Lahore University Of Management Sciences  
BSc (Honours) Programme

You must fill in your roll number in the space on the right before starting the exam

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Introduction to Computing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Code</td>
<td>CS101</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Arif Zaman, Sohaib Khan,</td>
</tr>
<tr>
<td></td>
<td>Syed Raza Shahid, Tariq Jadoon</td>
</tr>
<tr>
<td>Exam</td>
<td>Midterm</td>
</tr>
<tr>
<td>Quarter</td>
<td>Autumn</td>
</tr>
<tr>
<td>Academic Year</td>
<td>2006-2007</td>
</tr>
<tr>
<td>Date</td>
<td>14 October 2006</td>
</tr>
<tr>
<td>Time Allowed</td>
<td>75 minutes</td>
</tr>
<tr>
<td>Total Marks</td>
<td>75 (25% of grade)</td>
</tr>
</tbody>
</table>

DO NOT OPEN THIS EXAM UNTIL TOLD TO DO SO.

The instructions below must be followed strictly. Failure to do so can result in serious grade loss.

⇒ You may not
  • talk to anyone once the exam begins.
  • leave the examination room and then return.

⇒ Keep your eyes on your own paper.

⇒ Read all questions very carefully before answering them.

Specific instructions:

1. Closed book / closed notes / no help sheet / Calculator & mobile phone not allowed

2. All answers are to be marked on the separate answer sheet

3. This exam booklet contains 9 printed pages including this cover. You may use blank spaces on this exam booklet for rough work. However, do not put any stray marks on the answer sheet.

4. Leaving an answer blank will result in zero points. There will be negative marking for wrong answers. The implication of negative marking is that if you have no idea about the appropriate choice for a question, leave it blank. However, if you can eliminate some choices, it is better to guess from the remaining answers.
Section 1 (Questions 1-14): 2.5 points per question. Total points for this section are 35

1. If I say that ‘my computer has 1 GB RAM’, I am referring to:
   a. how fast is the processor of my computer
   b. how much memory does my computer have
   c. what is the size of the hardisk on my computer
   d. how fast is the internet connection that my computer is connected to
   e. what is the size of the data files I have stored on my computer

For the next TWO questions, refer to the following information:

In year 2000, Brickline Builders started producing a new form of bricks. These bricks, at that time, were sold in boxes of 10 and each box cost Rs 800. If this product has followed the Moore’s Law, answer the following questions.

2. How many bricks now fit in a box of the same dimensions, now in 2006, six years after the original product was launched?
   a. 10       b. 20       c. 40       d. 80       e. 160

3. How much does a box of same dimensions cost now in 2006?
   a. Rs 100   b. Rs 200   c. Rs 400   d. Rs 800   e. Rs 6,400

4. The term ‘workgroup applications’ refers to:
   a. an integrated software that performs functions central to many different parts of a business
   b. the type of applications that you are likely to use on a PC, like MS Word or Excel
   c. software applications that enable people at many different locations to work on a single document
   d. a set of different software applications packaged together in a single bundle
   e. an operating system that manages several computers of a workgroup
5. Which one of the following inventions is credited as being the first machine that could execute a previously-stored program?
   a. Jacquard’s Loom
   b. Blaise Pascal’s Pascaline
   c. Abacus
   d. ENIAC
   e. Babbage’s Analytical Engine

6. Which one of the following is NOT inside the microprocessor?
   a. Cache Memory
   b. Arithmetic and Logic Unit
   c. Registers
   d. Control Unit
   e. System Clock

