



အဆင့်မြင့်သိပ္ပနှင့်နည်းပညာဦးစီးဌာန  
ကွန်ပူးတာတော်သိုလ်  
ပထမနှစ် B.C.Sc. /B.C.Tech.  
ပထမနှစ်ဝက်စာမေးပွဲ (မြန်မာစာ)  
မတ်လ ၂၀၁၄  
ဇန် (၄)

မေးခွန်းအားလုံးဖြေဆိပါ။

ခွင့်ပြုခိုင်(၃)နာရီ

၁။ (က)အောက်ပါတို့အနက် ပြုခွင့်ဖြေဆိပါ။

စကားသံ၊ ပျည်းသံ၊ ပါကျော်း

(ခ)အကွဲရာစဉ်ပါ။

ကြွောက်မြောက်၊ ကြိတ်၊ ကြုံ၊ ကျွေး၊ ဆွေးနွေး၊ ဆန်းပြား၊ ဆန်းရော၊ ဆားနယ်၊ ဆေးပင်၊ ဆန့်တန်း၊  
ဆင့်ခေါ်၊ ဆင်ဝင်၊ ဆင်းသက်၊ ဆိုင်ခန်း၊ တွေးတော့၊ တမ်းတာ၊ တင့်တယ်၊ တစ်ခု၊ တော့တန်း။

၂။ နှစ်သက်ရာ တစ်ပုဒ် ကိုဖြေဆိပါ။

(က)လမ်းအခွင့် စကားပြောမှ ဖော်ပြထားသော အခွင့်အလမ်းများ

(ခ) ဘဝအကျိုးပေးမွန်မြတ်သော စာဖတ်နည်း

၃။ နှစ်သက်ရာ တစ်ပုဒ် ကို ဆွေးနွေးတင်ပြပါ။

(က) တို့တိုင်းပြည် ကဗျာမှ စာခိုင်းအမိုးသားရေးအားမာန်

(ခ) မင်းရဲကျော်စွာ ၏ရဲရင့်မြင့်မြတ်သည့်စိတ်ဓာတ်

၄။ နှစ်သက်ရာ တစ်ပုဒ် ကိုစီကုံးတင်ပြပါ။

(က) နောင်ရှိးတိုက်ပွဲ စကားပြေ့စည်းပွဲ

(ခ) ညွှန်ပေးပို့ ကဗျာ၏အရေးအဖွဲ့

၅။ နှစ်သက်ရာ တစ်ပုဒ် ကိုစီကုံးတင်ပြပါ။

(က)ဦးသန်းထွက် အသိပေးလိုသော အမျိုးသားယဉ်ကျေးမှု

(ခ) မြန်မာ့ရှိးရာ ရာသီပွဲတော်များ

**THE DEPARTMENT OF ADVANCED SCIENCE AND TECHNOLOGY  
UNIVERSITIES OF COMPUTER STUDIES ZONE IV  
FIRST SEMESTER EXAMINATION**

