Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 4th year 1st Semester Final Examination, 2016
Subject: Renewable energy in Food Processing (Theory)
Course Code: RFP-401(T)

Full Marks. 70   Time: 3 hours

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

SECTION-A

1. a) What do you mean by Renewable energy and Non-renewable energy?   2
   b) Define the terms: Solar constant, air –mass ratio and declination angle.   3

2. a) How does the future direction of human life depend on efficient use of renewable energy?   2
   b) How can you differentiate renewable energy sources from Non-renewable energy sources by bringing some specific factor?   3
   c) Describe the essential scientific principles for a successful renewable energy system.   5

3. a) Discuss the Renewability and Sustainability of biomass.   2
   b) Give the flow chart of biomass to bio-fuel conversion routes.   3
   c) Explain gasification and clearly discuss the different processes involved in gasification with chemical reactions.   5

4. a) Explain the origin of geothermal energy and hence derive an expression for the estimation of this energy.   5
   b) What do you mean by the term "Geothermal Reservoirs"? Explain the differential techniques used to generate Electricity from Geothermal sources in geothermal power plants.   5

5. a) Explain the construction details and working principle of a solar distillation unit. Hence, Mention the parameters affecting the solar still performance.   5
   b) Design a PV system to pump 50,000 litters of water every day from a depth of 10 metres. The data required for calculation are: Peak sunshine available is 6 hours/day, Solar PV module used for the system is 75 wp; Operating factor is 0.75, Power efficiency is 0.30, mismatch factor is 0.85. What will be the power rating of the pump that is being used to perform the operation?   5

SECTION-B

6. What do you mean by the term "Solar photovoltaic"? Mention some advantages and disadvantages of Solar PV technology.   5

7. a) Explain the construction details and working principle of a typical Biogas plant.   4
   b) Explain briefly the factors on which the energy content of Biomass product depends.   6

8. a) Give a diagram of a typical solar water heater. Explain its operation.   5
   b) Show that the maximum power of a solar cell is   5

$$P_{max} = \frac{eV_{max}^2}{KT_c + V_{max}}(I_{sc} + I_0)$$

where the symbols have their usual meanings.

9. a) How much energy is required to cook 1 kg of rice in a copper vessel of weigh 0.6 kg and heat capacity 0.39 kJ/kg °C. Hence find out the time taken by box and dish type solar cooker in cooking this same amount of food from the following data. Which one will consume lesser amount of time and why? (Solar radiation at a given instant is 800 w/m^2 of which 500 w/m^2 is direct solar radiation; In case of box type the area of both the cooker and reflector is 0.25 m^2 and for dish type those of the pot and collector are 0.25 m^2 and 7.05 m^2 respectively with the cooker optical efficiency of 0.75; Efficiency of both cooker is 0.25)   6
   b) Explain the construction details and working principle of a bar type solar cooker.   4

10. a) Explain three main types of tide phenomena at different locations on the earth briefly.   5
    b) Classify wave mentioning their anatomy and also with appropriate reasoning.   3
    c) Discuss how hydropower is used for the generation of electricity.   2

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 4th year 1st Semester Final Examination, 2016
Course Title: Poultry Products Technology
Course Code: PPT-401

Full Marks: 55   **Time: 3 hours**

(Figures in the right margin indicate full marks. Answer any **three** questions from each section where question no. **1** of section A is compulsory. Use separate answer script for each section. Split answer is discouraged.)

SECTION-A

1. a) Briefly discuss the prospects of poultry products and poultry products technology in Bangladesh.   5
    b) Compare and contrast the characteristics of meat from different species of poultry.   5

2. a) Describe the procedure of fermented and dried meat products.   5
    b) Briefly discuss different types of additives used in poultry meat products including their mode of action and inclusion level.   4

3. a) Describe the chemical and physical methods of preservation of poultry meat and meat products.   6
    b) Name the organisms associated with chicken meat products.   3

4. Write short notes on (any three)   3×3   9
    a) HACCP   b) Pickled and sweet sour chicken c) Freezed and dried egg c) Chicken nugget

SECTION-B

5. a) Write about characteristics of broiler meat.   3
    b) How does age of bird and physiological state of it influence on meat characteristics?   3
    c) Mention the food value of poultry meat.   3

6. a) Draw and label of an ideal poultry processing plant.   4
    b) Discuss the production, processing and packaging procedure for different types of meat.   5

