

**BITS PILANI, DUBAI CAMPUS  
DUBAI INTERNATIONAL ACADEMIC CITY, DUBAI  
I SEMESTER 2011-2012**

**COURSE : COMPUTER PROGRAMMING I (TA C162)**  
**COMPONENT : COMPREHENSIVE EXAMINATION**  
**DURATION : 3 Hours**  
**WEIGHTAGE : 35% (35 Marks)**  
**DATE : 04/01/2012 (AN)**

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**Q1.** What will be the output for the following code segment?

```
main()
{
    char name[50]="UAE",name1[50]="Dubai",name2[20]=" Sharjah";
    char name3[30]=" Abu Dhabi";
    strcat(name1,name2);
    strcpy(name,name1);
    strcat(name,name3);
    printf("%s",name);
}
```

**3M**

**Q2.** i) Represent -68 in 2's compliment binary form.

ii) For the following logic gate expression, write the truth table

((NOT (A NOR B)) XOR (((NOT B) NAND C)))

**3M+3M**

**Q3.** Consider the following scenario

"Road & Transport Authority (RTA) in UAE has a lot of vehicles. Every vehicle has a unique vehicle ID, the name of the vehicle (like Dubai bus, Dubai metro etc.), type of the vehicle (like car, bus, train etc.), source and destination."

Write a C program using structures to hold the vehicles information.

You need to accept the vehicle information from the user.

**4M**

**Q4.** In signed magnitude binary representation how do we represent numbers? Explain arithmetic operations with an example. If there is/are any problem(s), list if any.

**3M**

**Q5.** What are the building block(s) of a computer? Explain each of the building blocks. Draw the building block diagram.

**3M**

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**COURSE : COMPUTER PROGRAMMING I (TA C162)**  
**COMPONENT : TEST – 2 (OPEN BOOK)**  
**DURATION : 50 MINUTES**  
**WEIGHTAGE : 20% (20 Marks)**  
**DATE : 11-12-2011 (10:15 PM to 11:05 PM)**

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**Q1.** Write a C program to print the following pattern using loops and conditional statements

**If user input is 4**

```
1 2 3 4
2 3 4
3 4
4
3 4
2 3 4
1 2 3 4
```

**If user input is 7**

```
1 2 3 4 5 6 7
2 3 4 5 6 7
3 4 5 6 7
4 5 6 7
5 6 7
6 7
7
6 7
5 6 7
4 5 6 7
3 4 5 6 7
2 3 4 5 6 7
1 2 3 4 5 6 7
```

**6M**

**Q2.** A year is a leap year (i) if the year is divisible by 4 and not divisible by 100. (ii) The year is a leap year if the year is divisible by 400. Write an algorithm to determine whether the year is a leap year or not. And convert the same into a flowchart.

**2\*3=6M**

**Q3.** What does the following statements mean in C programming

- i)** `printf("%5d",12);`
- ii)** `for( ; ; )`
- iii)** `if(1)`
- iv)** `default`

**4\*2=8M**

**\*\*\*END\*\*\***

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COURSE : COMPUTER PROGRAMMING I (TA C162)  
COMPONENT : TEST – I (CLOSED BOOK)  
DURATION : 50 MINUTES  
WEIGHTAGE : 25% (25 Marks)  
DATE : 06-10-2011 (12:05 PM to 12:55 PM)

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**Q1.** Construct 8x1 multiplexer (gates representation). Clearly mention the number of input lines, select lines etc.

**[3M]**

**Q2.** Consider the following 2's Complement binary numbers. Convert these numbers into their equivalent decimal number

i) 011000111110

ii) 101011010010

**[2M+3M]**

**Q3.** Perform the following arithmetic operations using 2's Complement notation and verify the answer

i) 15 – 29 (6 bits)

ii) 83 – 67 (8 bits)

**[3M+3M]**

**Q4.** Perform the following logical operations. Express your answer in Hexadecimal notation.

i) E15F **AND** (NOT(6BDA))

ii) 7CF0 **OR** (B38E **XOR**(F904 **AND** 0340))

**[3M+4M]**

**Q5.** For the following logical expression draw the equivalent logic gate circuit

**(A AND B) XOR (NOT (NOT A AND B)) XOR ((NOT A AND B) OR (NOT (B OR C)))**

**[4M]**

**\*\*END\*\***

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COURSE : COMPUTER PROGRAMMING I (TA C162)  
COMPONENT : Quiz – I (CLOSED BOOK)  
DURATION : 50 MINUTES  
WEIGHTAGE : 10% (10 Marks)  
DATE : 27-10-2011 (12:05 PM to 12:55 PM)

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**Q1.** What is Demorgan's Law? Explain with an example.

**[2M]**

**Q2.** What is the meaning of 'Sign Extension' in context of LC-3 instructions?

**[2M]**

**Q3.** What do you mean by 'Address space' & 'Addressability'?

**[2M]**

Q4. What will the following instruction do?

0111011101110111

[4M]

**\*\*END\*\***

**Useful data**

<b>Opcode</b>		<b>Registers</b>		<b>Memory Location</b>	<b>Value</b>
LD	0010	R0	xA5D1	x5A9E	x50
LDR	0110	R1	x390E	xD80C	x0206
STR	0111	R2	xB630	xAB05	X108
		R3	xCA4F		
		R4	x00FA		
		R5	xD815		
		R6	xE2F4		
		R7	xB3DF		

**PC -> x2C9D**