**FIRST YEAR  
MARCH 2014**

***Answer all questions.***

**ENGLISH**

***Time allowed: 3 hours***

**QUESTION-I**

- A They are noisy, smelly and dirty, and cost more and more every year. We moan about them all the time, yet we are hopelessly addicted.
- B Britons love their cars more than any other Europeans, a major new EU study shows. The number of commuters cycling and walking in this country is declining, while the number of cars and lorries on the road has tripled in the last 30 years.
- C The report, The Hour of Choice – the first major transport study by the European Commission for a decade – says congestion costs Europe up to £85 billion a year.
- D Road traffic in the EU is forecast to increase by 50 per cent by 2010 and air travel by 70 per cent. ‘Europe is being asphyxiated by congestion,’ the study says. Transport chiefs will use its findings this week to urge Ministers to do more to reduce road traffic.
- E In Britain that means trying to cut the need to travel, said David Begg, chairman of the Commission for Integrated Transport – the Government’s advisory body: ‘We rely far too much on the car.’
- F Begg blamed the increase in traffic on the growth of out-of-town shopping and business parks in the Eighties. Bad policies have increased car and truck use which makes people demand more roads, but that only leads to more congestion. It’s a bit like a heroin addict always looking for another fix.’
- G Brussels wants to cut traffic and pollution with extra taxes on motorists and hauliers. The money would help the rail and bus services.
- H while road congestion grows, the study shows, the cost of alternative forms of transport is rising sharply. Britons pay some of the world’s most expensive bus and train fares for services that are crumbling through lack of investment.
- I In the last 20 years public transport fares have risen by an average of 65 per cent. Only 10 per cent of our fares are subsidized, compared with an average of 40 per cent on the Continent.
- J In an attempt to ease overcrowding in the skies, the EU is to consider forcing airlines to pay a tax on aircraft noise and greenhouse gas emissions, which could raise air fares.
- K But EU sources say Brussels will avoid recommending large rises in petrol and diesel taxes after the protests in Britain and France last autumn.
- L Congestion charging – forcing motorists to pay to drive into city centres – is seen as more effective. The report will encourage other countries to follow Britain in allowing local authorities to adopt such measures.
- M Environmental campaigners hope a strong endorsement at the European level will bolster what they see as Britain’s weakening resolve to push congestion charging and other green measures.

**Questions 1-6**

**Read the text and write NO MORE THAN THREE WORDS / OR A NUMBER for each answer.**

1. How many more cars and lorries are there in Britain now compared with 30 years ago?
2. How much does congestion cost Europe each year?
3. By how much will road traffic in the EU rise by 2010?

4. By what percentage have public transport fares risen in the last 20 years?
5. What percentage of public transport fares are subsidized in Britain?
6. What percentage of public transport fares are subsidized in Europe?

#### Questions 7-9

Answer these questions using NO MORE THAN THREE WORDS from the passage.

7. What methods of getting to work are now less popular in Britain?
8. Why is the service offered by trains and buses in Britain getting worse?
9. What does Brussels think is likely to be a more effective measure than increasing taxes on fuel?

#### Question - 10

Choose the most suitable title for the reading passage.

- (i) The solution to road traffic
- (ii) The increase in road accidents in Britain
- (iii) The need for public transport

### QUESTION-II

Complete the sentences with a suitable dependent preposition.

1. He was really enthusiastic ..... his work.
2. I was particularly fascinated ..... the architecture.
3. The Present remained optimistic.....his re-election, in spite of poor indications at the polls.
4. The university has a good reputation ..... supporting overseas students.
5. The spokeswoman stressed that continued research ..... cancer and its causes was absolutely vital.
6. My parents' flat is .....the twenty-first floor.
7. The passengers had to stand .....a queue.
8. Natasha now lives..... 32 The Avenue.
9. We'll have to hurry if we want to be.....time for the show.
10. The plane took off .....time.

### QUESTION-III

Match the words on the left (1-10) with the correct meaning on the right (a-j).

- |                         |   |
|-------------------------|---|
| 1. peripherals          | a. the line that describes the content of an email  |
| 2. ports                | b. a directory that holds data, programs and other folders                                  |
| 3. folder               | c. to classify records into numerical or alphabetical order                                 |
| 4. dock                 | d. input devices attached to the CPU  |
| 5. search               | e. which includes all the programs that control the basic functions of a computer           |
| 6. sort                 | f. which comprises programs that let you do specific tasks                                  |
| 7. system software      | g. the name given to junk mail  |
| 8. application software | h. set of icons at the bottom of the screen that give you access to the things you use most |
| 9. spam                 | i. sockets into which an external device may be connected                                   |
| 10. subject             | j. to look for specific information, for example the name of an employee                    |

#### QUESTION- IV

(A) Complete the following passage for how to Copy and paste in word with verbs from the list.

click              select              position              right-click              drag

First, (1)..... the text you wish to copy. To select text, (2)..... the mouse over the portion of the text that you want to copy. This part should then be highlighted. Then, (3)..... on the *Copy* icon on the Standard Toolbar. This copies the selected text to an invisible clipboard. Next, (4)..... the cursor where you want the text to appear. Finally, click the *Paste* icon. This inserts the content of the clipboard at the insertion point. As well as the icons on the toolbar, you can use the keys *Ctrl+C* for *Copy*, and *Ctrl+V* for *Paste*. These options also come up if you (5)..... the selected text.

