

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
FST 1st Year 1st Semester Final Examination, 2012
Subject: Communicative English (Theory)
Course Code: ENG-101 (T)

Full Marks: 35 **Time: 2 Hours**
(Figure in the right margin indicates full marks. Answer all the questions from both the sections. Use separate answer script for each section)

SECTION: A

1. **Use the right forms of verbs in the following sentences:** 5
- a) I not (choose) my career yet.
 - b) If I (be) you, I would not have done this.
 - c) I saw the tree (fall) down.
 - d) Had you called the police, they (come) instantly.
 - e) The quality of these mangoes (be) good.
2. **Change the voice of the following sentences:** 5
- a) I bought the baby a doll.
 - b) The teacher was pleased with the boy's work.
 - c) He was refused admittance.
 - d) Without effort nothing can be gained.
 - e) Do not insult the weak.
3. **Turn the following into indirect speech:** 3
- Her mother said, "you must go straight to your grand mother's cottage not loiter on the way. There is a wolf in the wood through which you are going ; but if you keep to the road, it won't do you any harm. Now will you be a good girl and do as I tell you"
4. **Complete the following sentences:** 5
- a) Read attentively lest -----
 - b) ----- owing to traffic jam.
 - c) Despite his earnest effort -----
 - d) If i were the prime minister -----
 - e) ----- in case it rains.

SECTION - B

5. **Join the following sentences as directed:** 5
- a) He may be innocent. I do not know. (whether)
 - b) She began late. She finished first. (though)
 - c) We wish to live. We eat for that purpose. (so that)
 - d) I will get ready.. do not go till them.(until)
 - e) I shall go. Your coming is the condition.(provided that)
6. Suppose you are concerned about the misuse of mobile phone by the young generation. Now, write a letter to the editor of The Daily Star stating this concern. 5
7. **Write a paragraph on any one of the following:** 7
- a) A hot summer day
 - b) Ways to improve English.

8. a) Obtain an expression for the excess of pressure inside a soap bubble. 5
b) Define angle of contact and surface tension. 2
c) Explain Laplace molecular theory of surface tension. 3
9. a) Explain various energies possessed by a liquid in motion. 3
b) State and prove that the Bernoulli's theorem. 7
10. a) Derive Stokes law for the motion of a body in a viscous medium from dimensional considerations. 4
b) Derive Poiseuille's equation for the rate of flow of a viscous liquid through a capillary tube. 6

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
FST 1st Year 1st Semester Final Examination, 2012
Subject: Introductory Human Nutrition (Theory)
Course Code: IHN-101 (T)

Full Marks: 70

Time: 3 Hours

Figure in the right margin indicate full marks.
(Answer FIVE questions from each section where question no. 1 and 7 are compulsory. Use separate answer script for each section. Split answer is not allowed)

Section: A

- | | | |
|----|------------------------------------------------------------------------------------------------------------|-----|
| 1. | a) Define Food and Nutrition. | 3 |
| | b) Classify food according to function. | 1.5 |
| | c) What do you mean by macronutrient and micronutrient? Why are they called so? Give example each of them. | 2.5 |
| 2. | a) What are the methods are used for assessing nutritional status of an individual? | 2 |
| | b) What is Malnutrition? Describe briefly the pathophysiological pathway of malnutrition. | 5 |
| 3. | a) What are the anthropometric indices are used for assessing nutritional status of children and adult? | 2.5 |
| | b) Write down the advantages and disadvantages of anthropometric assessment. | 2.5 |
| | c) Define BMI with it's cut off points. | 2 |
| 4. | a) What do you mean by PEM? Differentiate between Marasmus and Kwashiorkor. | 3.5 |
| | b) Discuss about the clinical signs and symptoms of micronutrient deficiencies. | 3.5 |
| 5. | a) What is Food Balance Sheet? | 1 |
| | b) Elaborately discuss the methods for measuring food consumption of an individual. | 3 |
| | c) What are the socioeconomic factors should consider for assessing nutritional status of a community? | 3 |
| 6. | a) Briefly describe the nutrition requirement in different stages of life. | 7 |

