number and its frequency in separate memory locations.

35

3. Write an assembly language program to generate the Fibonacci numbers 1, 1, 2, 3, 5,.....up to 20 terms. Store the sequence in consecutive memory locations. Count the numbers that are in odd parity and store the count in separate memory locations.

35

4. Write an assembly language program to check if the lower nibble of a number is equal to the upper nibble of another number. If it matches store 00H, otherwise 01H in a separate memory location. Take at least five sets of data for this implementation.

35

[Turn Over]

5. Write an assembly language program to separate an array of 20 elements into two arrays, one of them containing all odd positioned numbers and other containing all even positioned numbers.

35

6. Write an assembly language program to add the even positioned numbers and the odd positioned numbers separately from a set of 20 numbers. Subtract the sum of even positioned numbers from the sum of odd positioned number. Store the results in separate memory locations.

20+15

7. An array containing 20 elements. Write an assembly language program to complement each element and store the resultant array in reverse order into a separate location in the memory.

35

2009

COMPUTER SCIENCE – HONOURS – PRACTICAL

Seventh Paper

Group – A

(Microprocessor Programming & I/O Interfacing)

Full Marks – 50

The questions are of equal value

Candidates are required to give their answers in their own words as far as practicable

(Under 1+1+1 – New System)

DAY 2 (SECOND DAY)

Mark Distribution :

- | | | | |
|-------------------------|------|--------------|------|
| 1. Experiment | : 35 | 2. Viva-Voce | : 10 |
| 3. Laboratory Note Book | : 05 | | |

Experiment :

- | | | | |
|------------------------|------|------------|------|
| 1. Flowchart/Algorithm | : 05 | 2. Program | : 10 |
| 3. Implementation | : 10 | 4. Result | : 05 |
| 5. Discussion | : 05 | | |

Attempt *Any one* Question

1. Write an assembly language program to search for the odd numbers from a given set of numbers stored in the consecutive user's memory locations and arrange those odd numbers in a descending order.

✓2. Write an assembly language program to check the parity of a single byte number stored in a user's memory location. If the parity is even store FFH and for odd parity store OOH in another suitable user's memory location.

3. Write an assembly language program to count the number of 1s in a given byte of number available from a suitable user's memory location. If the count is found to be odd then multiply the number by 2, otherwise divide the number by 2. Store all the results in other consecutive memory locations.

4. An array contains N bytes. This array contains a few repeated bytes. The array starts from a memory location Y and the value of N is available from memory location Y-1. Write an assembly language program to create a new array where there is no repetition of data and store them at consecutive memory locations starting from another memory location Z.

[Turn Over]

array where there is no repetition of data and store them at consecutive memory locations starting from another memory location Z.

5. Write an assembly language program to find the output of the following Boolean expression

$$Z = X \odot Y + XY + \bar{X} \bar{Y}$$

where X and Y are two 8-bit numbers.

6. Write an assembly language program to find out the third smallest number from a list of ten single byte numbers.

7. Write an assembly language program that reads the Gray code bits from a user's memory location, finds the binary code corresponding to the Gray code and store the result in another user's memory location.

8. An array of 10 random number's stored in user's memory locations. Write an assembly language program to keep a count of positive but odd numbers present in the array. Store the count in a suitable user's memory location.

2009

COMPUTER SCIENCE – HONOURS – PRACTICAL

Seventh Paper

Group – A

(Microprocessor Programming & I/O Interfacing)

Full Marks – 50

The questions are of equal value

Candidates are required to give their answers in their own words as far as practicable

(Under 1+1+1 – New System)

DAY 3 (THIRD DAY)

Marks Distribution :

1. Experiment	: 35	2. Viva-Voce	: 10
3. Laboratory Note Book	: 05		

Experiment :

1. Flowchart/Algorithm	: 05	2. Program	: 10
3. Implementation	: 10	4. Result	: 05
5. Discussion	: 05		

Attempt Any One Question

1. Write an assembly language program to find the number of positive, odd and even numbers from an array of data bytes. Store the results in consecutive user's memory locations.
2. Write an assembly language program to multiply two single byte numbers using Shift – and – Add method and divide the product by 08H. Store all the results in consecutive user's memory locations.
3. Write an assembly language program to search for the even numbers from a given set of numbers stored in the consecutive memory locations and arrange those even numbers in an ascending order.
4. Write an assembly language program to double ten single byte numbers. Add those doubled numbers. The single byte numbers are stored in ten consecutive user's memory locations. After doubling and addition store all the results in consecutive user's memory locations.

[Turn Over]

5. Write an assembly language program to find the output of the Boolean expression

$$Z = (\overline{XY}) \odot (X \cdot Y)$$

where X and Y are two 8-bit numbers.

6. Write an assembly language program to convert (i) Hexadecimal number into its binary equivalent, and (ii) 2-digit BCD number to its binary equivalent.

7. Write an assembly language program to generate a sequence of Fibonacci numbers up to a value of N, which is stored in a user's memory location. Store the results in the consecutive user's memory locations.

8. Write an assembly language program to find out the negative but even bytes from an array of 10 bytes. The array starts from a location in the user's memory area.

2009

COMPUTER SCIENCE – HONOURS – PRACTICAL

Seventh Paper

Group – A

(Microprocessor Programming & I/O Interfacing)

Full Marks – 50

The questions are of equal value

Candidates are required to give their answers in their own words as far as practicable

(Under 1+1+1 – New System)

DAY 4 (FOURTH DAY)

Marks Distribution :

- | | | | |
|-------------------------|------|--------------|------|
| 1. Experiment | : 35 | 2. Viva-Voce | : 10 |
| 3. Laboratory Note Book | : 05 | | |

Experiment :

- | | | | |
|------------------------|------|------------|------|
| 1. Flowchart/Algorithm | : 05 | 2. Program | : 10 |
| 3. Implementation | : 10 | 4. Result | : 05 |
| 5. Discussion | : 05 | | |

Attempt *Any One* Question

1. Write an assembly language program to add an array of three two byte hexadecimal numbers and subtract 4AH from the sum. Store all the results in the two consecutive user's memory locations.
2. Write an assembly language program to transfer a block of data stored in the consecutive user's memory locations to another. Also transfer the same block of data to another consecutive user's memory locations in reverse order.
3. Write an assembly language program to generate a sequence of Fibonacci numbers up to a value of N and store the results in the consecutive user's memory locations. The value of N is stored in another user's memory location.
4. Write an assembly language program to search for the odd numbers from a given set of numbers stored in the consecutive user's memory locations and arrange those odd numbers in an ascending order.

[Turn Over]

5. Write an assembly language program to convert : (i) a Hexadecimal number into its Binary equivalent, and (ii) a 2-digit BCD number to its Binary equivalent.
6. Write an assembly language program to verify the De-Morgan's theorems, where the two input variables are two 8-bit numbers.
7. Write an assembly language program to compute the factorial of an integer number N, which is stored in a user's memory location. Store the result in two consecutive user's memory locations.
- ✓8. Write an assembly language program to find out the third smallest number from a list of ten single byte numbers.