

Ahsanullah University of Science and Technology

Final Examination of Spring Semester, 2016

Department of Arts and Sciences

Program: Bachelor of Science in Computer Science and Engineering

1st Semester of 1st Year

Course No.: PHY – 1115

Time: 3 (three) hours

There are 7 (seven) questions. Answer any 5 (five) taking at least 1 (one) from each group.
(Marks allotted are indicated in the right margin)

Group - A

1. a) What are periodic motion and oscillatory motion? Relate maximum acceleration and maximum velocity for a body under simple harmonic motion. [4]
b) Consider a body of mass m oscillating under damping condition. Obtain a solution for the differential equation of the motion of the body. [8]
c) A body is vibrating with simple harmonic motion of amplitude 15 cm and frequency 4 Hz. Compute (i) the maximum values of the acceleration and velocity of the body. [2]
2. a) What do you understand by phase velocity and group velocity? Derive an expression for phase velocity. [4]
b) For a standing wave show that the energy transfer rate is zero. [7]
c) A plane progressive harmonic wave is travelling with a velocity of 340 m/s in a fluid medium of density 0.0015 gm/cm^3 . If the amplitude of the wave be 10^{-4} cm and its frequency 300 Hz, obtain the values of (i) energy density and (ii) energy current for it. [3]

Group - B

3. a) What do you understand by interference of light? Explain constructive and destructive interferences. [3]
b) What are the conditions to observe interference of light on the screen? [2]
c) In the case of Young's double slit experiment, obtain an expression of intensity for interference pattern. Hence find the conditions for bright and dark fringes in terms of path difference. [7]
d) Light of wavelength 5500 Å from a narrow slit is incident on a double slit. The overall separation of 5 dark fringes on a screen 200 cm away is 1 cm. Calculate (i) the fringe width & (ii) the slit separation. [2]
4. a) Define diffraction of light. Differentiate between interference and diffraction of light. [5]
b) For Fraunhofer diffraction due to double slits, obtain the conditions for maxima and minima. Explain what happens to the pattern on the screen when the following changes are made separately:
(i) slit widths are decreased keeping slit separation constant,
(ii) slit separation is decreased keeping slit width constant.

- c) Find the half angular width of the central bright maximum in the Fraunhofer diffraction pattern of a slit of width 12×10^{-5} cm when the slit is illuminated by monochromatic light of wavelength 6000Å. [2]

6. a) Explain Huygens' principle. [2]
 b) Obtain the conditions for bright and dark fringes in the case of interference in thin film due to transmitted light. [6]
 c) What is angle of polarization? Calculate the angle between reflected and refracted rays when light is incident on a shiny surface at angle of polarization. [4]
 d) A plate of glass ($\mu = 1.50$) in air is used as a polarizer. Find the polarizing angle and the angle of refraction. [2]

Group-C

$$\mu_0 \frac{dI}{dA} = -L \frac{d\phi}{dt}$$

- a) Explain Faraday's law of electromagnetic induction. [2]
 b) Define inductance. What is its unit? [2]
 c) Consider a circuit consisting of a resistor of resistance R and an inductor of inductance L in series with a dc source. Obtain an expression for the growth of current for that circuit. [8]

Show graphically the variation of current with time and explain the meaning of the

- inductive time constant for the circuit.
 d) An inductor of self-inductance 500 millihenry and a resistor of resistance 5Ω is connected to a battery of negligible internal resistance. Calculate the time in which the current will attain half of its final steady value. [2]

7. a) What is energy band? Explain valence band, conduction band and forbidden energy gap with necessary diagram. [4]
 b) Explain doping, donor atom and acceptor atom. [3]
 c) Explain volt-ampere characteristics of a p-n junction. [7]

$$\int_{0}^{\tau} \frac{-R \frac{dI}{dt}}{E - IR} = L \int_{0}^{\tau} \frac{dI}{dt}$$

$$E - IR = u$$

$$\Rightarrow \frac{du}{dt} = -IR$$

$$\Rightarrow -IR = \frac{du}{dt}$$

$$\Rightarrow -R \cdot dI$$

Ahsanullah University of Science and Technology

Final Examination of Spring Semester 2016

Department of Arts and Sciences

Program: B. Sc. in Computer Science and Engineering

1st Year, 1st Semester

Course No: MATH-1115
Time: 03 (three) hours

Course Title: Mathematics-I

Full Marks: 70

$\frac{3}{2}$
 $\frac{1}{2}$
 $\frac{2}{2}$
 $\frac{2}{2}$

There are 7 (Seven) questions in group A and B. Answer 5 (Five) questions,
taking 3 (Three) from Group-A and 2 (Two) from Group-B.

