Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 1st year 1st Semester Final Examination 2018
Subject : Communicative English
Course Code: ENG-101

Full Marks: 35 **Time: 2 Hours**

Figure in the right margin indicate full marks.
(Answer all the Questions. Use Separate answer script for each section)

Section –A

1. Correct the following sentences if they are incorrect. If the sentence is correct, just copy it. 5
   a. You should do the work like I showed you.
   b. The baby has been born yesterday.
   c. Honesty and truthfulness are necessary for happiness.
   d. Would you mind to open the window.
   e. I received all available informations.
2. Complete the following sentences: 5
   a. If you ……., I could have lent you my books.
   b. The more you read the …….. you learn.
   c. You cannot get a good job …… you learn English well.
   d. The doctor …… the pulse of the patient.
   e. Can't you distinguish …… right and wrong?

3. Pot planting and rooftop gardening don't only have decorative benefits, they can be a great source of pleasure, oxygen and fresh food. Suppose, you would like to encourage people regarding pot planting and rooftop gardening. Write a letter to the editor of an English daily in this regard. 7

Section –B

4. Change the following sentences as directed: 5
   a. I have been offered a job at the bank. (Change the voice.)
   b. Cigarettes are known to be poisonous for people's health. (Change the voice.)
   c. The girl said, "It gives me great pleasure to be here this evening." (Change the speech.)
   d. Tom asked Bob if he (Bob) had seen his (Tom's) wristwatch that he (Tom) had lost the previous day. (Change the speech.)
   e. The man tried his best to reach his goal. He failed. (Join the sentences into a complex sentence.)

5. Write a paragraph of about 150 words on "The economic development of Bangladesh". 5
6. Read the passage carefully and answer the questions that follow: 8

A. Japan has a significantly better record in terms of average mathematical attainment than England and Wales. Large sample international comparisons of pupils' attainments since the 1960s have established that not only did Japanese pupils at age 13 have better scores of average attainment, but there was also a larger proportion of 'low' attainers in England, where, incidentally, the variation in attainment scores was much greater. The percentage of Gross National Product spent on education is reasonably similar in the two countries, so how is this higher and more consistent attainment in maths achieved?

B. Lower secondary schools in Japan cover three school years, from the seventh grade (age 13) to the ninth grade (age 15). Virtually all pupils at this stage attend state schools: only 3 per cent are in the private sector. Schools are usually modern in design, set well back from the road and spacious inside. Classrooms are large and pupils sit at single desks in rows. Lessons last for a standardised 50 minutes and are always followed by a 10-minute break, which gives the pupils a chance to let off steam. Teachers begin with a formal address and mutual bowing, and then concentrate on whole-class teaching.

Classes are large — usually, about 40 — and are unstreamed. Pupils stay in the same class for all lessons throughout the school and develop considerable class identity and loyalty. Pupils attend the school in their own neighbourhood, which in theory removes ranking by school. In practice in Tokyo, because of the relative concentration of schools, there is some competition to get into the 'better' school in a particular area.

C. Traditional ways of teaching form the basis of the lesson and the remarkably quiet classes take their owe notes of the points made and the examples demonstrated. Everyone has their own copy of the textbook supplied by the central education authority, Monbusho, as part of the concept of free compulsory education up to the age of 15. These textbooks are, on the whole, small, presumably inexpensive to produce, but well set out and logically developed. (One teacher was particularly keen to introduce colour and pictures into maths textbooks: he felt this would make them more accessible to pupils brought up in a cartoon culture.) Besides approving textbooks, Monbusho also decides the highly centralised national curriculum and how it is to be delivered.

D. Lessons all follow the same pattern. At the beginning, the pupils put solutions to the homework on the board, then the teachers comment, correct or elaborate as necessary. Pupils mark their own homework: this is an important principle in Japanese schooling as it enables pupils to see where and why they made a mistake, so that these can be avoided in future. No one minds mistakes or ignorance as long as you are prepared to learn from them.