Section :B

7. a) Define Exclusive Breast Feeding. What are the advantages of breast feeding? 4
b) Compare the nutritional composition between human milk and cow's milk. 3
8. a) State out the consequences of Low Birth Weight (LBW) on human life. 7
9. a) What is Weaning? Why weaning is important for a child? 3.5
b) Narrate the importance of colostrums on child health and development. 3.5
10. a) What do you know about Maternal Protein Energy Malnutrition? What are the causes of maternal PEM? 1.5+1.5
b) Discuss the effect of maternal micronutrient malnutrition on infant growth and development. 4
11. a) What are the clinical signs and symptoms of PEM in children? 3.5
b) How do you assess the nutritional status of a person using biochemical method? 3.5
12. Write down short note on the following topics: (Any Two) 3.5X2
a) Supplementary Feeding
b) Care during pregnancy and lactation
c) Maternal nutrition and pregnancy outcome

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
FST 1st Year 1st Semester Final Examination, 2012
Subject: Elementary Food Science (Theory)
Course Code: EFS-101 (T)

Full Marks: 70

Time: 3 Hours

Figure in the right margin indicate full marks.
(Answer **FIVE** questions from each section where question no. 1 and 7 are compulsory. Use separate answer script for each section. Split answer is not allowed)

Section: A

- | | | | |
|----|----|-----------------------------------------------------------------------------------------------|-------|
| 1. | a) | What do you mean by Basal Metabolic Rate (BMR)? Which factors affect BMR of a person? | 1.5X2 |
| | b) | Define Nutrition. | 2 |
| | c) | Give classification of nutrient with example. | 2 |
| 2. | a) | Discuss the nutritive value of rice, wheat, milk & egg. | 7 |
| 3. | a) | Classify food according to function. | 3 |
| | b) | Write down the loss of nutrients in different condition. | 4 |
| 4. | a) | What is hidden hunger? | 2 |
| | b) | Elaborately describe the health and social effects of hidden hunger. | 5 |
| 5. | a) | What do you mean by CED? | 2 |
| | b) | Discuss the consequences of CED in children. | 5 |
| 6. | a) | What do you mean by food faddism? What are the factors affecting food habit of an individual? | 2+3 |
| | b) | Write down short note on festival and prestige food. | 2 |

Section : B

- | | | | |
|----|----|--------------------------------------------------------------------|-----|
| 7. | a) | Define glycemic index. How glycemic index of a food is calculated? | 3 |
| | b) | Write down the GI value of honey, glucose, sucrose & carrot. | 2 |
| | c) | What are the side effects of taking only low GI foods? | 2 |
| 8. | a) | Enumerate the causes and mechanism of linear growth retardation. | 3.5 |
| | b) | What are the functional consequences of low BMI? | 3.5 |

9. a) Define food security and nutrition security. 2
b) What are the components of food security and nutrition security? Does food security ensure nutrition security? 3+2
10. a) What do you mean by household food security? 2
b) What measures should take to improve household food security? 4
c) Which groups are at risk of food security? 1
11. a) What approaches should take to prevent micronutrient malnutrition? 3
b) Define food fortification. Give name of some factors that should consider during fortification. 4
12. Write down short note on the following topics: (Any two) 3.5X2
a) At water factor
b) RDA
c) Difference between food safety and security
d) Malnutrition

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
FST 1st Year 1st Semester Final Examination, 2012
Subject: Inorganic Chemistry
Course Code: ICM-101 (T)

Full Marks: 70

Time: 3 Hours

Figure in the right margin indicate full marks.
(Answer **FOUR** questions from each section where question no. 1 and 6 are compulsory. Use separate answer script for each section. Split answer is not allowed)

Section: A

1. a) Write down the electron configuration of the following two atoms: Cr (24) and Ag (47). 2
b) Define Isotope, Isotone and Isobar. 3