(B) Choose the alternative. Just write down the number and the answer.

1. After awhile I felt more relaxing / relaxed about being in a foreign country.
2. He was so boring / bored during the lecture that he actually fell asleep.
3. She tried to explain the difference between the two words, but I still felt confusing / confused.
4. Learning a new language is really fascinating / fascinated!
5. He was amazing / amazed that the university had accepted him.
6. Living abroad is really exciting / excited!
7. He was really frustrating / frustrated that he couldn't understand the Australian accent when he first moved to Perth.
8. I felt really annoying / annoyed by his behavior.
9. I was really shocking / shocked to hear his news.
10. That book was really interesting / interested. I'll lend it to you.

#### QUESTION- V

Write an ESSAY on the following topic. Write at least 250 words.

"It is better for children to grow up in a countryside than in a big city"

Do you agree or disagree? Use specific reasons and examples to develop your essay.

**THE END**

**Department of Advanced Science and Technology**

**University of Computer Studies**

**First Year B.C.Sc. /B.C.Tech.**

**PHYSICS**

**Mid-Term Examination**

**2014**

**Answer ALL questions.**

**Zone IV**

**Time allowed: 3 hours**

1. (a) What do you understand an object in *translational equilibrium*? Does an object in translational equilibrium need at rest? How to identify an object in *static equilibrium* and *dynamic equilibrium*?

An airplane is cruising along in a horizontal level flight at a constant velocity, heading due west. (i) If the weight of the plane is  $3 \times 10^4$  N, what is the net force on the plane? (ii) With what force does the air push upward on the plane? (iii) Is the plane in equilibrium? If so, what kind of equilibrium?

- (b) Two spaceships are moving from the same starting point in the +x direction with constant accelerations. In component form, the silver spaceship starts with an initial velocity of +2 km/s and has an acceleration of +0.4 m/s<sup>2</sup>. The black spaceship starts with a velocity of +6 km/s and has an acceleration of -0.4 m/s<sup>2</sup>. Find the time at which the silver spaceship just overtakes the black spaceship.

2. (a) Define the followings in words and symbols.

- (i) Displacement  
(ii) Average Velocity

A rabbit nervously trying to cross a road first move 80 cm to the right, then 30 cm to the left, then 90 cm to the right; and the 310 cm to the left. (i) What is the rabbit's total displacement? (ii) If the elapsed time was 18 s, what was the rabbit's average speed? (iii) What was its average velocity?

- (b) What do you understand *free fall* and *projectile motion*? When an object in projectile motion, what is the *numerical value* of downward acceleration of that object?

A ball is thrown from a point 1 m above the ground. The initial velocity is 19.6 m/s at an angle of 30° above the horizontal. (i) Find the maximum height of the ball above the ground. (ii) What is the speed of the ball at the highest point?

3. (a) What is the difference between *centripetal acceleration* and *tangential acceleration*.

A potter's wheel rotates from rest to 210 rpm in a time of 0.75 s. (i) What is the angular acceleration of the wheel during this time, assuming constant angular acceleration? (ii) How many revolutions does the wheel make during this time interval? (iii) Find the tangential and centripetal components of the acceleration of a point 12 cm from the rotation axis when the wheel is spinning at 180 rpm.

- (b) A car drives around a curve with radius 410 m at a speed of 32 m/s. The road banked at 5°. The mass of the car is 1400 kg. (i) What is the frictional force on the car? (ii) At what speed could you drive around this curve so that the force of friction is zero.

4. (a) Define linear momentum. Is it a vector or a scalar? Write down mathematical expression for Newton's second law with momentum.

A spring of negligible mass is compressed between two blocks, A and B, which are at rest on a frictionless horizontal surface at a distance of 1 m from a wall on the left and 3 m from a wall on the right. The sizes of the blocks and spring are small. When the

spring is released, body A moves toward the left wall and strikes it at the same instant that body B strikes the right wall. The mass of A is 0.6 kg. What is the mass of B?