After the homework has been discussed, the teacher explains the topic of the lesson, slowly and with a lot of repetition and elaboration. Examples are demonstrated on the board; questions from the textbook are worked through first with the class, and then the class is set questions from the textbook to do individually. Only rarely are supplementary worksheets distributed in a maths class. The impression is that the logical nature of the textbooks and their comprehensive coverage of different types of examples, combined with the relative homogeneity of the class, renders work sheets unnecessary. At this point, the teacher would circulate and make sure that all the pupils were coping well.

E. It is remarkable that large, mixed-ability classes could be kept together for maths throughout all their compulsory schooling from 6 to 15. Teachers say that they give individual help at the end of a lesson or after school, setting extra work if necessary. In observed lessons, any strugglers would be assisted by the teacher or quietly seek help from their neighbour. Carefully fostered class identity makes pupils keen to help each other — anyway, it is in their interests since the class progresses together.

This scarcely seems adequate help to enable slow learners to keep up. However, the Japanese attitude towards education runs along the lines of 'if you work hard enough, you can do almost anything'. Parents are kept closely informed of their children's progress and will play a part in helping their children to keep up with class, sending them to 'Juku' (private evening tuition) if extra help is needed and encouraging them to work harder. It seems to work, at least for 95 per cent of the school population.

F. So what are the major contributing factors in the success of maths teaching? Clearly, attitudes are important. Education is valued greatly in Japanese culture; maths is recognised as an important compulsory subject throughout schooling; and the emphasis is on hard work coupled with a focus on accuracy.

Other relevant points relate to the supportive attitude of a class towards slower pupils, the lack of competition within a class, and the positive emphasis on learning for oneself and improving one's own standard. And the view of repetitively boring lessons and learning the facts by heart, which is sometimes quoted in relation to Japanese classes, may be unfair and unjustified. No poor maths lessons were observed. They were mainly good and one or two were inspirational.

Choose the correct heading for sections B - F from the list of headings below.
Write the correct number, *i*—*ix*, beside question number *a*—*e* on your answer sheet.

List of Headings

i The influence of Monbusho
ii Helping less successful students
iii The success of compulsory education
iv Research findings concerning achievements in maths
v The typical format of a maths lesson
vi Comparative expenditure on maths education
vii Background to middle-years education in Japan
viii The key to Japanese successes in maths education
ix The role of homework correction

a) Section **B**
b) Section **C**
c) Section **D**
d) Section **E**
e) Section **F**
Example:
Section **A** Answer **iv**

Choose the correct letter, A, B, C or D.

f) Maths textbooks in Japanese schools are
A. cheap for pupils to buy.
B. well organized and adapted to the needs of the pupils.
C. written to be used in conjunction with TV programmes.
D. not very popular with many Japanese teachers.

g) When a new maths topic is introduced,
A. students answer questions on the board.
B. students rely entirely on the textbook.
C. it is carefully and patiently explained to the students.
D. it is usual for students to use extra worksheets.

h) How do schools deal with students who experience difficulties?
A. They are given appropriate supplementary tuition.
B. They are encouraged to copy from other pupils.
C. They are forced to explain their slow progress.
D. They are placed in a mixed-ability class.

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 1st Year 1st Semester Final Examination, 2018
Subject: Mathematics-I
Course Code: MTH-101(T)

Full Marks: 70 **Time: 3 hours**

(Figures in the right margin indicate full marks. Answer **any Five (5)** questions from each section. Use separate answer script for each section. Split answer is strongly discouraged.)

Section-A

1. a) What is a Hermitian matrix? Determine whether matrix A is Hermitian or not. 3

$$A=\begin{bmatrix} 2 & 1+j & 2-j \\ 1-j & 1 & j \\ 2+j & -j & 1 \end{bmatrix}$$

b) For which value of the constant k does the system $1\times 4=4$

$$x-y=3$$
$$2x-2y=k$$

has no solutions? Exactly one solution? Infinitely many solutions? Explain your reasoning.