2. a) Describe Rutherford's α -particle Scattering experiment. What type of information was obtained from that experiment? 4+2=6
b) State and explain Pauli exclusion principle with suitable example. 4

3. a) What is buffer solution? Give example. 2
b) Discuss the mechanism of action of acidic and basic buffer solutions. 5
c) Show that $\text{pH} + \text{pOH} = 14$. 3

4. a) What is periodic table? Write down the modern periodic law. 2
b) What are electronegativity and ionization potential? Discuss their change in the periodic table. 2+6=8

5. a) Discuss briefly how ionic, covalent and co-ordinate bonds are formed electronically. 6
b) Compare the properties of ionic compounds with those of covalent compounds. 4

Section: B

6. a) Define molarity and normality of a solution. 2
b) What are exothermic and endothermic reactions? 3
7. a) Classify the Lewis acids with example. 5
b) State with examples the Bronsted concept of acids and bases. 3
c) What is the pH of 0.04N NaOH solution? 2
8. a) Give the electronic definitions of oxidation and reduction with suitable example. 4
b) What do you mean by oxidizing agent and reducing agent? Give example. 4
c) Define oxidation state and oxidation number. 2
9. a) Describe the single beam atomic absorption spectrophotometer with a line diagram. 8
b) What do you mean by Iodimetry and Iodometry? 2
10. a) Explain that- Ice floats in water. 4
b) Define primary and secondary standard substance with at least three examples. 4
c) What do you mean by common ion effect? 2

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Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
FST 1st Year 1st Semester Final Examination, 2012
Subject: Human Biology (Theory)
Course Code: HBL-101 (T)

Full Marks: 70

Time: 3 Hours

Figure in the right margin indicate full marks.
(Answer any **FIVE** questions from each section where question no. 1 and 7 are compulsory. Use separate answer script for each section. Split answer is not allowed)

Section: A

- | | | |
|----|--------------------------------------------------------------------|-------|
| 1. | a) What is immunity? Briefly describe the types of immunity. | 1+3 |
| | b) Define antibody and antigen. | 1.5X2 |
| 2. | Define cell. Sketch and label the structure of a human cell. | 1+6 |
| 3. | a) What is hormone? Classify hormone according to chemical nature. | 1+3 |
| | b) Write down the difference between hormone and enzyme. | 3 |
| 4. | a) Explain the functions of liver. | 4 |
| | b) Write down the composition and functions of bile. | 3 |
| 5. | a) What is micelle? | 2 |
| | b) Briefly describe the digestion and absorption of carbohydrate. | 5 |
| 6. | a) List the accessory organs of digestive system. | 2 |
| | b) Discuss the process of coagulation of blood in details. | 5 |

Section : B

- | | | |
|----|--------------------------------------------------------------------------------------------------------------|-------|
| 7. | a) Define blood. Give the composition of blood. | 1+3 |
| | b) What is anticoagulant? Write down the name of some the natural and laboratory used anticoagulants. | 3 |
| 8. | a) What are the primary and accessory sex organs of male and female? | 1.5X2 |
| | b) What hormones are responsible for male and female characteristics? Describe the functions of sex hormone. | 1+3 |
| 9. | a) Define spermatogenesis. | 2 |
| | b) Draw and label of a human spermatozoan. | 3 |

- c) Write down the composition of semen. 2
10. a) What are the major systems in human body? 2
b) What is nephron? Explain the role of kidney in electrolyte and fluid balance. 1+4
11. a) Define blood pressure. 1
b) What are the factors regulate blood pressure? 2
c) Sketch out neuron with it's function. 4
- 12 Write down short note on the following topics. 3.5 X2
a) Ovulation
b) Functions of pancreatic hormone.

Chittagong Veterinary and Animal Sciences University

Faculty of Food Science and Technology

FST 1st Year 1st Semester Final Examination, 2012

Subject: Physics-I (Theory)

Course Code: PHC-101 (T)

Full Marks: 70

Time: 3 Hours

Figure in the right margin indicate full marks.