7. Which one of the following correctly depicts the relationship of different hardware/software components involved in the Power-On-Self-Test (POST) sequence?
   a. The CMOS program, stored in BIOS, contains instructions to test functionality of hardware components. The results of these tests are compared against the official record of installed components, which is stored in Read-Only-Memory (ROM). The ROM chip is powered by a battery.
   b. The BIOS program, stored in CMOS, contains instructions to test functionality of hardware components. The results of these tests are compared against the official record of installed components, which is stored in Read-Only-Memory (ROM). The ROM chip is powered by a battery.
   c. The BIOS program, stored in Read-Only-Memory (ROM), contains instructions to test functionality of hardware components. The results of these tests are compared against the official record of installed components, which is stored in the CMOS chip. The CMOS chip is powered by a battery.
   d. The Read-Only Memory (ROM) program, stored in BIOS, contains instructions to test functionality of hardware components. The results of these tests are compared against the official record of installed components, which is stored in the CMOS chip. The CMOS chip is powered by a battery.
   e. The CMOS program, stored in Read-Only-Memory (ROM), contains instructions to test functionality of hardware components. The results of these tests are compared against the official record of installed components, which is stored in BIOS. The BIOS chip is powered by a battery.
8. When yellow and cyan are mixed, first using the additive color model and then using the subtractive color model. Which one of the following options correctly shows the colors that will be generated in each model?

<table>
<thead>
<tr>
<th>Additive</th>
<th>Subtractive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option a</td>
<td>White</td>
</tr>
<tr>
<td>Option b</td>
<td>White</td>
</tr>
<tr>
<td>Option c</td>
<td>Blue</td>
</tr>
<tr>
<td>Option d</td>
<td>Blue</td>
</tr>
<tr>
<td>Option e</td>
<td>Red</td>
</tr>
</tbody>
</table>

9. Which one of the following is the most accurate statement regarding displays.
   a. CRT monitors are based on the principle of changing the polarity of light.
   b. The magnetic deflection yoke controls the intensity with which the electron beam will strike the phosphors.
   c. The Digital to Analog Converter (DAC) converts the digital pixel values to voltage levels that are to be applied to the electron guns in the CRT.
   d. Computers that come with an LCD screen do not have a DAC.
   e. There is a separate electron beam for each pixel that needs to be painted on the screen.

10. Which one of the following statements about the operating systems is NOT correct?
   a. The operating system creates and manages the directory structure of the computer
   b. The operating system is the first program to load after the POST is completed.
   c. The operating system manages all hardware devices through their device drivers.
   d. The operating system includes a program to let the user check her email.
   e. When an application program needs more memory, it sends its request to the operating system.
11. Windows XP allows the users to multi-task. Which one of the following scenarios is most closely analogous to multi-tasking the way it is done by Windows? [In these analogies, the clerk is analogous to the processor, the filing bins are analogous to RAM and the manager is analogous to the operating system].

   a. The manager queues several forms in the filing bins of the clerk. The clerk works on all of them simultaneously.

   b. The manager queues several forms in the filing bins of the clerk. The clerk works on them one by one, completing work on each in the order in which they were sent by the manager. Once all of them are completed, the manager is informed that the work is completed and the clerk goes into a waiting mode.

   c. The manager puts one of the forms on the clerk’s desk. The clerk completes the work required for that form, and then waits for the manager to send another one. In the mean time, the clerk utilizes the idle time by doing some work of her own.

   d. The manager queues several forms in the filing bins of the clerk. The manager then puts one of them on the clerk’s desk, but allows her to work on it only for a fixed time. After that, the clerk is made to work on the next form, and then the next, and returns to the first one only when no other new forms are in the queue.

   e. The clerk first files all requests from the manager orderly in the filing bins. She then picks the first one, works on it only for a fixed time, and then shelves it away back into the filing bin. After that, she works in a similar fashion on the next form, and then the next, and returns to the first one only when no other new forms are in the queue. Once all of them are completed, the manager is informed that the work is completed and the clerk goes into a waiting mode.

12. All of the following is true about beta release of software, EXCEPT:

   a. Beta release is a test version made available to users.

   b. Beta version is released before the actual launch of the commercial version.

   c. Beta release is made available for free.

   d. One of the purposes of the beta version is to use an alternate way to find bugs in the software.

   e. The manufacturer will often provide warranties for beta release.

13. _______________ are special programs that allow communication between hardware components and the operating system

14. Your job is to configure your own computer system on which you can do your homework assignments. You want the system to be such that once you get it, you just have to install a word processor and it should function smoothly. Your budget is limited, so you need to buy the minimum possible components. The following table shows five different options. Which one of the following choices will let you pick, so that your work starts smoothly.