7. a) Discuss the procedure for inspection of a poultry processing plant.   5
    b) How do the microorganisms effect on the spoilage of poultry meat?   4

8. a) What parameters should you use to estimate the quality of poultry meat?   5
    b) Define poultry and mention the different species of poultry. Mention the common species of poultry in Bangladesh.   4

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 4th year 1st Semester Final Examination, 2016
Subject: Food Quality Control and Assurance (Theory)
Course Code: FQA-401
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) Define "Quality" of a food product. — 1
   b) Draw the typical quality control cycle. — 2
   c) Enlist the quality factors of food. — 2

2. a) What are verification and validation? Write down the difference between verification and validation. — 5
   b) How unknown concentration of a sample can be determined with the help of UV-Visible spectrophotometer? — 5

3. a) What is hazard analysis? How is it important in food processing? — 3
   b) Briefly discuss about HACCP, GMP and PRP. — 7

4. a) Define quality specification. How can you specify the quality of tomatoes? — 3
   b) What do you mean by recall plan? Why would a product be recalled? — 3
   c) Enlist the basic methods of QC. Discuss about the microbiological method of QC. — 4

5. a) What do you mean by food adulteration and misbranding? — 2
   b) Write the health effects of ethylene and calcium carbide as food adulterants. — 3
   c) Give a brief account of food misbranding in Bangladesh. — 5

Section-B

6. a) What do you mean by spectroscopy? — 2
   b) State the principle of spectroscopy. — 3

7. a) State the principle of AAS. — 3
   b) Write down the sequential steps for the production of gaseous atom in AAS. — 3
   c) Define calibration curve. How can you determine the unknown concentration of metal ion by using calibration curve? — 4

8. a) Define chromatography. Classify chromatographic methods. — 3
   b) What do you mean by GC? Draw the diagram of GC. — 4
   c) Lead (Pb) is extracted from a sample of food and analyzed at 283 nm and gave an absorbance 0.340 in an AAS. The following additional data was also obtained by the subsequent dilution of a standard solution of Lead (Pb) ions. — 3

Pb^{2+} (ppm)	0.00	0.100	0.200	0.300	0.400	0.500
Absorbance	0.00	0.116	0.216	0.310	0.425	0.520

   Draw a calibration curve and determine the Lead (Pb) content of food in ppm.

9. a) Define rancidity. How can you detect a rancid food? — 3
   b) Enlist the name of synthetic anti-oxidants. Discuss about the toxic effects of synthetic anti-oxidants. — 4
   c) What do you mean by quality attributes? Classify the quality attributes. — 3

10. a) Define electronic transition. Enlist the regions of electromagnetic radiation. — 3
    b) Draw the schematic diagram of a double beam UV-Visible spectrophotometer. — 3
    c) State and explain, $A = \varepsilon cl$ — 4

Faculty of Food Science and Technology
BFST 4th year 1st Semester Final Examination, 2016
Subject: Epidemiology and Public Health
Course Code: EPH-401

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. one (1) and six (6) are compulsory. Use separate answer script for each section. Split answer is discouraged.)

Section-A

1. a) What is epidemiological triad? Which factor plays the central role in it and explains why? 5

2. a) Malnutrition is a serious problem in rural poor children in Bangladesh. You have   4
investigated age, sex, BMI and social status associated with malnourished children
   i.   Enlist the exposures from the above texts and define the term 'Determinant'.
   ii.   Find out the outcome from the above texts and briefly explain about outcome.

   b) Match up the pattern of infectious diseases with the following statements   3
   i.   When a disease exceeds the level of normal expectancy in the population.
   ii.   When a disease maintains usual occurrence in the population over time.
   iii. When a disease epidemic spreads in many countries in the world.

   c) What are the distributions of water and foodborne disease? Explain them.   3

3. a) Diabetes is widely occurred nutritional disease in peoples of Bangladesh. You want to   4
measure the burden of the diabetes in the population of chittagong metropolitan city
   i.   What are appropriate measures of frequency of diabetes in the population? Write
         the pre- requisites to calculate them.
   b) What are the ways to calculate denominator for the calculation of rate.   2
   c) Let's say the prevalence and incidence of foodborne salmonella where 0.1 and 0.05 in a   4
   population. Write proper interpretation of prevalence and incidence of foodborne
   saimonellosis.

4. a) Differentiate between observational and non-observational epidemiological studies and   4
   between analytical and descriptive epidemiological studies.
   b) What is case and control of a study? Give a schematic diagram to conduct a case-control   6
   study and when this design is applicable for a research?

