Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd Year 1st Semester Final Examination, 2016
Subject: Computer Application in Food Technology
Course Code: CFT- 301 (T)

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

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

Section-A

1. a) Write the importance of learning C languages in the field of programming.   2

   b) Why do we use main () function in C?   2

   c) Which of the following are valid identifiers? If invalid explain why?   3
      i) &profit   ii) id no   iii) 2nd Semester
      iv) file-3   v) r 345   vi) do

2. a) What are the differences between getchar () and scanf() ?   2

   b) Determine the value of each of the following logical expressions if $p = 10$ $q = 20$ 5
      $r = -10$,
      i) $p > q$ $\&\& q \leq r$

      ii) $p == q \| r < p$

      iii) $p \leq 20 \| q > 0 \&\& r \leq 10$

      iv) $p != r \&\& p < q \| q \geq p$

      v) $(p/2.0 == 0 \| q \% 2 != 0) \&\& r < 10$

3. a) Identify syntax errors in the following program and write in the correct form.   2

   ```
   include < stdio. h >

   void main()

   float base; height;

   float= area;  /* Area of a triangle */

   scanf ("%d", height);

   scanf ("%f", & base);

   Area = =0.5* height *base;

   printf ("%f", Area);  }
   ```

   b) Name the basic data types in C. What is an escape sequence? What are its purposes?   3

   c) Write a program that takes an integer number **n** as input and increment **n** by one if it is odd otherwise decrement n by two.   2

4. a) What do you mean by casting? Give an example.   2

   b) Write a program to rotate values of x, y, z such that x has the value of y, y has value of z and z has value of x.   5

5. a) Explain the necessity of declaring a variable?   2

   b) Write a program to determine whether given number is odd or even and print the following message: 5
      Number is odd
      or Number is Even

6. a) Explain how conditional operator works.   3

   b) Consider the following code segment. What will be the output of the following code segment?   4
      ```
      int p, q, r, s;
      p = 5;
      q = 25;
      ```

```
r = p - q + + ;
print f(" p = %d  q = %d  r = %d \ n", p, q, r);
s = + + q + p;
print f(" p = %d  q = %d  s = %d \ n", p, q, s);
print f(" p / q = %d \ n", p / q);
print f(" p * = q = %d \ n", p * = q);
```

Section-B

7. a) What are the major components of a C program?   2
    b) Define Operator. Give at least one example of each type operator.   3
    c) What will be the output of the following code segment: 2
```
for (i = 1, k = 5; i ≤ k; i + +, k - -)
print f("i = %d and   k = %d ", i, k)
```

8. a) Compare while loop and do while loop.   3

    b) Convert the following while loop into do while loop: 4
```
sum=0;
n=1;
while(n < = 100)
{
sum=sum+n;
n++
}
```

9. a) What is an array variable? How does an array variable differ from an ordinary variable?   2
    b) Which of the following initializations are correct?   2
        i)   int num [5] ={0, 0, 0, 0, 0};
        ii)   float total [5] ={0.0, 3.60, -2};
        iii)   char ctr [ ] = "Good";
        iv)   int item [3][2]={0, 1, 2, 3, 4, 5};
    c) Write a program to generate the following output   2
```
    5      10    15    20    25    30    35
```
    d) Compare printf function with the putchar function with example   1
10. a) Write down the rules of an identifier.   3
    b) Assuming the variable string 1   4
        contains the value "Hello" and string 2 contains the value " World"
        What will be the output of the following string operations:
        i)   strlen(string 1)
        ii)   strcmp(string 2, string 2)
        iii)   strcpy(string 2, string 1)
        iv)   strcat(string 1, string 2)
11. a) Define the following C functions: 4
        i)   pow (x, y)
        ii)   is punct (x)
        iii)   sqrt(x)
        iv)   to lower (x)
    b) What will be the output of the following code segments?   3
```
i)      product =1;                         ii)   int i , j
        for(i=1, i<=10; i++)                        for(i=1, i<12, i+ =2)
        {                                           {
        if(i= =5)                                   if(i= =10)
        break;                                      continue
        product= product*i                          printf(%d\n, i)
        printf("%d\n", product);                    }
        }
```

12. a) What do you mean by searching and sorting?   2
    b) Write a program that can sort a list of numbers.   3
    c) Write the advantages of using function   2

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination, 2016
Subject: Waste Management and Environmental Science (Theory)
Course Code: WME-301

Full Marks: 35   **Time: 2 hours**

(Figures in the right margin indicate full marks. **Answer any three (03) questions** from each section where **question n** **1 and 5 are compulsory.** Use separate answer script for each section. **Split answer is not allowed.**)

Section-A

1. a) What is fly ash?   1
   b) Give an account of Air Quality Standards of primary air pollutants.   2

2. a) Give an outline of the modes of solid waste disposal.   3
   b) What are aerobic treatment processes? Discuss the distinguishing features of activated sludge   4
      process.