- (b) At a Route 128 highway on-ramp, a car of mass  $1.5 \times 10^3$  kg is stopped at a stop sign, waiting for a break in traffic before merging with the cars on the highway. Another car of mass  $2 \times 10^3$  kg comes up from behind, hits the stopped car, and locks bumpers with it. How fast was the moving car going just before the collision if the two cars move together at 10 m/s just after the collision?
5. (a) What do you understand the *mechanical energy*? State *Conservation of mechanical energy*.

A roller coaster is hauled to the top of the first hill of the ride by a motorized chain drive. After that, the train of cars is released and no more energy is supplied by an external motor. If the cars start from rest at 35 m above the ground at the top of the first hill, how fast are they moving at the top of the second hill, which is 22 m above the ground? Ignore friction and air resistance.

- (b) Write down an expression for a translational equilibrium and rotational equilibrium.  
A sign painter is standing on a uniform, horizontal platform that is held in equilibrium at the tenth-story level by two cables attached to supports on the roof of the building. The painter has a mass of 75 kg and the mass of the platform is 20 kg. The distance from the left end of the platform to where the painter is standing  $d = 2$  m and the total length of the platform is 5 m. (i) How large is the force exerted by the left-hand cable on the platform? (ii) How large is the force exerted by the right-hand cable?

**Department of Advanced Science and Technology**

**University of Computer Studies**

**Introduction to Computer System (CST-101)**

**B.C.Sc. /B.C.Tech. (First Year) First Term Examination**

**March 2014**

<b>Answer all questions</b>	<b>Zone IV</b>	<b>Time allowed 3 hours</b>
<b>1.</b> Define the following terms:		<b>(16 marks)</b>
(a) Plotter (b) Instruction set (c) OMR (d) Program control register	(e) Cylinder (f) Vision input system (g) Unicode (h) Garbage-In-Garbage-Out	
<b>2.</b> Differentiate Any FOUR of the followings:		<b>(16 marks)</b>
(a) Fixed and variable word length memory (b) Soft-copy and hard-copy outputs (c) Volatile and non-volatile memory (d) On-line and off-line storage of data (e) CISC and RISC		
<b>3.</b> Answer Any SIX of the followings:		<b>(18 marks)</b>
(a) List and explain some important characteristics of a computer (b) Why do we refer to multicore processor technology as energy-efficient or power-aware processor technology? (c) Write short notes on middleware. (d) What is a utility program? Write tasks commonly performed by utility programs. (e) Write the limitations of magnetic disk. (f) Write the main steps involved in execution of an instruction by a computer's CPU. (g) What are the five basic functions performed by a computer system?		
<b>4. (a)</b> Write the full form of the following abbreviations used in computer terminology.		
(i) EDSAC (ii) VLSI (iii) MB (iv) MFLOPS	(v) UTF (vi) RAID (vii) GUI (viii) SRAM	<b>( 8 marks)</b>

(b) (i) Using hexadecimal notation, write the zoned-decimal coding and packed-decimal for the following numbers. How many bytes are required for each of these representations?

(a) -439

(b) +43927

(4 marks)

(ii) Write 4-bit BCD code for following numbers:

(a)  $25_{10}$

(b)  $1024_{10}$

(4 marks)

5. (a) Carry out the following conversion.

(i)  $(100000111101)_2 \rightarrow ( )_{16}$

(ii)  $(EC)_{16} \rightarrow ( )_{10}$

(iii)  $(3211)_4 \rightarrow ( )_6$

(iv)  $(436)_8 \rightarrow ( )_2$

(v)  $(2E3)_{16} \rightarrow ( )_2$

(vi)  $(BDF)_{16} \rightarrow ( )_8$

(vii)  $(1111101)_2 \rightarrow ( )_8$

(viii)  $(619.34)_{10} \rightarrow ( )_8$

(8 marks)

(b) Calculate the followings: (10 marks)

(i) Add binary numbers 110101 and 011011 in both decimal and binary number form.

(ii) Find the complement of  $24_8$ .

(iii) Subtract  $732_{10}$  from  $285_{10}$  using complementary method.

(iv) Multiply binary numbers 111111 and 1111.

(v) Divide  $10111_2$  by  $110_2$ .