2. a) What do you understand by linear programming? Write down the steps you should follow to construct a linear programming problem. 1+1=2

b) Food X contains 6 units of vitamin A per gram, 7 units of vitamin B per gram, and costs 12 paise per gram. Food Y contains 8 units of vitamin A per gram, 12 units of vitamin B and costs 20 paise per gram. The daily minimum requirements of vitamin A and vitamin B are 100 units and 120 units respectively. Find the minimum costs of product mix using graphic method. 5

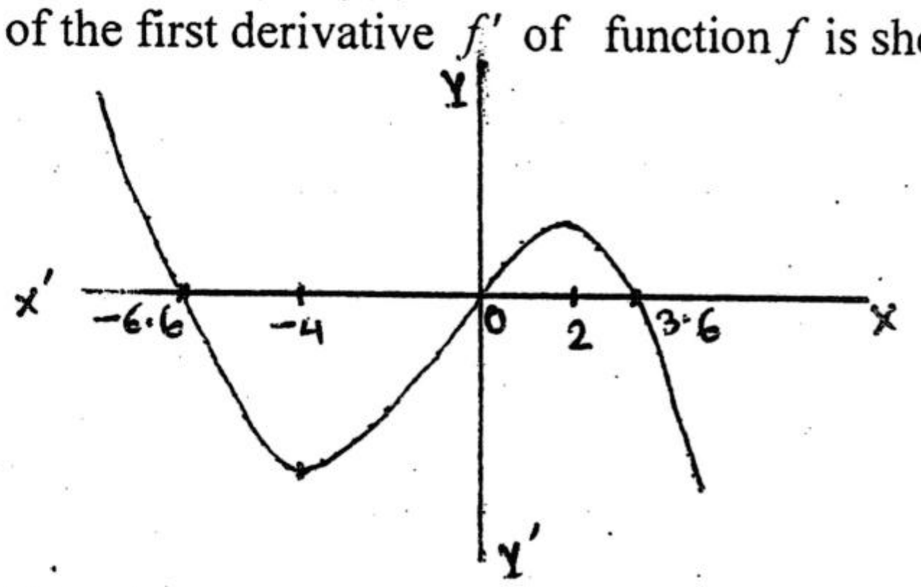
3. a) Determine the domain and range of the function $f(x)=2+\dfrac{1}{x-1}$. 2

b) Evaluate $\lim\limits_{x\to -4}\dfrac{2x+8}{x^2+x-12}$. 2

c) Let $f(x)=\begin{cases} x+3, & x<0 \\ -2x+3, & x\geq 0 \end{cases}$ 3

Test the differentiability of $f(x)$ at $x = 0$.

4. a) The graph of the first derivative f' of function f is shown below: 7



i) For what values of x is f increasing?
ii) For what values of x does f have a local maximum or minimum?
iii) For what value(s) of x is the graph of f concave up and concave down?
iv) Where are the points of inflection of the graph of f located?

5. a) Verify the Rolle's theorem for the function $f(x)=\dfrac{1}{2}x-\sqrt{x}$ on the interval [0, 4]. 3

b) If $y=e^{a\sin^{-1}x}$ then prove that $(1-x^2)y_{n+2}-(2n+1)xy_{n+1}-(n^2+a^2)y_n=0$ 4

6. Find the radius and height of the right circular cylinder of largest volume that can be inscribed in a right circular cone with radius 6 inch and height 10 inch. 7

Section-B

7. a) The length, width and height of a rectangular box are increasing at rates of 1 inch/s, 2 inch/s and 3 inch/s respectively. $3.5 \times 2 =$