5. a) Define validity and reliability. How can we detect the degree of consistency of results?   3
   b) What do you mean by external and internal validity? Describe the qualities of internal   4
   validity.
   c) How can you improve reliability and validity?   3

Section-B

6. a) Define sample, sampling unit and sample size. Differentiate between probability and non-   5
   probability sampling technique. Mention their uses.

7. a) Define screening. What are the purposes and types of screening?   3
   b) What are the criteria for evaluating a screening test? Which types of diseases are   5
   appropriate for a screening test?
   c) What is lead time and trade off?   2

8. a) What are the sequential steps to investigate food poisoning outbreak?   5
   b) What ate the appropriate measure to estimate the frequency of food poisoning?   2
   c) How do you develop epi-curve? What are the important information you can have from the   3
   curve to control the outbreak.

9. a) Define error. Explain chance error and systematic error with example. 4
   b) What is confounder? What are the rules to designate a factor as a confounder? 2
   c) Explain some methods by which you can control confounder. 4

10. a) When we use qualitative research and what are the common qualitative research methods? 2
    b) Describe ' Focus group discussion' and ' In-depth interview' with their uses. 3
    c) What is randomization? Sketch the diagram of 'time-series', 'separate sample pre-test, post- test' and 'non- equivalent group comparison' study design. 5

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 refrigeration and refrigerator. How human comfort can be expressed in terms of effective temperature.   5

2.   a)   Draw a neat diagram and vividly describe the operating principle of a vapour compression refrigeration system. What are the thermodynamic processes involved in the system?   6

      b)   Enumerate in brief the comparisons between vapour compression systems and vapour absorption system.   4

3.   a)   Describe the following psychrometric processes : (i) Adiabetic saturation,   2.5×4=10
                                                      (ii) Heating and humidification,
                                                      (iii) Cooling and humidification,
                                                      (iv) Cooling and dehumidification.

4.   a)   Explain conduction heat transfer. Derive an equation for steady state conduction heat transfer through a composite wall.   4

      b)   Explain the reflection phenomenon's that are observed in radiation heat transfer principle.   3

      c)   Define ton of refrigeration, work done and by pass factor.   3

5.   a)   Define black body radiation. Derive LMTD equation for counter flow heat exchanger.   5

      b)   List the parameters affecting human comfort. What types of equipment's are used in an air conditioning system?   5

Section-B

6.   Explain the following terms: (i) Shape factor,   5
                                   (ii) Reverberation time,
                                   (iii) Noise nuisance,
                                   (iv) Structure borne sound.

7.   a)   Mention the factors which are influenced by building acoustics. Also mention the characteristics of sound.   4

      b)   Mention the initial cooling method for cold storage preservation and describe the forced air cooling method for preservation chamber.   6

                                                                                                4
8.   a)   Define and explain temperature gradient, thermal resistance and overall heat transfer co-efficient.   6

      b)   State fouriers law of heat conduction. A stream pipe 16 cm inner diameter has wall thickness of 5 mm and is covered by two layers of insulation. The thickness of first material is 3 cm and that of second is 5 cm. The thermal conductivities of pipe, first insulating layer and second insulating layer is 1.5, 0.5 and 0.08 kcal/m.hr.°C respectively. The temperature of stream is 300°C and that of outside air is 50°C. Find out the heat loss per unit length of pipe. Assume, h_i=3000 kcal/m².hr °C and h_o=8 kcal/m².hr °C.

9.   a)   Design different winter air conditioning system and represent its psychrometric process.   5

      b)   The library building of cvasu is maintained at 22°C. The walls are composed of three layers with thickness and conductivities as follows: 5

Layer	Thickness	Conductivities (Kcal/ m.hr.°C)
Inner layer with cork	3 cm	1.0
middle layer (brick)	25 cm	5.0
Outer layer (Plaster)	2.5 cm	0.5

Inside and outside heat transfer co-efficient are 18 and 40 Kcal/ m².hr.°C respectively. Find heat loss per unit area of the wall and determine the temperature at the junction of outer layer, if the outside air temperature is 35°C.