Marks allotted are indicated in the right margin

Group-A

1. a) Define limit of a function $f(x)$ at $x = a$. [8]

A function $f(x)$ is defined as $f(x) = \begin{cases} 1+x & \text{for } x \leq 0 \\ x & \text{for } 0 < x < 1 \\ 2-x & \text{for } 1 \leq x \leq 2 \\ 2x-x^2 & \text{for } x > 2 \end{cases}$ at $x = 1$ and $x = 2$.

Test the continuity of $f(x)$ at $x = 1$ and differentiability of $f(x)$ at $x = 2$.

- b) State Roll's theorem and Lagrange's mean value theorem. Determine the value of 0 [6] using 2nd mean value theorem for the function $f(x) = (1-x)^{5/2}$ if $h = 1$.

- c) Find the Lagrange's form of remainder in the expansion of $e^x \cos bx$ in powers of x . [3]

d) State L'Hospital's theorem. Evaluate the indeterminate form, $\lim_{x \rightarrow 0} \left(\frac{\sin x}{x} \right)^{\frac{1}{x}}$. [5]

- e) State the Euler's theorem for homogeneous functions of two variables. If [6]

$u = \cos^{-1} \left\{ \frac{x+y}{\sqrt{x+y}} \right\}$, show that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} + \frac{1}{2} \cot u = 0$ using Euler's theorem.

e) If $v = \sqrt{x^2 + y^2 + z^2}$, then show that $v_{xx} + v_{yy} + v_{zz} = \frac{2}{v}$. [4] $\rightarrow (n^2-n)$

- b) Prove that the curves $\frac{x^2}{a_1} + \frac{y^2}{b_1} = 1$ and $\frac{x^2}{a_2} + \frac{y^2}{b_2} = 1$ will cut orthogonally if [4]

$$a_1 - b_1 = a_2 - b_2.$$

- c) State Leibnitz's theorem. If $y = \sin^{-1} x$, prove that

$$(1-x^2)y_{n+2} - (2n+1)xy_{n+1} - n^2y_n = 0.$$

$$\begin{aligned} & 2 \left(y^2 + z^2 + \dots \right) \frac{1}{\sqrt{x^2+y^2+z^2}} = \frac{2}{\sqrt{x^2+y^2+z^2}} \\ & \sqrt{x^2+y^2+z^2} \frac{1}{\sqrt{x^2+y^2+z^2}} = \frac{1}{\sqrt{x^2+y^2+z^2}} \end{aligned}$$

$$x \cdot \frac{4x^2}{2\sqrt{x^2+y^2+z^2}} - \sqrt{x^2+y^2+z^2} \cdot 1 - \left(y^2 + z^2 \right)$$

$$\frac{4x^2 - 2\sqrt{x^2+y^2+z^2} - y^2 - z^2}{\sqrt{x^2+y^2+z^2}}$$

$$\frac{4x^2 - 2\sqrt{x^2+y^2+z^2} - y^2 - z^2}{\sqrt{x^2+y^2+z^2}} = \frac{4x^2 - 2\sqrt{x^2+y^2+z^2} - y^2 - z^2}{\sqrt{x^2+y^2+z^2}}$$

- 4(a) Define radius of curvature. Find the curvature of the curve $x^3y = a(x^2 + y^2)$ at $(-2a, 2a)$. [6]
- b) Define maxima and minima of a function. Given $\frac{x}{2} + \frac{y}{3} = 1$, find the maximum value of xy and minimum value of $x^2 + y^2$. [8]