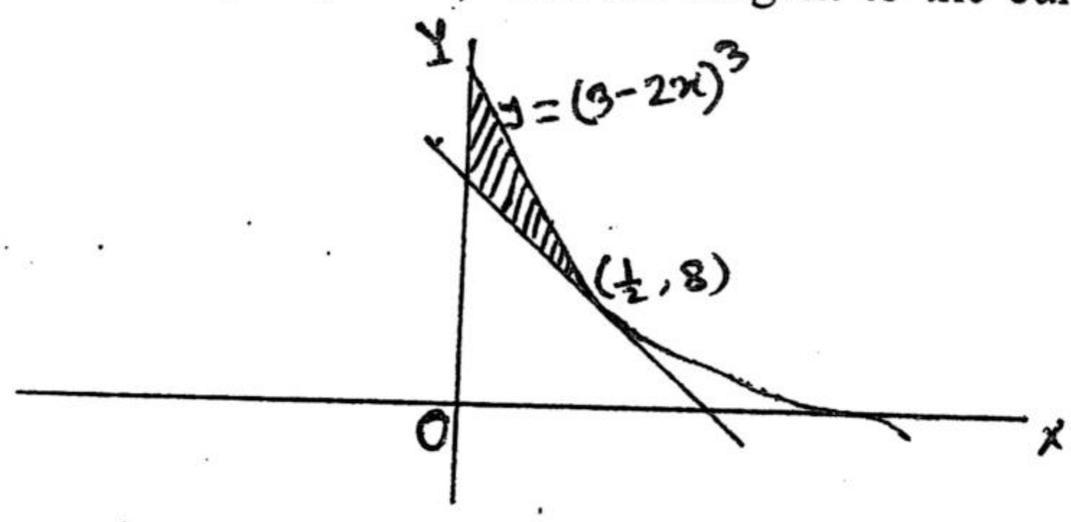
   i) At what rate is the volume increasing when the length is 2 inch, the width is 3 inch and the height is 6 inch?

   ii) At what rate is the length of the diagonal increasing at that instant?

8. a) Sketch the region enclosed by the curve $y = x^2$ and $y = \sqrt{x}$. Also find its area. 1+2=3

   b) Find the volume of the solid generated when the region R in the first quadrant enclosed between $y = x$ and $y = x^2$ is revolved about y-axis. 4

9. The diagram shows the curve $y = (3-2x)^3$ and the tangent to the curve at the point $(\frac{1}{2}, 8)$. $3.5 \times 2 = 7$



   i) Find the equation of this tangent, giving your answer in the form $y = mx + c$

   ii) Find the area of the shaded region.

10. a) The graph of $y = \sqrt{x}$ from (1, 1) to (4, 2) is revolved about x-axis. Find the area of the resulting surface. 3

    b) A right circular conical tank of altitude 20 ft and radius of base 5 ft has its vertex at ground level and axis vertical. If the tank is full of water weighing 62.5 lb/ft^3, find the work done in pumping all the water over the top of the tank. 4

11. a) Prove that Homogeneous equation of 2nd degree represents a pair of straight lines. 4

    b) Show that the equation $2x^2 + 5xy + 3y^2 - 9x - 11y + 10 = 0$ represents a pair of straight lines. What is the angle between them? 3

12. a) Obtain a relation between the direction cosines of a line. 2

    b) Show that the points A(2, 3, -4), B(1, -2, 3) and C(3,8,-11) are collinear. 2

    c) Find the angle between the pair of lines 3

$$\frac{x+3}{3} = \frac{y-1}{5} = \frac{z+3}{4}$$

$$\frac{x+1}{1} = \frac{y-4}{1} = \frac{z-5}{2}$$

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 1st year 1st Semester Final Examination, 2018
Subject: Elementary Food Science (Theory)
Course Code: EFS-101

Full Marks: 70 **Time: 3 hours**

(Figures in the right margin indicate full marks. Answers any four (4) questions from each section where question no **1** and **6** are compulsory. Split answer is strongly discouraged.)