6. (a) How many bytes will be required to store the word 'FIRMWARE' in a (i) character-addressable computer (ii) word-addressable computer having word-length of 64 bits?

(4 marks)

(b) A computer uses EBCDIC. In which order will this computer sort the string?

64BIT, B24, 2MB, 1GB, MB, BAD, 234, ADD.

(4 marks)

(c) What will be the storage capacity of a double-sided disk with 400 tracks, 16 sectors per track and 512 bytes per sector? (4 marks)

(d) Write the ASCII coding for the word 'Device' in and hexadecimal notations. How many bytes are required to store this word using this coding? (4 marks)

**Department of Advanced Science and Technology**  
**University of Computer Studies**  
**B.C.Sc./B.C.Tech. (First Year)**  
**Mid Term Examination**  
**Mathematics of Computing I (CST-102)**

2-4-2014

Zone IV

Time Allowed: 3 hours.

**Answer ALL Questions.**

1(a) Find the domain and graph the function  $f(x) = 1 - 2x - x^2$ .

(b) The graph of the function  $y = 1 + \frac{1}{x^2}$  is compressed vertically by a factor of 2. Give an equation for the compressed graph.

(c) Graph the function  $y = \cos\pi x$ . What is the period of the function?

2(a) Find the slope and an equation of the tangent line of the curve  $y = x^3 - 12x$  at  $P(1, -11)$ .

(b) Find the limits in (i)  $\lim_{x \rightarrow -2} \frac{x+2}{\sqrt{x^2+5}-3}$  (ii)  $\lim_{x \rightarrow 1^+} \sqrt{\frac{x-1}{x+2}}$

(c) Define  $f(1)$  in a way that extends  $f(s) = \frac{(s^3-1)}{s^2-1}$  to be continuous at  $s = 1$ .

3(a) Find the slope of the graph of the function  $f(x) = x^3$  at the point  $(2, 8)$ . Then find an equation for the line tangent to the graph there.

(b) Find the derivatives of the functions in (i)  $f(x) = \frac{5x+1}{2\sqrt{x}}$  (ii)  $y = \frac{\sin x + \cos x}{\cos x}$   
 (iii)  $f(x) = x \tan(2\sqrt{x}) + 7$

(c) In  $y^2 = x^2 - 2x$ , use implicit differentiation to find  $\frac{dy}{dx}$  and then  $\frac{d^2y}{dx^2}$ .

4(a) Find the linearization  $L(x)$  of  $f(x) = x + \frac{1}{x}$ , at  $x = 1$ .

(b) Find the absolute maximum and minimum values of the function  $f(x) = \sqrt[3]{x}$  on  $-1 \leq x \leq 8$ . Then graph the function. Identify the points on the graph where the absolute extrema occur, and include their coordinates.

(c) Find the values or values of  $c$  that satisfy the equation  $\frac{f(b)-f(a)}{b-a} = f'(c)$  in the conclusion of the Mean Value Theorem for the function  $f(x) = x^3 - x^2$  and interval  $[-1, 2]$ .

5(a) Solve (i)  $\int \cot^2 x dx$  (ii)  $\int_{-4}^4 |x| dx$  (iii)  $\int \frac{18\tan^2 x \sec^2 x}{(2+\tan^3 x)^2} dx$

(b)(i) Graph the function  $f(x) = -\frac{x^2}{2}$  and find its average value over the given interval  $[0, 3]$ .

(ii) Find the area of the region enclosed by the line  $y = -3$  and the curve  $y = 2x - x^2$ .

Department of Advanced Science and Technology  
University of Computer Studies  
B.C.Sc/B.C.Tech. (First Year) Mid Term Examination  
CST-103 Computer Application Technique I

March, 2014

Zone IV

Time Allowed: 3 hours

(15 marks)

Answer all questions

1.Explain briefly:

- i. Difference between internet and world wide web
- ii. Router and Packet
- iii. Blog
- iv. TCP/IP
- v. Shareware

2(a). Create an HTML page with following.

(15marks)

Background image is "goldfish.gif".

Insert an image (desert.jpg, width and height 100 pixels each). This image uses image map.(Circle shape, 60,60,30 coordinates, self target and links to coffee.html). Map name is gallery.