Group-B

- 5(a) Determine the angle through which the axes must be rotated to remove that xy term of the equation $7x^2 - 6\sqrt{3}xy + 13y^2 = 16$. [2]
- b) Prove that the pair of straight lines joining the origin to the point of intersection of the curve $y^2 = 4ax$ by the line $y = mx + c$ are coincident if $c = a/m$. [5]
- c) Find the equation of the bisectors of the angles between the lines represented by the equation $2x^2 + 7xy + 6y^2 + 13x + 22y + 20 = 0$. [7]
- 6(a) Find the director circle of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$. [7]
- b) The circle $x^2 + y^2 + 2x - 4y - 11 = 0$ and the line $x - y + 1 = 0$ intersect at A and B . Find the equation of the circle with AB as diameter and the equation of the circle through A, B and orthogonal to the given circle. [7]
- 7(a) Define co-axial circles. Find the general equation of the system of co-axial circles containing the limiting point $(2, 3)$ and the circle $x^2 + y^2 = 9$. Find also the other limiting point of the system. [7]
- b) Find the angle between the lines whose direction ratios are $(3, 1, 2)$ and $(2, -2, 4)$. [4]
- c) Find the equation of the plane passing through the line of intersection of the planes $2x - y = 0$ and $3x - y = 0$ and perpendicular to the plane $4x + 5y - 3z + 1 = 0$. [3]

$$\begin{array}{r} -14 - 3 \\ \hline 14 \end{array} \qquad \begin{array}{r} 17 \\ \hline 14 \end{array}$$

$x^2, z, 2\pi$

Date: 26/09/16

AHSANULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

Final Examination of Spring Semester 2016

Department of Arts and Sciences

Program: B. Sc. in Computer Science & Engineering

1st Semester of 1st Year

Course Code: HUM 1107; Course Title: Critical Thinking and Communication

Time: 3 hours

Full marks: 70

There are 10 (ten) questions in this question paper. Answer any seven of them.
(Marks allocated are indicated in the right margin.)

Question#1 'Critical thinking is not just thinking, but thinking which entails self-improvement.' Do you agree to this proposition? Give reasons in support of your answer. 10

Question#2 'Rational decisions are essential for career-choice, relationships and investment among other things.' Discuss the maxim elaborately. 10

Question#3 Identify whether the following passages are arguments or fallacies and justify 5+5=10
your opinion by giving reasons.

- The earth is getting warmer. Why? There are many reasons, but here are two important ones. First, the burning of coal, oil, and natural gas has greatly increased the carbon dioxide in the atmosphere. And carbon dioxide retains heat. Second, chlorofluorocarbons, which are used in air conditioners and refrigerators, have attacked the ozone layer, thus leaving the earth exposed to ultraviolet rays from the sun.
- An umbrella prevents you from getting wet in the rain. Ashley took her umbrella and, therefore, she did not get wet.

Question#4. Answer the following questions: 10

- What are the steps required for analyzing an argument? Explain with an example.
- What is a premise in an argument? Give an example and explain it.

Question#5. Inductive argument is based on probability, not certainty. Explain the statement with an example. 10

Question#6. There was a rally of teachers and students in the AUST campus against the recent terrorist activities in Bangladesh. As the Public Relations Officer of AUST draft a report to be sent to the News Editor of the Daily Observer, Motijheel, Dhaka. 10

Question#7. Compose a paragraph on any one of the following topics: 10

- How to Organize a Study Tour
- An Exciting Event in Your Life

Question#8. Read the following passage and then answer the questions given below:

1x10=1
0

The night before my baby's operation I lay awake anxiously; in the morning I packed her pitifully small requirements and we went to the hospital. She cried when they took her away. The world had contracted to the small size of her face and her clenching, waving hands; the poignancy was intolerable. I went away, and walked around outside the hospital for hours. When I went back at the appointed time, the senior nurse told me that the operation had been successful and that Octavia was well. I could not believe that a mere recital of facts could thus change my fate; I stood there dumbly, wondering whether she had got the wrong name, the wrong data, the wrong message. When I got round to speaking, I asked if I could see her, and they said to come back in the morning, as she was still unconscious. Such was my nervousness that I did not ask again to see her. I went home and wept copiously.

It was only then that I began to be preoccupied with certain details about which I had not previously dared to think. Would there be a nurse with Octavia at all times? Would they feed her properly? Earlier these things had seemed trivial, but now their importance swelled in my mind. Because the threat of fatality had been removed, life seemed to have gone back to normal. It was the strangeness more than the pain, I thought, that would afflict her, for she liked nobody but me, and strangers she disliked with noisy vehemence.