3. a) Describe the byproducts from fruits and vegetables and how can you utilize them?   3
   b) Distinguish between by products and co-products. What are the main byproducts released from   4
      dairy industries?

4. a) What are the primary air pollutants? Discuss their sources and relative contribution to air   4
      pollution.
   b) Sketch a flow diagram for primary and secondary treatment of municipal waste water.   3

Section-B

5. a) What is BOD?   1
   b) What are anaerobic treatment processes? Show how organic waste matter undergoes break   3
      down.

6. a) What is incineration? Describe short note on "Rotary kiln incineration".   3
   b) How do you propose to control hydrocarbon and particulate emission?   4

7. a) What do you mean by waste minimizations? Write the processes of waste minimization.   4
   b) Briefly describe the waste produced from nuclear power plant.   3

8. a) What do you mean by fish silage? Write down the potential uses of waste derived from fish and   4
      fishery products.
   b) Write short notes on: "Acid rain".   3

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

(Figures in the right margin indicate full marks. **Answer any four (4) 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.   Define Sea Food. Briefly describe the ISSCAAP classification of sea food   5 by FAO.

2. a) Write down the objectives and importance of compositional study of fish   5 and sea food.

   b) Classify fish according to fat content. Does dark muscle loose the quality   5 faster than white muscle and why? Why we are interested in marine lipids?

3. a) Define rigor mortis. Briefly describe the different steps of rigor mortis in   5 fish? How can you determine the rigor mortis of fish?

   b) Define food safety, quality, hygiene and marine biology. Describe the   5 benefits of eating sea foods.

4. a) Define fishing techniques? Shortly describe the use of modern technology in   5 fishing.

   b) Define freezing time? Calculate the refrigeration requirement to freeze 5   5 tons of Hilsha fish, where initial temperature of fish is 25°C and storage temperature is -40°C.

5. a) Enumerate the advantages of quick freezing? Compare different quick   5 freezing techniques for fishery products.

   b) Illustrate the causal factors of spoilage of fish. Discuss the process of   5 spoilage.

Section-B

6.   Describe the scope of sea food and its processing in contest of Bangladesh.   5

7. a) Give an overview about the control measures against sea food pathogens?   5 Tabulate growth and heat in activation characteristics of food poisoning bacteria important in sea food processing.

   b) How should fish be prepared for salting? Describe the salting methods?   5

8. a) Describe the medicinal uses of sea weeds. Discuss the problems associated   5 with traditional salting processing.

   b) Give an overview about the application of pesticides in traditional dried   5 fish? What are the characteristics of dried fish prepared from fresh or rotten raw material?

9. a) What do you mean by fermented fish products? Describe the procedure for   5 the preparation of belachan.

   b) Write down the good handling practices in boats used for chilling prawns.   5 Enumerate miscellaneous aquatic products used as foods?

10.   Write short notes on (any four) :i) Ring tunnel.   4x2.5=10
   ii) Control of black spot in prawn,
   iii) Value added sea food,
   iv) Marine toxins and the associated poisoning,
   v) Marketing channel of sea food.

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination, 2016
Subject: Market Milk Processing Technology(Theory)
Course Code: MMP-301
Full Marks: 35   **Time: 2 hours**

(Figures in the right margin indicate full marks. **Answer any two (02) questions** from each section where **question no. 1 is compulsory**. Use separate answer scripts for each section. **Split answers are discouraged**)

Section-A

1. a) What are milk and market milk?   2.0
    b) What do you mean by platform tests? What are those?   2.0
    c) Mention the significance of milk chilling.   2.0
    d) Enumerate the causes of flavor defects in market milk.   2.0

2. a) Briefly discuss the history of modern dairying in Bangladesh with preference to market milk   4.0
        processing.
    b) What do you mean by CIP? Briefly state the CIP procedure in a pasteurization plant.   3.0
    c) What are common sources of contamination of milk?   2.0