Type the following paragraph with big text and Arial.

" The color of the text enclosed in the container is set by the color attribute, just as you learned to set text color in the body tag."

Type heading "Special Characters" with level 4 heading style and align center.

Type the following paragraph with smallest size, align center and yellow color.

" One drawback with powerful browsing agents like opera, Netscape and IE is that they try to interpret every recognizable character sequence as if it were a set of tags."

Type the following.

K. Keyboards

L. Laptop

M. Monitors

Create the following.

Keyboard

An input device.

Printer

An output device.

Type the following paragraph with bold type, italic style and indentation effect.

"Formatting the text in your pages has become in one way much easier and in another way much more complex since the release of the HTML 4 specifications."

Type the following text with given format.

*This text is using cite.*

**This text is using strong.**

This text is using strike.

Create a horizontal line.

(b). Create an HTML page with following LIST.

(10 marks)

o Item

A. Machine

- W. Washing Machine
- X. Fax Machine
- Y. Copying Machine
- I. Intelligent Copier

B. Television

■ Type

- i. LG
- ii. Toshiba
- iii. Samsung
- iv. Sony

3(a). Create an HTML page with following TABLE. (10 marks)  
(Remark: Final row displays pink background color. Image uses desert.jpg)

Nested table with Image

		one	row1 column2	row1 column3
two		three	row2 column2	row2 column3

(b). Create an HTML page with following FRAME. (5 marks)

File1.html	File2.html	File4.html
	File3.html	File5.html
		File6.html

(c). Create an HTML page with following FORM. (10 marks)

Welcome To My Page

Name  Email  Password   
Music Information

Your Favorite Artist  Your Favorite Album   
Album Type  Rock  Pop  Rap  Traditional

Do you want to listen the music? Click the following.

[Couple Album](#)

[Male Album](#)

[Female Album](#)

[Group Album](#)

Remark: Links use couple.html, male.html, female.html and group.html. Image uses desert.jpg.

4. Create an html page with following. It includes CSS rules. (15 marks)
- Create a CSS rule that specify the background of web page with repeated images vertically. And then set the background color with #ffcccc. Set the font face in whole page with sans-serif font family (Arial, Verdana, and sans-serif). (Use boxmodel.gif image file.)
  - Create a CSS rule applies to the h1 selector: background color to #191970, text color to #E6E6FA, and align to center. Add a bit of empty space above and below the heading text to 200%. Use a serif font (Geogia, Times New Roman, and serif)

(iii) Create a CSS rule that specify some paragraph with font size 12 pixels, bolder and italic font style.

(iv) Create a CSS rule that specify some paragraph within a box. This box defines with blue solid line border, 2 pixels border width and 3 pixels padding. The space between lines is 26 pixels.

(v) Display the following heading text which applied the above CSS rule.

An Example Illustrating the Box Model

(vi) Display the following paragraph with font size 12 pixels, bolder and italic font style. (Apply the above CSS rule.)

This paragraph should be bolder and italic.

(vii) Display following paragraph within a box that defines in above CSS rule.

Each element is treated as if it generates a new box. Each box can have new rules associated with it. The most common unit of measurement for boxes is pixels, although percentages and ems are often used in layout that stretch and contract to fit the size of the browser window.

5. Create a CSS file and an HTML file as follow:

(20 marks)

(a). Create a file called waterFormat.css, add following CSS rules.

(i) Create a rule which sets up some default for the page. The color of text to black; background color to white; typeface to arial, verdana, sans-serif family; the side of font to 13 pixels.

(ii) Next is the rule for the heading level 1 and level 2; background color to #cc99cc; the text color to #E6E6FA; the height of line to 200%; the align to left; the typeface to Serif family (Geogia, Times New Roman, Serif); the space between words to 3 pixels; and the text in underline.

(iii) Next is the rule for some paragraph which needs to be indented from left (3 em); the space between letters to 5 pixels.

(iv) Next is the rule for some paragraph which displays the capitalized text.

(v) Next is the rule for some paragraph which displays the text in a box. This box is 300 pixels wide and 100 pixels high, padding space 5 pixels, margin space 10 pixels, 2 pixels black solid border.