<table>
<thead>
<tr>
<th>Options</th>
<th>a.</th>
<th>b.</th>
<th>c.</th>
<th>d.</th>
<th>e.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printer</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Monitor</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Speakers and Headphones</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Keyboards and Mouse</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Hard drive</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CD ROM Drive</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CD Writer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Processor</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Motherboard</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Scanner</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>RAM</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Windows XP</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Floppy Drive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>All connecting cables and power cables</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Section 2 (Questions 15-24) : Total points for this section are 40

In this section, code snippets are shown and you are asked questions about them. You may assume that other subroutines are appropriately defined, and you are only seeing a portion of the code.

The following FOUR questions are worth 2.5 points each

15. Which one of the following pieces of code will switch the values of $x$ and $y$?

   a. $x = y$
   b. $z = x$
   c. $x = z$
   d. $z = x$
   e. $z = y$

16. The $x$ in the following code is all of the following EXCEPT:

   Private Function DrawLine(x)
   Form1.Line (0,x)-(x,0)
   DrawLine = x + 1000
   End Function

   a. A parameter of DrawLine
   b. An argument of DrawLine
   c. A local variable
   d. A returned value
   e. An argument of Form1.Line

17. $X = 2 * \text{Int}(\text{RND}*5)$

   This statement will result in $X$ containing:
   a. An integer between 2 and 10
   b. An integer greater than equal to 2 and less than 10
   c. An integer less than 10
   d. Even integers less than 10
   e. Even integers between 2 and 10

18. $i = "1"$
    For $i = 1$ to 5
        Form1.print $i$
    next $i$
    Form1.print $i$

   This code will print which of the following options?
   a. 1 1 1 1 1
   b. i i i i i
   c. 1 2 3 4 5
   d. 1 2 3 4 5 1
   e. 1 2 3 4 5 6
All the remaining questions are FIVE points each.

19.

In the following 10 lines of code, a grade is printed based on the value stored in \( x \). An "A" grade should be assigned when \( x \) is 90 or above, "B" for \( x \) between 80 and 89, and so on....

```vbnet
If x >= 90 Then
    Form1.Print "You’ve got an A"
ElseIf x >= 80 Then
    Form1.Print "You’ve got a B"
ElseIf x >= 60 Then
    Form1.Print "You’ve got a D"
ElseIf x >= 70 Then
    Form1.Print "You’ve got a C"
Else
    Form1.Print "You’ve got an F"
End If
```

This code can logically be fixed by:

a. making no changes (It is fine as it is)
b. interchanging lines 5 and 7
c. interchanging the "<" to ">" in lines 1, 3, 5, and 7
d. interchanging lines 6 and 8
e. needs more than two lines to be modified before it will work

20.

Which of the following diagrams would be produced by the following code?

```vbnet
Private Sub Form_Load()
    Form1.AutoRedraw = True
    Form1.DrawWidth = 3
    For n = 200 To 2000 Step 200
        Form1.Circle (n, n), n
    Next n
End Sub
```
21. What would be shown on the form if it was clicked three times, with the following code?

```vbnet
Dim x
Private Sub Form_Load()
    x = 5
    y = 10
End Sub
Private Sub Form_Click()
    x = x + 1
    y = y + 1
    Form1.Print x; y
End Sub
```

- **a.** 6 1
- **b.** 7 1
- **c.** 8 1
- **d.** 6 1
- **e.** 1 1

22. The following program, if run, would result in which of the options given on the right?

```vbnet
Private Sub Form_Load()
    x = 500
    Triple x
    Form1.Print x
End Sub
Private Sub Triple(x)
    x = 3 * x
End Sub
```

- **a.** print 500 on the form
- **b.** print 1500 on the form
- **c.** print 2000 on the form
- **d.** print nothing on the form
- **e.** have an error

23. The program on the left is being stepped through. At the point where it is stopped, the value of **y** is

- **a.** 1500
- **b.** 2000
- **c.** 2500
- **d.** 3500
- **e.** 4000

24. The program in the previous question would draw:

- **a.** horizontal stripes of red, blue and green, all of equal size
- **b.** vertical stripes of red, blue and green, all of equal size
- **c.** horizontal stripes of red, blue and green, with green being larger
- **d.** vertical stripes of red, blue and green, with blue being larger
- **e.** horizontal stripes of red, blue and green, with blue being larger