When I went round in the morning, the senior nurse told me that Octavia was comfortable. Summoning some courage, I asked to see her, but was told that was impossible. 'She will settle in more happily if she doesn't see you,' she said. I didn't like the sound of that word 'settle'; it suggested complete inactivity. 'I'm afraid that for such small infants we don't allow any visiting at all,' she continued. Octavia had never been settled in her short life, and I pictured her lying there in a state of lethargy. Furthermore, it was now imperative to see her. Already, we had endured the longest separation of our lives, and I began to see it stretching away, indefinitely prolonged. Why would they not let me see the child? Had the operation not been a success?

The senior nurse showed me the surgeon's report. Although it was nothing but a mass of technicalities to me, I felt better; for all the senior nurse knew, I might have had enough medical knowledge to understand the report and she would not have taken that silly risk. By this time I could tell that she considered my behaviour to be tedious, and I left.

But I had been outside the hospital for only a few moments when I thought of my baby's possible distress, and I went back inside. Two junior nurses greeted me nervously, repeating the earlier message, but I told them I had no intention of not seeing my baby. Their voices hardened. They had that whole building behind them and I had nothing behind me except my intention. Just then, the senior nurse returned. 'Well, well, you're back again,' she said. She took my arm and began to push me towards the door. At first I was unable to resist her physical propulsion, but then she took hold of my elbow and started to exert greater pressure, so I started to scream. I screamed very loudly, shutting my eyes to do it, and listened in amazement to the deafening noise. Once I had started, I could not stop. I stood there, motionless, screaming, whilst they shook me and yelled that I was upsetting everyone.

Through the noise I could hear things happening and I felt I had to keep doing this until they let me see her. Inside my head it was red and black and very hot. After a while I heard someone shouting above the din: 'For goodness sake, tell her she can see her baby.' I instantly stopped and opened my eyes. I looked at the breathless circle surrounding me: the surgeon himself looking white with anger; the senior nurse crying; the junior nurses looking stunned. It was as though I had opened my eyes on a whole new narrative in which I myself had taken no part. But I had no interest in their story; I wished to know only my own. 'Of course you can see the baby,' said the surgeon, kindly. 'I will take you to see her myself.'

Questions:

- a. What was going to happen to the baby in the morning?
- b. Explain fully why the baby's requirements are described as 'pitifully small'.
- c. After the writer was told that Octavia was well, what two aspects of her behaviour showed her nervousness?
- d. What two things worried the writer about the way in which Octavia might have been treated in hospital?
- e. Why do you think that 'earlier these things had seemed trivial'?
- f. Explain in your own words why 'life seemed to have gone back to normal'.
- g. Why was it now 'imperative' for the writer to see her baby?
- h. Explain fully the 'silly risk' the senior nurse had taken.
- i. Why do you think the nurses greeted the writer 'nervously'?
- j. The surgeon was 'white with anger'. Why do you think he was angry?

Question #9. Answer the questions:

5

- a. Copy the following passage in your answer paper making necessary corrections:

The atom is the basic building block of matter. One interesting aspect of the atom its spatial composition. Surprisingly, it is largely build from empty space its nucleus made of protons and neutrons, makes up only about a billionth of the atom itself. Another surprising aspect of the atom is its structure. Because most of us maintain a mental model of the atom's nucleus being orbited by discrete electrons, the reality is ^{the} way different than that traditional depiction. Scientists now prefer to describe the movement of electrons around the nucleus as a so-called "wave-pattern" cloud. In addition, ^{to the} models predicting the placement of electrons within the cloud is described as one probability among many, instead than depicting planet-like electrons orbiting a sun-like nucleus.

2.5

- b. Turn the following into polite questions:

- i. Whom did you want?
- ii. Was the examination in time?
- iii. Have you got your driving licence?
- iv. When did you come from Sylhet?
- v. Who will win in the next US Presidential election?

c. Fill in the blanks to make meaningful conditional sentences: 2.5

- i. I would go on a diet _____
- ii. If I could choose anywhere in the planet to go on holiday, _____
- iii. If you found a wallet with a lot of money in the street, _____
- iv. What would you eat _____
- v. If I had more free time, _____

Question#10. The following advertisement was published in the daily Prothom Alo on 20 August 2016. Draft a job application and a resume in response to the advertisement: 10

(New Horizon Software Limited)
(140 New Eskaton, Dhaka)

We are looking for some young, energetic, hardworking Software Engineers for our company's headquarters in Dhaka. Candidates having minimum B. Sc. in CSE from a recognised university may send their applications with two copies of CV and two copies of passport size photographs each to the Managing Director of the company on or before 25 September 2016.