(Answer FOUR questions from each section where question no. 1 and 6 are compulsory. Use separate answer script for each section. Split answer is not allowed)

Section: A

1. a) Explain elastic fatigue. 1
b) What are forces of cohesion and adhesion? 2
c) What is Reynolds number? Explain its physical significance. 2

2. a) Deduce the differential equation of wave motion. 4
b) Define stationary wave and hence deduce the condition for nodes and antinodes of a sound wave. 6

3. a) During an adiabatic expansion prove that the work done, 5
$$W = \frac{1}{1-\gamma} [RT_2 - RT_1]$$

b) State and explain the principle of equipartition of energy. 3
c) Define isochoric and isentropic processes. 2

4. a) Why radiant energy should be considered atomic in structure, like matter? 1
b) Deduce Planck's radiation formula for black body spectrum and hence derive the Wien's and Rayleigh-Jean's law from Planck's formula. 9

5. a) For Carnot's reversible cycle, show that $\frac{\theta_1}{\theta_2} = \frac{T_1}{T_2}$ 6
b) Show that adiabatic curves are more steeper than that of the isothermal curves. 4

Section: B

6. a) Define stream line and turbulent motion. 2
b) Define static pressure and dynamic pressure. 2
c) Write down the dimension and unit of the coefficient of viscosity. 1

7. a) Show that the relation between three elastic constants. 5
b) Deduce an expression for the torsional rigidity of the material of the wire. 5

Chittagong Veterinary and Animal Sciences University

Faculty of Food Science and Technology

FST 1st Year 1st Semester Final Examination 2012

Subject: Mathematics-I

Course Code: MTH-101

Full Marks: 70

Time: 3 Hours

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(Answer **FOUR** questions from each section where question no. 1 and 6 are compulsory. Use separate answer script for each section)

Section: A

1. a) Define continuity and differentiability of a function $y = f(x)$ at $x = a$. 1
b) How many negative roots does the equation $x^5 + x^3 - 2x^2 + x - 2 = 0$ have? 2
c) Show that $A = \begin{pmatrix} \cos \theta & 0 & \sin \theta \\ 0 & 1 & 0 \\ -\sin \theta & 0 & \cos \theta \end{pmatrix}$ is an orthogonal matrix. 2
2. a) Define inverse of a matrix. Find the inverse of the following matrix 5
$$S = \begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix}$$

b) Given the matrices $A = \begin{pmatrix} 1 & 2 & 3 \\ 3 & -1 & 1 \\ 4 & 2 & 1 \end{pmatrix}$, $X = \begin{pmatrix} x \\ y \\ z \end{pmatrix}$, $C = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$ Write down the linear equations given by $AX = C$ and solve for x, y, z by matrix method. 5
3. a) Define linear programming problem mathematically. 2
b) Food X contains 6 units of vitamin A per gram and 7 units of Vitamin B per gram and costs 12 paisa gram. Food Y contains 8 units of vitamin A per gram and 12 units of Vitamin B per gram and costs 20 paisa gram. The daily minimum requirements of vitamin A and Vitamin B are 100 units and 120 units respectively. Find the minimum cost of product mix using graphic L.P.P. method. 8
4. a) State Leibnitz's rule. If $y^{1/m} + y^{-1/m} = 2x$ then show that $(x^2 - 1)y_{n+2} + (2n + 1)xy_{n+1} + (n^2 - m^2)y_n = 0$ 5
b) A closed top cylindrical container is to hold a volume of 1.875 litres. The material used for the top and bottom parts of container costs twice as much per unit area as the material used for the cylindrical tube. Find the dimensions of the most economical container. 5
5. a) If $y = (\sin x)^{(\sin x)^{(\sin x)^{\dots \dots \dots \infty}}}$ then show that $\frac{dy}{dx} = \frac{y^2 \cot x}{1 - y \log(\sin x)}$ 4
b) Find the value of c in the Mean Value theorem, $f(b) - f(a) = (b - a)f'(c)$ if $f(x) = x^3 - 2x^2 + 3x - 2$ in $(0, 2)$. 3
c) Define homogeneous function of degree n . Hence establish Euler's theorem in x, y of degree n . 3