(vi) Next rule specify the box to insert an image which is 2 pixels solid border, 100 pixels wide and 150 pixels high and scroll bars. This box float at the right.

(vii) Next the two rules for unordered list and ordered list elements. The position of list to outside and inside.

(b) Create following web page which links to the above CSS file. (Use water\_drop.jpg.)

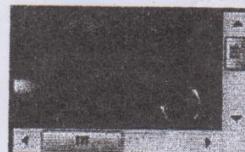
## Water

Water in three states: liquid, solid (ice), and gas (invisible water vapor in the air). Clouds are accumulations of water droplets, condensed from vapor-saturated air.

Water Is A Chemical Compound With The Chemical Formula H<sub>2</sub>O.

### Chemical and physical properties

A water molecule contains one oxygen and two hydrogen atoms that are connected by covalent bonds. Water is a liquid at standard ambient temperature and pressure, but it often co-exists on Earth with its solid state, ice, and gaseous state, steam (water vapor).



The major chemical and physical properties of water are:

1. Water is a liquid at standard temperature and pressure. It is tasteless and odorless. The intrinsic colour of water and ice is a very slight blue hue, although both appear colorless in small quantities. Water vapour is essentially invisible as a gas.

• Water is transparent in the visible electromagnetic spectrum. Thus aquatic plants can live in water because sunlight can reach them. Infrared light is strongly absorbed by the hydrogen-oxygen or OH bonds.

**Department of Advanced Science and Technology**

**University of Computer Studies**

**B.C.Sc./B.C.Tech. (First Year)**

**Mid-term Examination**

**CST-104 (Programming Logic and Design & C++)**

**April, 2014**

**Answer all questions.**

**Zone IV**

**Time allowed : 3 hours**

1. (a) Answer the following statements are True or False. (5 marks)
1. When you combine AND and OR operators, the OR operators take precedence, meaning their Boolean values are evaluated first.
  2. The general rule is: In an OR decision, first ask the question that is more likely to be true.
  3. A program with syntax errors can execute but might produce incorrect results.
  4. When you draw a flowchart, you use a parallelogram to represent an input operation.
  5. The for statement provides you with three actions in one compact statement: initializing, evaluating, and incrementing.
- (b) Choose the correct answer. (5 marks)
6. The major computer operations include \_\_\_\_\_.
    - a. hardware and software
    - b. input, processing, and output
    - c. sequence and looping
    - d. spreadsheets, word processing, and data communications
  7. An English-like programming language such as Java or Visual Basic is a \_\_\_\_\_ programming language.
    - a. machine-level
    - b. low-level
    - c. high-level
    - d. binary-level
  8. The value stored in an uninitialized variable is \_\_\_\_\_.
    - a. garbage
    - b. null
    - c. compost
    - d. its identifier
  9. Symbols such as > and < are known as \_\_\_\_\_ operators.
    - a. arithmetic
    - b. sequential

- c. relational comparison
- d. scripting accuracy

10. Each data item in an array is called a(n) \_\_\_\_\_.

- a. data type
- b. subscript
- c. component
- d. element

2. Draw the hierarchy chart and design the logic of a program for the owner of Bits and Pieces Manufacturing Company, who needs to calculate an employee's projected salary following a raise. The input is the name of the employee, the employee's current weekly salary, and the percentage increase expressed as a decimal (for example, 0.04 for a 4 percent raise). Design the program so that it runs continuously for any number of employees using three modules. The housekeeping module prompts the user for the percent raise that will be applied to every employee, and prompts for the first employee's name. The detail loop executes continuously until the user enters "XXX" for the employee's name. The detail loop gets the employee's weekly salary, applies the raise, produces the result, and prompts for the next employee name. The end-of-job module, which executes after the user enters the sentinel value for the name, displays a message that indicates the program is complete.