Glob. State

Date : 29/09/16

Ahsanullah University of Science and Technology
Final Examination of Spring Semester 2016
Department of Arts and Sciences
Program: B. Sc. in Computer Science and Engineering
1st Semester of 1st Year
Course No. Chem – 1115; Course Title: Chemistry

Full Marks: 70

- Q.4.** (a) Define heat of reaction. Derive a mathematical expression by which one can calculate the heat of reaction at any temperature from that at a given temperature. 06
- (b) The heat of combustion of propane at 25°C is 82.0 k Cal. The molar heat capacities of propane, water vapour and carbon dioxide are 3.2, 4.5 and 1.8 cal respectively. Calculate the heat of combustion of propane at 135°C . 04
- (c) Derive a mathematical relation between K_p and K_c . 04
- Q.5.** (a) Define specific conductance, equivalent conductance and molar conductance. 03
- (b) State and explain Arrhenius theory electrolytic conductance. 04
- (c) Define order and molecularity of a reaction. Derive a kinetic expression for the rate constant of a first order reaction. 04
on air | O
- (d) What do you understand pseudo-uni-molecular reaction and zeroth order reaction? Give at least one example of each of them. 03
- Q.6.** (a) Discuss Bohr's model of the atom. How does it account for the hydrogen spectra? 04
- (b) Explain Pauli's Exclusion Principle. 03
- (c) What are s-block elements? Discuss the main characteristics of these elements. 04
- (d) Discuss the defects of the Mendeleeff's periodic table. 03
- Q.7.** (a) Give an account of conditions and types of compounds formed by inert gases. 04
- (b) Explain why the electronegativity and electron affinity of noble gases is zero. 03
- (c) What is meant by an ionic bond? What are the conditions for the formation of this type of bond? 04
- (d) Explain why CH_4 , NH_3 and H_2O molecules have different shapes? 03

Ahsanullah University of Science and Technology
 Department of Computer Sciences and Engineering
 Final Examination Spring 2016

Course No.: CSE1101
 Time: 3 Hours

1st Year 1st Semester
 Course Title: Elementary Structured Programming
 Full Marks: 70

[There are seven questions. Answer any five. Marks are indicated in the right margin. Assume that notation and terms used in this question paper refer to those of the programming language C.]

1. a. Illustrate with an example the concepts of 'algorithm' and 'program'. 3
 b. Describe various uses of the special characters '-' and '%'. 2+2
 c. Narrate the rules of writing identifiers or names of variables, functions, etc. 3
 d. Explain in detail the program segment given below.

```
double DtyPn05(int x1, float x2)
{ double d1,d2;
  d1 = x1*x1+0.5*x2+3; d2 = sqrt(d1);
  return d2; }
```

 4
2. a. Measurement in centimeters of an edge of a cube is to be entered. The entered number is also considered as the radius of the base of a cylinder as well as its height. The volumes of the cube and the cylinder in cubic meters need to be displayed. All input and output should be arranged in the 'main' with appropriate text messages and all calculations should be done in two different functions called 'CubeVlm' and 'ClndrVlm' respectively. Write a program to perform all those activities. 5
 b. Explain the general form of a 'for' loop. 2
 c. Write a brief essay on relational and logical operators. 5
 d. Find the value that is assigned to x1 showing all intermediate calculations.
 $\text{int } i=10, j=10, x1; x1 = i++ * 10 / j++ * 10;$ 2
3. a. Consider the following form of selection statements reading e1, e2, etc., as expressions and b1, b2, etc., as code blocks. Draw a flowchart diagram to describe it, and determine the simple forms isolated for execution of each block. 5
 $\text{if}(e1) \text{ if}(e2) b1 \text{ else } b2 \text{ else if}(e3) b3 \text{ else } b4$
- b. Develop a program, with discussions about memory requirements and important steps, to find the sum of the 1ⁿ n terms, ensuring $n \geq 1$, of the following series. 6
 $5/(5+10), 10/(10+15), 15/(15+20), \dots$
- c. Rewrite the following program segment using a 'while' loop. What might be the purpose of the code? 2+1
 $\text{int } i; \text{char ch1};$
 $\text{for}(\text{ch1}=\text{getche}, i=5; \text{ch1} != 'c'; \text{printf}("%d\n", i*i*i), i=i+2, \text{ch1}=\text{getche});$
4. a. Illustrate the major differences between 'while' and 'do-while' loops, preferably with the help of flowchart diagrams. 4
 b. Explain the concept of nested loops. 2