Section: B

6. a) Define Beta and Gamma function. 1
 b) Evaluate $\int_0^1 \frac{1}{\sqrt{1-x}} dx$ 2
 c) Find the area bounded by the function $f(x) = x, 0 \leq x \leq 1$ along with the x-axis. 2
7. a) Integrate the following(any three) 6
 (i) $\int \tan^{-1} \sqrt{\frac{1-x}{1+x}} dx$ (ii) $\int \frac{xe^x}{(1+x)^2} dx$
 (iii) $\int_0^1 \frac{\log(1-x)}{x} dx$ (iv) $\int_0^{\pi/2} \cos^8 x \sin^6 x dx$
 b) Find the area above the x-axis included between the parabola $y^2 = ax$ and the circle $x^2 + y^2 = 2ax$. 4
8. a) If $I_n = \int_0^{\pi/4} \tan^n x dx$ show that $I_n + I_{n-2} = \frac{1}{n-1}$ and hence deduce the value of I_5 . 5
 b) Find the arc length of the curve $y = x^{3/2} - 1$ from $x=0$ to $x=1$ 5
9. a) Show that $\Gamma(n+1) = n\Gamma(n) = n!$ 3
 b) Evaluate $\iint_R xy dA$ over the region R enclosed between $y = x/2$, $y = \sqrt{x}$, $x = 2$ and $x = 4$. 4
 c) If $u = \log \frac{x^3 + y^3}{x^2 + y^2}$ show by Euler's theorem that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = 1$ 3
10. a) Define direction cosine and direction ratio of a line. 2
 b) Show that $2x^2 - 7xy + 3y^2 + x + 7y - 6 = 0$ represents two straight lines and angle between them is 45° . 3
 c) Find the shortest distance between the lines $\frac{x-3}{3} = \frac{y-8}{-1} = \frac{z-3}{1}$ and $\frac{x+3}{-3} = \frac{y+7}{2} = \frac{z-6}{4}$ 5

Chittagong Veterinary and Animal Sciences University

Faculty of Food Science and Technology

FST 1st Year 1st Semester Final Examination, 2012

Subject: Physical Chemistry (Theory)

Course Code: PCM-101 (T)

Full Marks: 70

Time: 3 Hours

Figure in the right margin indicate full marks.

(Answer **FOUR** questions from each section where question no. 1 and 6 are compulsory. Use separate answer script for each section. Split answer is not allowed)

Section: A

1. a) Define pH. Draw the pH scale. 2
b) Write the difference between gels and emulsions. 3
2. a) Define with example a reversible and irreversible reaction. 3
b) What are the criteria of chemical equilibrium? 2
c) Write the equation for the rate constant of a first order reaction and derive the expression for half change. 5
3. a) What are colligative properties of solution? 2
b) How can you determine the molecular weight of a solute from lowering of vapour pressure? 5
c) Acetone boils at 56.38 °C and a solution of 1.41 gm of an organic solid in 20 gm acetone boils at 56.88 °C. If K_b for acetone per kg is 16.7, calculate mass of one mole of the organic solid. 3
4. a) What do you mean by strong and weak electrolyte? 2
b) Define specific conductance and equivalent conductance of a solution. 2
c) How can you determine pH of a solution by using standard Hydrogen electrode? 6
5. a) What do you mean rate of reactions? 2
b) Give the difference between order and molecularity of a reaction. 4
c) The equilibrium constant K_p for the reaction
$$2\text{NH}_3(\text{g}) = 3\text{H}_2(\text{g}) + \text{N}_2(\text{g})$$