Section-A

1.	a)	How you classify food? Mention the physiological functions of food.	2+3
2.	a)	Discuss the pigment and flavor compounds present in fruits and vegetables.	6
	b)	Why does an apple become brown when it is cut? How can it be prevented?	1+3
3.	a)	Define fatty acid. Classify fatty acids according to the chain length.	1+1.5
	b)	Analyze healthy fat and unhealthy fat with example	2.5
	c)	"Polyunsaturated fatty acids are considered as healthy fat" explain it.	4
	d)	What are trans fatty acids?	1
4.	a)	What are the functions of carbohydrate?	4
	b)	What is dietary fiber? Classify it based on their physicochemical properties.	1+3
	c)	What happens during hydrolysis of non-reducing sugar?	2
5.	a)	Define protein. How protein can classify according to their chemical composition?	1+4
	b)	Write down the biological functions of protein.	4
	c)	How will you differentiate between complete and incomplete protein?	2

Section - B

6.		Briefly describe the components of energy expenditure.	5
7.	a)	Define vitamin classify vitamins on the basis of solubility.	1+2
	b)	Write down the chemical name, deficiency diseases and physiological functions of the following vitamins i. Vitamin A&D ii. Vitamin B_1 and B_6 iii. vitamin E and B_{12}	7
8.	a)	Define minerals. Classify minerals with example.	1+2
	b)	Write down the sources, daily requirements and deficiency diseases of the following minerals i. Iodine ii. calcium iii. potassium iv. Sodium	1.75x4
9.	a)	How minerals function in body regulators?	3
	b)	Define food faddism, food taboo and food symbolism.	3
	c)	What are the aspects of intra house hold differences?	4
10.		Write short notes on – i. **Dietary Water** ii. Phytochemicals iii. Junk food	3 3 4

Chittagong Veterinary and Animal Sciences University

Faculty of Food Science and Technology

BFST 1st Year 1st Semester Final Examination, 2018

Subject: Physics-I

Course Code: PHC-101(T)

Full Marks: 70 **Time: 3 hours**

(Figures in the right margin indicate full marks. Answer **any Five (5)** questions from each section. Use separate answer script for each section. Split answer is discouraged.)

Section-A

1. a) Prove that, Bending moment $= \frac{YI_g}{R}$. 5

   b) Glass is more elastic than rubber- Explain. 2

2. a) What is Poisson's ratio? Show that the value of Poisson's ratio must lie between -1 to $+\frac{1}{2}$. 1+4=5

   b) A uniform rod of length 1m is clamped horizontally at the free end. A weight of 0.1 kg is attached at the free end. Calculate the depression of the midpoint of the rod. The diameter of the rod is 0.02m and $Y=10^{10}\ Nm^{-2}$. 2

3. a) Show that $\frac{9}{Y} = \frac{3}{\eta} + \frac{1}{k}$. 5

   b) The modulus of rigidity and Poisson's ratio of the material of a wire are $2.87\times10^{10}\ N/m^2$ and 0.379 respectively. Find the value of Young's modulus of the material of the wire. 2

4. a) Define the surface tension and the surface energy. 2

   b) Derive an expression for the excess of pressure inside a spherical liquid drop. 5

5. a) What is the capillary action? Explain why water rises in a narrow tube and oil spreads over water. 1+2=3

   b) Determine coefficient of viscosity of a liquid using Stoke's formula. 4

6. a) Show that for a stream line motion sum of energies possessed by a flowing liquid at any point is constant. 5

   b) Water flows through a horizontal pipe line of varying cross section at the rate of $0.2\ m^3/s$. Calculate the velocity of water at a point where the area of cross section of the pipe is $0.02\ m^2$. 2

Section-B

7. a) Define degrees of freedom. Show that the energy associated with each degree of freedom is $\frac{1}{2}kT$. 1+4=5

   b) Find an expression for mean free path. 2

8. a) "Entropy is a measure of unavailable energy"- Explain. 2

   b) Find the efficiency of Carnot's engine working between the stream point and the ice point. 3

   c) 1 kg of water at 273° K is brought in contact with a heat reservoir at 373° K. What is the change in entropy of water as its temperature reaches 373° K? 2

9. a) State and explain first law of thermodynamics. 2

   b) Differentiate between isothermal and adiabatic changes. 2

   c) Using kinetic theory of gases prove that the mean kinetic energy of a molecule is directly proportional to the absolute temperature of a gas. 3

