

Instructions:

You are required to do only that one question which is allotted to you as per the pdf named 'Questions_Allotted.pdf'. Document to be uploaded in moodle should have 6 sections named Question, Logic Used, Program, Inputs, Result, and output. See the sample file given as EE22D006_P12.pdf for reference. Write the program, execute the code, verify the result, take a screenshot of the output and upload in moodle as "Rollnumber_QuestionNumber.pdf" (Eg. EE22D006_P12.pdf).

- P1** Find the sum of N even numbers starting from 2. Store the sum in a variable named RESULT. N can be changed at will in the program, no hardcoding. Given N=11 as input, show the output. (Hint: use a loop)
- P2** Write Program to find SUM and Carry of Half Adder. Store the result in variables named SUM and CARRY.
- P3** Write a subroutine to circulate E and AC four times to the right. If AC contains hexadecimal 079C and E = 1, what are the contents of AC and E after the subroutine is executed?
- P4** Write a program to Compare Two Words (ie, two 4 digit hexadecimal numbers) and display the result in RESULT. If the Words are equal RESULT should be set as zero, else set as one.
- P5** Find the Nth term of fibonacci sequence. The Fibonacci sequence has the following starting terms: 0, 1,... and every next term is the sum of the previous 2 terms. Given N=11 as input, show the output. (Hint: use a loop for storing last 2 terms for next term and initialize it with 0 and 1)
- P6** Write a program to unpack two characters from location WRD and store them in bits 0 through 7 of locations CH 1 and CH2. Bits 9 through 15 should contain zeros. (Hint: If WRD = 23FF, CH1 = 00FF and CH2 = 0023)
- P7** Use the assembly language program (of the equivalent binary instructions) generated by a compiler from the following Fortran program. Assume integer variables.

```
SUM = 0
SUM = SUM + A + B
DIF = DIF - C
SUM = SUM + DIF
```

- P8** Write a program that can evaluate the expression
 $(A \times B) - (C \times D)$
- P9** Write a program for the arithmetic shift-left operation. Branch to OVF if an overflow occurs.
- P10** Write a program that calculates the sum of digits of a hexadecimal input number and stores the result in a variable named SUM. For example if 1231 is the input hex number, SUM should have the value 6.

(Hint: Use bit masking, AND and shift operations)
- P11** Write a program to unpack two characters from location WRD and store them in bits 0 through 7 of locations CH 1 and CH2. Bits 9 through 15 should contain zeros.
- P12** Write a program to multiply two positive numbers by a repeated addition method. For example, to multiply 5×4 , the program evaluates the product by adding 5 four times. Use this to implement following expression :

 $(A \times B) + (C \times D)$
- P13** Use the assembly language program (of the equivalent binary instructions) generated by a compiler for the following IF statement:

IF (A - B) 10 , 20 , 30

The program branches to statement 10 if $A - B < 0$; to statement 20 if $A - B = 0$; and to statement 30 if $A - B > 0$.
- P14** Write a program that counts the number of zeros in a given number stored in the location WRD and stores the result in a counter named CTR.
- P15** Write a program that counts the number of one's in the number stored in the location WRD and stores the result in a counter named CTR.
- P16** Find the sum of all even numbers between 1 to n (excluding 1 and n). N can be changed at will in the program, no hardcoding. Given N=11 as input, show the output.
(Hint: use a loop)
- P17** Write a subroutine that performs division by 4 using RIGHT SHIFT operation. Give input

1000 and show the result.

- P18** Write a subroutine that performs multiplication by 8 using LEFT SHIFT operation. Give input 0020 and show the result.
- P19** Write a program that performs Division operation, find Quotient and Remainder.
- P20** Find the sum of all odd numbers between 1 to n(excluding 1 and n). N can be changed at will in the program, no hardcoding. Given N=11 as input, show the output. (Hint: use a loop)
- P21** Write a program that can evaluate the expression
 $(A + B) \times (C + D)$
- P22** Write a program that calculates 2^N , where N is a single digit input number greater than zero.
- P23** Write a program to find XOR between MSB and LSB of a given hexadecimal number.
If FFF0 is the input hexadecimal number, output should be F.
- P24** Write Program to find XNOR between MSB and LSB of a given hexadecimal number.
If FF00 is the input hexadecimal number, output should be 0.
- P25** Write a program to calculate the cube of a number.