is 1.22×10^{-3} at 298 K and 2.16 at 498 K. Calculate ΔH for the reaction. 4

Section: B

6. a) What is common ion effect? 2
b) Discuss how a buffer solutions works. 3
7. a) State Le-Chatelier principle. 2
b) What is the thermodynamical equilibrium constant? Derive the expression showing the effect of temperature on chemical equilibrium. 6
c) Define activity. 2
8. a) Difine viscosity and surface tension of a liquid. What is the effect of temperature on them? 2+2=4
b) Derive Poiseuille's equation for a liquid passing through a cylindrical tube. 6
9. a) What do you mean by lyophobic and lyophilic colloids? 2
b) Describe the Bredig's Arc method for the preparation of sols with a neat diagram. 5
c) What is zeta potential? 3
10. a) Define heat of solution and heat of neutralization. 2
b) State and explain Hess's law. 4
c) Calculate the heat of formation of propane (C_3H_8); if its heat of combustion is -2220.2 kJ/mol. The heat of formation of CO_2 (g) and H_2O (l) are -393.5 and -285.8 kJ/mol respectively. 4

Chittagong Veterinary and Animal Sciences University

Faculty of Food Science and Technology

FST 1st Year 1st Semester Final Examination 2012

Subject: Computer Science

Course Code: CSC-101

Full Marks: 70

Time: 3 Hours

Figure in the right margin indicate full marks.

(Answer **FOUR** questions from each section where question no. 1 and 6 are compulsory. Use **separate answer script** for each section)

Section: A

(Answer **FOUR** questions where question no. 1 is compulsory.

- | | | | |
|---|----|----------------------------------------------------------------------------------------------|---|
| 1 | a) | Differentiate First, Second, Third and Fourth generation computer. | 3 |
| | b) | Define Software and Hardware. | 2 |
| 2 | a) | Define computer. Describe the main functional units of a computer system. | 4 |
| | b) | Write short notes on Mini and Super computer. | 3 |
| | c) | Compare RAM, ROM and Hard disk. | 3 |
| 3 | a) | Convert 101.101_2 to Decimal and 0.375_{10} to Binary. | 4 |
| | b) | Subtract 101_2 from 1011_2 using 1's complement. | 3 |
| | c) | Construct a logic circuit for the Boolean expression $f = (A + B) \cdot (\bar{A} + \bar{B})$ | 3 |
| 4 | a) | Explain how a computer outputs sound. | 4 |
| | b) | List and explain the four criteria you should consider when evaluating printers. | 3 |
| | c) | Define average access time and explain how it is measured. | 3 |
| 5 | a) | Explain how data are stored on a hard disk. | 4 |
| | b) | Define file compression and data transfer rate. | 3 |
| | c) | Name and explain the four areas created on a magnetic disk during formatting. | 3 |

Section: B

(Answer **FOUR** questions where question no. 6 is compulsory.

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|----|----|---------------------------------------------------------------------------------------------|---|
| 6 | | Write short notes on- i) LAN ii) WAN iii) NIC iv) FTP v) E-commerce | 5 |
| 7 | a) | What do you mean by Programming Language? Discuss different types of Programming Languages. | 4 |
| | b) | Explain the six phases in Program Development Life Cycle (PDLC). | 6 |
| 8 | a) | What do you mean by Operating System? Discuss some objectives of Operating System. | 4 |
| | b) | What are the difference between Multi-Programming and Time-Sharing system? | 3 |
| | c) | What do you mean by network? Write some benefits of using network. | 3 |
| 9 | a) | Describe how the Internet works. | 4 |
| | b) | List the major services the Internet provides to its users. | 3 |
| | c) | Explain a modem's function. | 3 |
| 10 | a) | What do you mean by E-commerce? Describe how E-commerce work. | 4 |
| | b) | Discuss the benefits of E-commerce. | 3 |
| | c) | What do you mean by M-commerce? Write the advantages of M-commerce. | 3 |