3. a) Mention the milk collection and payment methods. Which one of the payment methods do you
        prefer and why?   4.0
    b) How much cream containing 40% butter fat will be required to standardize 2000 kg milk of
        3.0% fat to make milk with 4.0% fat?   5.0

Section-B

4. a) State the concept of "Pasteurization of Milk".   2.0
    b) Mention the time and temperatures of different types of pasteurization of milk. Sketch the   4.0
        comparative advantages and disadvantages of different types of pasteurization.
    c) List the functions of different parts of a HTST pasteurizer.   3.0

5. a) Enumerate the physico-chemical properties of milk. Briefly describe milk acidity and viscosity
        or color properties.   4.0
    b) State the significance of determining the specific gravity of milk. State the factors that can
        influence the specific gravity of milk with their consequences.   5.0

6.0   Write short notes (any three)   3X3= 9.0
    a) Mechanism of fluctuation of flow diversion valve;
    b) Acidophilus milk;
    c) Food value of milk;
    d) Homogenization of milk; &
    e) Routine activities of a milk chilling plant.

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination 2016
Subject: Technology of Fruits and Vegetable Products (Theory)
Course Code: FVP-301

Full Marks: 70   Time: 3 hours

(Figures in the right margin indicate full marks. **Answer any four (4) 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.   Compare and contrast between fruits and vegetables. Give a brief account of gross composition of fruits and vegetables.   5

2. a) Illustrate the structural and chemical components of plant cells with diagrammatic figure of a parenchymacell.   5
   b) Describe the pigments and colour precursors found in fruits and vegetables.   5

3. a) Define cell turgor. Describe the factors which affect the range of textures encountered in fresh and cooked fruits/vegetables.   5
   b) Describe the harvesting and processing techniques of fruits and vegetables.   5

4. a) Differentiate in tabular form among Nectar, Cordial, Squash, Crush, RTS and Syrup in respect of T.S.S, acidity, preservatives and necessity of dilution.   4
   b) Discuss the necessity steps required in clarification of lime juice cordial. Find out the necessary methods applied in juice extraction from fresh fruits.   6

5. a) Mention the typical sequence of canning. Write down the following terms: 6
            i) T.A. Spoilage,
            ii) Sulfide stinker,
            iii) Hydrogen swells.
   b) Define pickles. Mention the problems which are encountered in pickle manufacturing.   4

Section-B

6.   Give the standard definition for vinegar. Describe in brief the alcoholic fermentation and acetification methods for manufacture of vinegar.   5

7. a) Give brief account of physiological development of fruits and vegetables.   5
   b) Indicate the chemical changes occur during maturation and also in the effect of ethylene on the ripening of climacteric and non-climacteric fruits.   5

8. a) Define controlled atmosphere (CA), modified atmosphere, gas storage and hypobaric storage. Enumerate in brief the factors influencing the adoption of CA/MA storage for fruits and vegetables.   6
   b) Mention how to remove ethylene in atmosphere.   4

9. a) Distinguish among the following items: 6
            i) Jam, Jelly and Marmalades,
            ii) Chutney, Sauces and Ketchups,
            iii) Preserve, Candy, Crystallized fruits and vegetables.

   b) Define dehydrofreezing and rehydration ratio with example.   4

10. a) State the antimicrobial properties of salt and acid.   5
    b) Compare and contrast natural and artificial dehydration. What types of changes occur during storage of freezing?   5

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination 2016
Subject: Fish Processing Technology (Theory)
Course Code: FPT-301

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

(Figures in the right margin indicate full marks. **Answer any four (4) 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.   What is fish? Write down the characteristics of fresh fish.   5

2.   a)   Explain the factors that determine the composition of fish. Classify fish   5
   according to composition of protein and fat?
     b)   Define bio factors? Give the measurement of the enzymatic freshness?   5

3.   a)   Briefly describe the cause and effect of rigor mortis in fish. How can you avoid   5
   the undesirable effects of rigor mortis?
     b)   Discuss the factors influencing kind and rate of spoilage? Enumerate the   5
   evidence of spoilage of fish?

4.   a)   Define marketing channel? Give an overview of the marketing channels of fish   5
   in Bangladesh?
     b)   Enumerate the problems related to the landing and wholesale markets of fish?   5
   Draw marketing channel of Hilsha fish.

5.   a)   Briefly describe the physical and chemical approaches to minimize the risk of   5
   fish and fishery products.
     b)   Enlist the bacteria pathogens and the most sensitive sea food. What control   5
   measures should be taken against sea food pathogens?

