Course Code : MCS-012
Course Title : Computer Organisation and
Assembly Language Programming
Assignment Number : MCA(1)/012/Assign/2013
Maximum Marks :
100 Weightage : 25%
Last Dates for Submission : 15th October, 2013 (For July 2013
Session) 15th April, 2014 (For January 2014 Session)
There are four questions in this assignment, which carry 80 marks. Rest 20 marks are for viva-voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation. Answer to each part of the question should be confined to about 300 words.

Question 1 (covers Block 1)

(a) Perform the following arithmetic operations using binary signed **(3 Marks)**

2's complement notation for integers. You may assume that the maximum size of integers is of **10 bits** including the sign bit. (Please note that the numbers given here are in decimal notation)

i) Add – 512 and 198

ii) Subtract 400 from –98

ii) Add 400 and 112

Please indicate the overflow if it occurs.

i) Add – 512 and 198

	Sign	Binary	2 complement
-512	1	001000000000	1001000000000
198	0	11000110	011000110
-314	1	000100111010	1000100111010

ii) Subtract 400 from –98

	Sign	Binary	2 comple
400	0	00011001000	000011001000
-98	1	01100010	101100010
498	0	00011111001	000011111001

ii) Add 400 and 112

	Sign	Binary	2 comple
400	0	000110010000	000011001000
112	0	01110000	001110000
512	0	001000000000	000100000000

(b) Convert the hexadecimal number: 21 3A FE into binary, octal and decimal equivalent. **(1 Mark)**

Ans1: (211000010011101011111110)23AFE)16= (

Ans2: (210235376)83AFE)16 = (

Ans3: FE)16(212177790)103A= (

(c) Convert the following string into equivalent "UTF 16" code – **(2 Marks)**
"Email addresses always use @ sign".
Are these codes same as that used in ASCII?

	ASCII	UTF 8

Stri Email addresses always use @ sign

ASCI

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&#69;&#109;&#97;&#105;&#108;&#32;&#97;&#100;&#100;&#114;&#101;&#115;&#115;&#10
1;&#115;&#32;&#97;&#108;&#119;&#97;&#121;&#115;&#32;&#117;&#115;&#101;&#32;&#6
4;&#32;&#115;&#105;&#103;&#110;
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UTF	0069;00109;0097;00105;00108;0032;0097;00100;00100;00114;00101;00115;00115;0010 1;00115;0032;0097;00108;00119;0097;00121;00115;0032;00117;00115;00101;0032;006 4;0032;00115;00105;00103;00110;