(10 marks)

3. Design a flowchart and pseudocode for a program that accepts each student's records which include students first and last name, roll no, mark. Display each student's record and their grade. The grade will evaluate as follows:

- 100 marks or fewer, the grade is D.
- 101 to 300 marks, the grade is C.
- 301 to 600 marks, the grade is B.
- 601 marks and up, the grade is A

(10 marks)

## Part (B) C++ Programming

4. (a) What is the output of the program below? (3 marks)

```
void main ()  
{  
    int i = 5, j = 6, k = 7, n = 3;  
    cout<< i + j * k - k % n << endl;  
    cout<< i / n << endl;  
    cout<<j++;  
}
```

(b) What is the output of the program below? (3 marks)

```
void main()  
{  
    int n = 3;  
    while (n >= 0)  
    {  
        cout<< n * n << endl;  
        --n;  
    } //while  
} //main
```

(c) What is the output of the program below? (3 marks)

```
void main()  
{  
    int i=1;  
    for ( ; i<=25; i++)  
    {  
        cout << "*" << "\t";  
        if (i%5==0) cout << endl;  
    } // for  
} //main
```

(d) Convert the following **while** loop to an equivalent **for** loop: (3 marks)

```
void main()  
{  
    int x=1, y;  
    while (x <=15)  
    {  
        y=2*x-3;  
        cout<<x<< "\t" <<y << endl;  
        x+=3;  
    } // while  
} // main
```

**Part (B) C++ Programming**

(e) Find the **syntax errors** of the statement and correct them. (3 marks)

/\*This a program to swap two numbers\*/

```
void main()
{
    int a; b ; temp;
    cout >> Enter any two integers: ;
    cin <<a<<b;
    cout>> Before swapping: a = <<a<<, b="<<b;
    temp = a;
    a = b;
    b = temp;
    cout>>After swapping: a = <<a<<, b="<<b;
}
```

**Sample Output:**

Enter any two integers: 4 22

Before swapping: a =4, b=22

After swapping: a =22, b=4

(f) Find the **syntax errors** of the statement and correct them. (3 marks)

void main()

```
{
    int a
    cout << Enter a number ;
    cin << a;
    switch a;
    case 1 - cout << "One";
    case 2 - cout << "Two";
    case 3 - cout << " Three";
    else cout << "Other";
}
```

(g) Suppose int x = 10, int y = 15, int z = 20. Determine whether the following expressions are true or false. (4 marks)

**Sample:**  $x > 5 \&\& z == 20$ , the answer is true.

- $x \leq 5 \parallel y > 15$
- $(x != 5) \&\& (y == z)$
- $x \leq z \&\& (x + y \geq z)$
- $(x == 5) \&\& (y != z)$

5. (a) Write a program to accept a positive number n (not greater than 10) and then find product of the integers from 1, 1 to 2 then 1 to 3 then 1 to 4 and so on until it displays product of integers from 1 to n. (6 marks)

**Sample output:**

Please enter a positive number, n: 5

Product

1

2

6

24

120

- s)
- (b) Write a C++ program that reads a positive integer entered by an interactive user and then prints out the reversed of that number. The program should allow the user to repeat this process until the user enters an integer that's negative or zero. (10 marks)

**Sample output:**

Enter a positive integer: 12  
Reversed of number: 21  
Enter a positive integer: 378  
Reversed of number: 873  
Enter a positive integer: -467  
-467 is not a positive integer. Program terminated.

- s)
6. (a) Write a program that ask user to enter employee information such as name (char[20]), empno (int), basicsalary (double) and overtimehour (int) and write these data into a text file called "employee.dat". The program should allow user to enter as much employee data as user wants. (8 marks)

- (b) Write a program that read data from "employee.dat" file created in (a) and write employee information on screen. Final salary should be calculated as

$$\text{salary} = \text{basicssalary} + 1500 * \text{overtimehour}$$

sample output should be as follow.

**Employee Information**

Name	EmpNo	Basic Salary	OvertimeHr	Salary
Aye Aye	1	5000.50	3	9500.5
Mg Ba	2	10000.50	3	14500.5
:	:	:	:	:

(8 marks)

7. Ten students in a class have to sit an exam. The student will pass the exam if he/she gets score at least 40 marks. Write a program that ask user to enter exam scores from keyboard for *ten students* and then, output on screen for the maximum mark, minimum mark, average mark and number of passed students and number of failed students.

(16 marks)