10. a) During an adiabatic process establish the following expression, $PV^{\gamma} = \text{Constant}$ 4

    b) A motor car tyre has a pressure of 2 atmospheres at room temperature of 27° C. If the tyre suddenly bursts, find the resulting temperature. 3

11. a) Derive the differential equation of simple harmonic motion and show its graphical representation. 4

    b) Calculate the average energy of a body executing simple harmonic motion. 3

12. a) Obtain an expression for the velocity of sound using Newton's formula. 4

    b) A harmonic oscillator is represented by the equation $y = 0.26\cos(4000t + \frac{\pi}{6})$, where y and t are expressed in millimeter and second respectively. Find its amplitude, frequency, angular velocity and time period. 3

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 1st year 1st Semester Final Examination, 2018
Course Title: Inorganic Chemistry (Theory)
Course Code: ICM-101

Full Marks: 70 **Time: 3 hours**

[Figures in the right margin indicate Full Marks. Answer any four questions from each section where **question no. 1 & 6 are compulsory**. Use separate answer scripts for each section. **Split answer is strongly discouraged.**]

SECTION-A

1. a) Derive Henderson-Hesselbalch equation for basic buffer solution. 05

2. a) What do you mean by ionic product of water? 02
   b) Calculate the $[OH^-]$ of the solution of baking soda with p^H of 8.5. 02
   c) Describe the significance of p^H for the following: 03X2=06
      i) Agriculture, ii) Swimming pool, iii) Human Body

3. a) Manifest the terms conjugate acids and conjugate bases citing suitable example. 04
   b) Identify the Lewis acid or base in the following: 02
      i) Ag^+; ii) BF_3; iii) CO and iv) PCl_3
   c) Enumerate the prerequisite conditions for a compound to be able to serve as an acid –base indicator. What indicators you would choose for the following titrations? 02+02
      i) NaOH vs CH_3COOH;
      ii) NH_4OH vs CH_3COOH

4. a) Define redox reaction according to electronic concept. Cite examples. 03
   b) Find out oxidation number of the bold elements in the following compound 02
      i) $\mathbf{BrO^{3-}}$
      ii) $\mathbf{KMnO_4}$
   c) Balance the following redox reaction using ion electron method: 05
      $Cr_2O_7^{2-} + Fe^{2+} \rightarrow Cr^{3+} + Fe^{3+} + H_2O$

5. a) Why the inert gases are chemically inert? 02
   b) Draw a fraction evaporation column of inert gas separation with its different parts. 04
   c) How do you separate the individual component from 2nd fraction of above column? 04

SECTION-B

6. a) Justify the position of Hydrogen in the periodic table. 05

7. a) What do you mean by fixation of nitrogen? Explain. 02
   b) Describe the extraction process of Ra. 03
   c) Write down some uses of Aluminium and Tin. 02
   d) How the following products can be produced (give only reactions) : 03
      Na_2O, Na_2O_2, NaOH, $NaHCO_3$, NaCN, $BeCl_2$

8. a) Write down the various sources of Na. 02
   b) State the production process of caustic soda by Nelson cell. 04
   c) Mention some uses of Be and Mg. 04

9. a) Write down the similarities and dissimilarities between Hydrogen and Alkali metal group. 03
   b) Describe the lans process and bosch process of hydrogen production. 04
   c) Write down the significance of Hydrogen bond. 03

10 a) Define covalent bonding. 02
   b) Explain the formation of covalent bond of H_2O anf N_2 molecule. 04
   c) Explain the term "Variable Covalency". 04

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 1st year 1st Semester Final Examination, 2018
Subject: Introductory Human Nutrition (Theory)
Course Code: IHN-101

Full Marks: 70 **Time: 3 hours**

(Figures in the right margin indicate full marks. Answers any five **(5)** questions from each section. Split answer is strongly discouraged.)