Section-B

6.   Give an overview about the fish preservation techniques? Which one is the best   5
   technique? What do you think?

7.   a)   Illustrate typical fish freezing curve? Describe factors affecting freezing time?   5
     b)   Compare IQF shrimp prepared by different freezing process? Discuss the   5
   advantages and disadvantages of IQF.

8.   a)   Describe the procedure for the smoking of fish? Enumerate the compounds   7
   identified in wood smoke.
     b)   Explain the benefits of salt applications?   3

9.   a)   Define active packaging? What are the requirements for the vacuum packaging   5
   of fish? Enumerate the signs of spoilage in salted fish?
     b)   Discuss the control of beetles and mites in dried fish?   5

10.   (a)   What do you mean by sous vide technology? Briefly describe the sous vide   7
    process with flow chart?
      (b)   Enlist the fish by products? Discuss the use of fish by products.   3

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination 2016
Subject: Food Biotechnology (Theory)
Course Code: FBT-301
Full Marks: 70   Time: 3 hours
(Figures in the right margin indicate full marks. **Answer any four (4) 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) What is meant by the term food biotechnology? Write down the scopes of food 3
        bio-technology.
    b) Categorize foods which are produced through modern biotechnology.   2

2. a) What are the concepts of generation time? Why some bacteria cannot grow in 5
        the presence of oxygen?
    b) What do you mean by RNA splicing? How does DNA replicate?   5

3. a) What do you mean by recombinant DNA? Briefly illustrate the tools of genetic 6
        engineering.
    b) How nucleic acids are separated and purified from the cell lysates?   4

4. a) How sticky ends are converted to blunt ends? Write down the characteristics of 5
        an ideal cloning vector with a schematic diagram.
    b) Write short notes on: i) Adapter,   5
                             ii) Linker,
                             iii) Isoschizomer,
                             iv) Homo polymer tailing,
                             v) TA cloning.

5. a) What are the concepts of gene transfer? Give a detailed account of 6
        transformation, transduction and conjugation methods of gene transfer which
        are usually observed in bacteria.
    b) What do you mean by crocon gall disease in plant? What's the molecular 4
        mechanism undergoing Agrobacterium mediated transformation?

Section-B

6. a) Which part of the plant is best suited for making virus free plants and why?   3
    b) State the principle of tissue culture.   2

7. a) Briefly describe the steps that are involved in micro propagation.   5
    b) "Contribution from plant tissue culture has been significant in the improvement 5
        of quality of plants"- justify the statement.

8. a) Which culture technique is most widely utilized for haploid production? 5
        Discuss it briefly.
    b) Give an account on Electroporation and Electro fusion of gene transfer.   5

9. a) Illustrate the strategies for the isolation of desirable microbes.   5
    b) What are the component parts of a fermentation process? Elucidate the different 5
        stages of bioprocess.

10. (a) Explain primary and secondary metabolite of a bacterium. Give some examples 5
        of it mentioning the name of bacteria and its use in industrial microbiology.
    (b) Briefly describe the mechanisms of different types of bioreactors based on the 5
        mode of operation.

Full Marks: 35   **Time: 2 hours**

(Figures in the right margin indicate full marks. Answer any **Four (4)** questions from each section where question no. **one (1) and six (6)** are compulsory. Use separate answer script for each section. Split answer is strongly discouraged.)

Section-A

1. Define Malnutrition. List the public health nutritional problems in Bangladesh.   2

2. Ashraf, a nine year boy, frequently stumbles at night while walking, What could be the probable diagnosis? Write in details about the grading and clinical manifestation about the disorder. How can you treat this condition?   5

3. (a) Mention the dietary sources and RDA of the following micronutrients for pregnant women   3
        i. Vitamin B_1 ii. Vitamin B_2 iii. Iron   iv. Ca
    b) How does active form of vitamin D is formed in our body?   2

4. A 22 years lady lives in a rural area of Jamalpur district has noticed a large diffuse swelling over her throat that moves up and down with swallowing and also has breathing problem. The physician suspects that it is not a tumor. Based on the above case study, answer the following questions
    a. Identify the clinical condition of the lady.   1
    b. Briefly narrate the nutritional management of this patient.   4

5. a) What is vitamin? Classify vitamins.   2
    b) Mention the disease caused by deficiency of vitamin B complex group.   3

Section-B

6. a) Why Protein Energy Malnutrition (PEM) is more common among young children? Give the classification of PEM.   1
    b) Briefly state the nutritional management of one year old child suffering from kwashiorkor.   2