- C. How does a 'continue' statement work? 3
- D. Write a program that displays the following pattern, if 'A' is entered as the starting character, and 3 is entered as the number of rows. $\text{ch} = \text{A}$
 $\text{for} (\text{i}=0; \text{i}<3; \text{i}++)$
 $\quad \quad \quad \text{for} (\text{j}=0; \text{j}<3; \text{j}++)$
 $\quad \quad \quad \quad \quad \text{if} (\text{j} > \text{i}) \text{sp} = 3, \text{sp} = 0$
- The program must display similar patterns for other starting characters based on their ASCII values and the numbers of rows entered.
- E. a. Suppose, the code that follows is executed with necessary support. You must show every change of value for every variable, and also show in proper form all that will be displayed on the screen. Assume that d, p, x and p are the characters entered. 5
- ```
int i, j, r, a[4]={10, 20, 30, 40}; char c1;
for(i=0, j=3; i<4; i++, j--)
{
 c1=getche();
 switch(c1)
 {
 case 'p': r = a[i]*a[j]; break;
 case 'd': r = a[i]-a[j]; break;
 default : r=a[i]+a[j];
 }
 printf("\t%d\n", r);
}
```
- b. Illustrate with an example the use of recursive functions. 4
- c. Explain two major differences between local and global variables. 3
- d. Elaborate the concept of type cast. 2
- F. a. Letter grades obtained by 40 students in a course are entered into a one-dimensional array of structures along with the id numbers of the students. It is assumed that only six grades, A, B, C, D, E and F are possible. We need to get the id numbers of the students in another array who have obtained a specified grade. Write a program to arrange necessary input, processing and output. 5
- |                     |                          |                      |
|---------------------|--------------------------|----------------------|
| Sample input        | Reduced array of size 5: | Corresponding output |
| 1 A 2 B 3 A 4 B 5 C | 2 4                      |                      |
| Specified grade: B  |                          |                      |
- b. How do you define an array? Explain one important use of arrays. 1+2
- c. Illustrate with an example the fact that a string is a one-dimensional array of characters processed as a single data. 4
- d. Write a short note on 'strcat'. 2
- G. a. Produce a brief comparative study of 3D arrays of numbers and those of characters. 3
- b. Develop a program, with discussions about memory requirements and important steps, that arranges necessary input and output, and then compares the sums of the elements along the two diagonals of a matrix, 10x10 or bigger in size. 6
- c. Explain with examples the operations that are allowed to be performed with pointers. 3
- d. How writing to a text file can be arranged? 2

Department of Arts and Sciences, AUST

Spring Semester 2016

Lab Final Examination

HUM 1108: English Language Sessional

Program: B.Sc. in CSE (1/1), Group A2

Time: 1 hour 30 minutes

Full Marks: 30

Answer the following questions:

The figures in the margin indicate full marks.

Question #1. Answer any three of the following questions:

3x5=15 marks

A. Compose a paragraph on any one of the following topics in about 100 words:

- i. How to Find Things in the Internet
- ii. Your Visit to an Important Tourist spot
- iii. Why We Should Obey Traffic Rules

B. Copy the following passage in your answer script correcting the errors:

Mr. Wu has been very angry at her. On numerous occasions, he had warning her she will get the sack if things dont improve. Xian Chee spent between eight and ten hours a day working at her typewriter and answering the telephone. It is great at the beginning. The job had being something totally new and different from her last. But, she began to hate a routine. She does not look forward to come to work because she has lost her enthusiasm