Section-A

1.	a)	Define nutrients and nutritional status.	1.5+1.5
	b)	Who is the father of Human nutrition? What was his contribution?	1+1
	c)	Enlist the name of organizations involved in nutrition related activities	2
2.	a)	"Breast milk is the best milk"- explain it.	2
	b)	Mention the physiological changes during pregnancy.	5
3.	a)	Why colostrum is yellow?	2
	b)	List the antimicrobial peptides present in colostrum.	2
	c)	Write the hormonal mechanism prior to lactation process.	3
4.	a)	What are the common nutrients needed during pregnancy period?	2
	b)	Write down the functions of folic acid.	2
	c)	State the problems during pregnancy.	3
5.	a)	Give the RDA for a 5 years old child.	3
	b)	Briefly discuss deficiency disease among pre-school children.	4
6.	a)	What are the factors to be considered in planning packed lunch for school going children?	3
	b)	Explain the eating disorders of adolescent girls.	4

Section-B

7.	a)	Shortly describe physical, physiological and psychological changes during aging.	5
	b)	What are the nutrition related problems of the elderly people?	2
8.	a)	Differentiate between supplementary and complementary feeding.	3
	b)	Write down the guidelines of complementary feeding.	4
9.	a)	How will you take care of a baby weighting 1.3 kg at birth?	4
	b)	What are the difference between human milk and cow's milk?	3
10.	a)	Define health.	1
	b)	What are the common nutrients deficient among adolescents?	3
	c)	How can you prepare low cost supplementary food?	3
11.	a)	What is hidden hunger?	2
	b)	What do you mean by double burden of malnutrition?	2
	c)	Discuss about malnutrition.	3
12.	a)	Define diet and balanced diet.	2
	b)	What do you mean by exclusive breast feeding?	2
	c)	Discuss about gestational diabetes mellitus.	3

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 1st year 1st Semester Final Examination, 2018
Subject: Human Biology (Theory)
Course Code: HBL-101

Full Marks: 70 **Time: 3 hours**

(Figures in the right margin indicate full marks. Answers any four (4) questions from each section where question no **1** and **6** are compulsory. Split answer is strongly discouraged.)

Section-A

1. a) Why homeostasis is important in living system? 2
   b) How does negative feedback control blood pressure? 3

2. a) Classify tissue. Briefly describe the functions of different types of tissues. 1+4
   b) Illustrate the physiological importance of endoplasmic reticulum and lysosome. 2.5x2

3. a) Why cell is known the structural and functional unit of life? 3
   b) Write down the chemical composition of cell. 3
   c) Give an overview of circulatory organ and their functions. 4

4. a) Why nephron called the functional unit of kidney? Draw and label the different parts of a typical nephron. 2+3
   b) Why para-aminohippurate (PAH) is used to measure renal plasma flow? 1
   c) Calculate actual renal plasma flow from the following data 4
      i. Concentration of PAH in urine= 14 mg/ml
      ii. Concentration of PAH in plasma= 0.02 mg/ml
      iii. Volume of urine= 1000 ml/24 hrs
      iv. Extraction ratio of PAH= 0.9

5. a) Why ABO system is called classical blood group? How baroreceptors regulate blood pressure? 2+3
   b) Explain the detail process of coagulation of blood. 5

Section - B

6. a) Why ptyalin cannot as un-boiled starch? 2
   b) Enlist the digestive juice with their daily secretion and P^H level. 3

7. a) What do you mean by digestion and absorption? 2
   b) Name the proteolytic enzymes and classify them. 1+2
   c) How does the body digest and absorb protein? 5

8. a) Define and classify diuresis. Write the causes and clinical consequences of diuresis. 2+3
   b) Briefly discuss the role of kidney in acid-base balance in normal human body. 5

9. a) What can your urine tell you about your health? 3
   b) What are the major intracellular and extracellular electrolytes? How sodium is regulated in the body? 2+3
   c) Differentiate between Extra cellular fluid (ECF) and Intra cellular fluid (ICF). 2

10. a) Why respiration through mouth is harmful. Explain the steps of respiration? 2+2
    b) Briefly discuss the gaseous transport in the blood and body fluid with figure. 6