7. a) Rekha (25 years) recently gave birth of a male child. There was post-partum bleeding. She is with a pale conjunctiva, what is her probable diagnosis.   1
    b) What measures can be taken to prevent the after said condition among the women of reproductive age.   4

8. a) What is diarrhea? How can you manage a case of mild dehydration at home?   3
    b) How can you assess the nutritional status of a child?   2

9. a) What is gout? What types of foods can increase the serum uric acid level in gouty patient? Make a list of dietary sources to prevent gout.   5

10. a) Explain- "Malnutrition and Infection is a vicious cycle".   2
    b) Mention the complication and prevention strategy of obesity.   3

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 2nd Semester Final Examination, 2016
Subject: Food Packaging (Theory)
Course Code: FPK-302

Full Marks: 70   Time: 3 hours

(Figures in the right margin indicate full marks. **Answer any four (04) questions** from each section where **question no. 1 and 6 are compulsory**. Use separate answer scripts for each section. **Split answers are strongly discouraged.**)

Section-A

1. What do you mean by packaging? Write down the functions of food packaging.   5

2. a) Why polymers are used increasingly in food packaging?   3
   b) Briefly discuss injection molding and thermoforming process for plastic packaging.   7

3. a) What is shelf life? What are the factors that influence the shelf life of food products?   3
   b) Briefly discuss the advantages and disadvantages of using plastics as packaging materials.   3
   c) Which types of properties are considered during choosing of packaging materials? Describe.   4

4. a) Classify paper as packaging materials.   3
   b) Write down the specifications and features of one sealing machine.   3
   c) Briefly describe flow process (press and blow) for the production of glass packaging.   4

5. a) Describe extrusion molding with a neat diagram.   5
   b) Classify the methods of forming glass containers.   5

Section-B

6. Write a short note on "Food spoilage bacteria".   5

7. a) What are the raw materials for paper manufacturing?   2
   b) What are the advantages of paper as packaging materials?   2
   c) Discuss the production process of tin plate.   6

8. a) What is aluminium foil? What are the advantages of using aluminium foil?   4
   b) With a flow diagram describe the Kraft pulping process for paper packaging.   6

9. a) What type of environment is suitable for food packaging? Describe.   4
   b) Write down the packaging process of the following food: 6
      i) Fresh meat.
      ii) Dehydrated foods.
      iii) Sugar confectionary.

10. Define any 05 (five) of following: 10
    a) Traceability
    b) Plastication
    c) Ingot
    d) Critical moisture content
    e) Tertiary packaging
    f) MAP

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 3rd year 1st Semester Final Examination, 2016
Subject: Oil and Fat Technology (Theory)
Course Code: OFT-301
Full Marks: 35   Time: 2 hours

(Figures in the right margin indicate full marks. **Answer any four (04) 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. Draw the following structures: 2
   a) Linolenic acid
   b) Oleic acid
   c) Lauric acid
   d) Palmitic acid

2. a) What do you mean by terrestrial and marine sources of lipid?   1.5
   b) "Fish oil is awesome as a dietary lipid"-Why?   2
   c) Differentiate between soft and hard margarine.   1.5

3. a) What do you mean by refining of crude oil? Write down the objectives of refining of oil.   2
   b) What are the gums should be removed from oil during degumming process? Explain water   3
      degumming process.

4. a) Define winterization process of oil.   1
   b) Draw a flow diagram of olive oil production process   2
   c) Briefly discuss about acid degumming process.   2

5. a) Define saponification number and iodine number.   1
   b) Explain the principle of saponification number determination test.   2
   c) Write down the procedure of iodine value determination test.   2

Section-B

6. "Low temperature rendering is better than open kettle rendering"- Why?   3

7. a) Explain the mechanisms of homogeneous and heterogeneous catalyst in hydrogenation reaction   2
      of oil.
   b) What is selectivity ratio? Discuss the effects of different parameters on hydrogenation reaction   1.5
      rate.
   c) Write down the health effects of saturated fatty acids.   1.5

8. a) Differentiate between edible and inedible fats.   2
   b) What are the health benefits and side effects of omega-3 and omega-6 fatty acids?   3

9. a) Draw a flow chart of fatty oil extraction process from seeds.   2
   b) Briefly discuss about the different steps of palm oil production.   3

10. Write short notes on (any two)   5
    a) Margarine and Mayonnaise
    b) Vegetable fat and animal oil
    c) Isomerization of oil
    d) Suet and tallow