*beg bigli is a handsome friendly and healthy jag man. he  
mister bigli*

C. Transform the following phonological transcription into English language: /is a contrast  
/mɪstər bɪglɪ ɪz ə hænsəm frendlɪ ænd welθi jən mæn/ /hi ɪz ə kəntræst t̬u mɪstər darsi hu ɪz æt fərst  
snabis ænd rʊd/ /dʒeɪn seɪz ðæt mɪstər bɪglɪ ɪz dʒæst wæt ə jən mæn / /ðæt ðæt  
ænd ai nevar səts hæpi mænərz/ /ɪn fækɪt ðeɪn ænd mɪstər bɪglɪ ər veri similər in tərmz əv  
pəsonəliti/ /hɪz sɪstarz ə: fain wɪmin wið pæsən hr fæsən/ /hɪz bræðər in lɔ mɪstər hərst mɪrəli luki  
laik ə dʒentəlmən bat hɪz frend mɪstər darsi sun dru ðə/ətenʃən əv ðə pipl əv ðə rum bai hɪz fain  
pəsonəliti ænd hænsəm fitʃərz/

D. Arizona IT Company, 25 Banani, Road 7, Dhaka 1208 has advertised in the Daily Sun on 25 July 2016 for a Data Base Engineer. Candidates having B.Sc. in CSE have been invited to apply to the Managing Director of the organization by 20 September 2016. Draft a cover letter and a resume for the post.

seanabiss and robad.

Question# 2. Read the passage and answer the questions given below:

1.5x10=15 marks

The earth is losing its forests. Presently, trees cover about 30 percent of the earth's surface, but they are being destroyed at an alarming rate, especially in the tropics. Timber harvesting is a major reason for the destruction of the forests. Trees are used for building houses, making furniture, and providing pulp for paper products, such as newspapers and magazines. At least 40 hectares of rainforest are being felled every minute, mostly in order to extract the valuable timber.

Another way that man is destroying the world's forests is by burning them down. In the Amazon, for example, rainforests are being burnt down at a rate of 20 hectares a minute. The main reason for this is to clear the land for farming. Farmers in rainforest countries are often poor and cannot afford to buy land. Instead, these farmers clear rainforest land to raise their animals or grow their crops. Because tropical rainforest soil is so poor in nutrients, framers cannot reuse the same land year after year. In the following years, farmers just clear more land, destroying the forest piece by piece. Already more than 30 tropical countries have reached a critical level of forest destruction and one-time exporters of timber such as Nigeria and Thailand now have to import timber for their domestic needs.

Should we get all excited and worried about the loss of the forests? Yes, we should. Healthy trees are a vital part of the environment, and keep the entire balance of the atmosphere agreeable to all life forms. Forests are catchment areas for rainwater, holding the rainwater in the leaves of the trees, so that it will not sink so quickly into the earth's crust. Furthermore, the forests help maintain the water cycles in the area. The masses of cloud that provide the rain are formed over the moist forests. Thus, the destruction of forests may also lead to a reduction in rainfall over the area, resulting in drought.

Forests also protect and feed the earth's fragile mantle of soil. Trees curb soil erosion. Without the tree cover, the land is totally exposed to the agents of erosion, such as strong winds and heavy rainfall. The strong winds blow away the top layers of the soil and the flowing water carries it away into the rivers, lakes or sea. Consequently, the once fertile land is converted into a barren wasteland. In addition, denuded hill slopes are vulnerable to landslides, which can be catastrophic disasters, resulting in the loss of homes and lives.

Apart from preventing soil erosion and landslides, forests, with their abundant supply of leaves, give compost back to the land, thus helping it to remain fertile. The leaves of the trees and the droppings of the birds, animals and insects which live in them, fall to the ground, where they decay and replenish the soil with mulch, minerals and manure.

Forests are rich in flora and fauna. The rainforests are home to over half of the entire species of the world, which are being destroyed with the rainforests; and some of those species that are killed will never return again. Plants and creatures are god's gift to us and they serve mankind, each in its own way. For example, plants are the source of our clothes; and the rubber used for tyres comes from trees. Plants are also the source of sugar, coffee, tea, rice, wheat and many delicious and nutritious fruit.

In addition, most of the medicines that have been used by men are derived from plants and animals. Most of the Chinese medicines, for example, such as ginseng and ginkgo, are herb-based. An example from the realm of modern Western medicine is the drug Vincristine. This drug, which is derived from a jungle plant, is used in the treatment of leukemia. Many of those species that have not yet been discovered may very likely cure cancer, AIDS, and many of the other diseases and virus-based illnesses of today. In fact, one research scientist in the field of botany has concluded that in Costa Rica's forests alone, 15 percent of the plant species may have the potential as a treatment for cancer. What potential life-saving medicines are we losing each day as the forests are being destroyed?

Apart from all this, let us keep in mind the most basic function of trees, which is that they provide oxygen. All living creatures need to breathe oxygen in order to stay alive. A treeless planet will be an airless and, therefore, a dead one.

#### Questions:

- (a) State two main ways that forests are being destroyed.
- (b) What is the main purpose for the burning of the trees in the forests of the Amazon?
- (c) What point is the writer trying to show in mentioning the fact that Nigeria and Thailand have to import timber?
- (d) Explain why the destruction of forests may lead to drought.
- (e) Find a word in this paragraph which means "very important".
- (f) Why is soil erosion a greater problem in areas that have been cleared of forests?
- (g) Explain the meaning of "denuded hill slopes" without using the italicised word.
- (h) What is vincristine?
- (i) What does the writer compare a tree less planet to?
- (j) What does the word "it" in the second line of the 5<sup>th</sup> paragraph means?

poverty  
poverty  
poverty

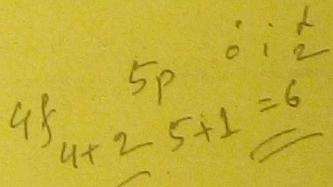
Department of Arts and Sciences, AUST  
 Class Test  
 HUM1107: Critical Thinking and Communication  
 B.Sc. in Computer Science and Engineering  
 Marks: 10, Time: 40 minutes

Compose a paragraph on any one of the following topics in about 100 words:

- (a) Differences between an Educated Person and an Uneducated Person
- (b) How to Take Preparation for a Semester Final Examination

AHSANULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
 CSE 1/1 Section: A, FALL Semester 2016  
 Course No.: Chem 1115 Course title: Chemistry  
 Quiz 1, Total marks 20

- |                                                                                                                        |   |
|------------------------------------------------------------------------------------------------------------------------|---|
| ✓ 1. Give an account of the structure of atoms with the reference to the arrangement of orbital electrons              | 4 |
| ✓ 2. Why has the Bohr model of the atom become outmoded?                                                               | 3 |
| ✓ 3. Why hydrogen atom should give so many lines in its spectrum although there is only one electron in hydrogen atom? | 2 |
| ✓ 4. Write a brief account of the origin of spectra in a hydrogen atom.                                                | 3 |
| ✓ 5. What is the significance of quantum numbers?                                                                      | 3 |
| ✓ 6. Write the electronic configurations of Cr and Ce.                                                                 | 2 |
| ✓ 7. What is meant by excited atom? How could you excite an atom and what happens if an atom is excited?               | 3 |



Section A (set A)

Class Test II

Department of Arts and Sciences, AUST

Program: B.Sc. in Computer Science and Engineering (1/1)

HUM 1107: Critical Thinking and Communication

Time: 30 minutes

2x5=10 marks

Answer the following questions:

1. What is a deductive argument? Explain your answer with an example.

2. Identify whether the following passage is an argument or a fallacy and explain why:

In an engineering program like B.Sc. in ESE, English course is a useless course, and spending money on a useless course is wastage. So, English course should be dropped from engineering programs.

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AHSANULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY  
CSE 1/1 Section: A, Fall Semester 2016  
Course No.: Chem 1115 Course title: Chemistry  
Quiz 2, Total marks 20

|                                                                          |   |
|--------------------------------------------------------------------------|---|
| 1. Write four limitations of Mendeleef's periodic table.                 | 4 |
| 2. What are s, p, d and f-block elements?                                | 4 |
| 3. Discuss the two reasons for placing the noble gases in zero group.    | 4 |
| 4. Write down the principle of isolation of inert gases from liquid air. | 4 |
| 5. Write four uses of helium.                                            | 4 |