10. (a) Two air streams are being mixed at the flowing rates, No-1: stream flowing at 150 kg/min having 27°C dbt and 21°C wbt and No-2: stream is flowing at 100 kg/min having 20°C dbt and 50% rh. After mixing the mixture is sensibly heated 10°C, Whlie the heater efficiency is 90%. Determine psychrometric properties of the final mixture. (psychrometric Chart are attached with question)   5

(b) What do you mean by heating load/ cooling load? List all the parameters you must consider for calculating heating load.   5

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 4th year 1st Semester Final Examination, 2016
Subject: Marketing of Food Products and Business Management
Course Code: MFP-401

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. **one (1)** and **six (6)** are compulsory. Use separate answer script for each section. Split answer is discouraged.)

Section-A

1. a) Define market and Marketing. Distinguish between marketing and selling. Is marketing productive and complex? Explain.   3
    b) Write the characteristics of a perfect competitive system food market.   2
    c) Briefly discuss the approaches of food marketing in context of Bangladesh.   3

2. a) Define marketing Channel. Write the elements of marketing channel of food products.   3
    b) What factors govern the choice of marketing channel?   4
    c) Suggest the measures for un-interrupted and sustainable food marketing channel.   2

3. a) What is meant by the terms of working capital? Distinguish between fixed and working capital.   3
    b) Discuss the functions of business management in regard to Bangladesh.   4
    c) Write the characteristics of a good management.   2

4. a) Define marketing margin. Write the elements of marketing margin.   2
    b) Briefly discuss the marketing system of milk and milk products in context of Bangladesh. 4
    c) Mention the common problems of different food products marketing system.   3

5. a) Define Price, Cost and Value.   3
    b) State the meaning of "Marketing efficiency in food marketing under perfect competition." 3
    c) State the factors that influence marketing efficiency with subsequent measures to overcoming the barriers under perfect petition.   3

Section-B

6. a) Define business and business management. Write the difference between business and administration.   3
    b) Enumerates the roles of business information in business planning.   3
    c) What do you mean by business planning?   2

7. a) What do you mean by marketing intermediaries? Write the difference between whole selling and retailing.   2
    b) Discuss the role of intermediaries of marketing for economic development of Bangladesh.   3
    c) Do you agree with the statement "Middlemen are treated as parasite in marketing of food products"? Explain.   4

8. a) Define "Organization" and "Business Organization".   3
    b) Enumerate the common conflicts arose in business organizations.   3
    c) Write a note on "Decentralization in smooth business operations".   3

9. a) What do you mean by co-operative marketing system? Write the principles of co-operative marketing society.   3
    b) Briefly discuss the historical background of "BUMCUL" of Bangladesh.   4
    c) Why co-operative society fails in Bangladesh.   2

10. Write short notes on any 3 (three) of the followings: 3X3
    i.   Standardization and Grading.   =9
    ii. Plant layout and product design.
    iii. Marketing efficiency.
    iv. Selection Procedures of Manpower

Full Marks: 55   Time: 3 hours

(Figures in the right margin indicate full marks. **Answer any three (3) questions** from each section where **question no. 1 is compulsory.** Use separate answer script for each section. **Split answer is not allowed.**)

Section-A

1. a) Define leader and leadership. Write the forms of leaders. Why leadership is important for running an enterprise.   3
   b) Discuss the qualities of a good leader.   5
   c) State the comparison between professional and extension leader.   2

2. a) What is entrepreneurial behavior? Briefly discuss its dimensions.   4
   b) Describe the impact of entrepreneurial behavior on the success of business.   5

3. a) Define entrepreneurial growth and mobility.   2
   b) What factor hinders the entrepreneurial growth of food enterprises in Bangladesh?   4
   c) Discuss the procedures for developing the entrepreneurial competencies in the field of food industry.   3

4. a) Define financing. Write the necessities of financing of an entrepreneur.   2
   b) Distinguish between shares and debentures.   2
   c) What factors responsible for determine the formation of capital structures of a food enterprise in context of Bangladesh?   5

Section-B

5. a) Give a picture of gender based discriminations in entrepreneurship development in Bangladesh.   4
   b) Discuss the present scope of involving women in entrepreneurship development. Give some suggestions to improve on the present situation.   5

6. a) What is meant by opinion leadership? Write the types of opinion leaders with characteristics.   3
   b) Discuss the duties and responsibilities of a business leader for expansion of food enterprises in regard to Bangladesh economy.   4
   c) State the criteria for identification of a business leader in the field of food industry.   2

7. a) Define project. Write the characteristics of a project.   2
   b) Discuss the investment analysis tools and techniques in a project.   5
   c) State the limitation of the project formulation in context of Bangladesh.   2

8. Write short notes on (any three)   3×3= 9
   a) Women entrepreneurship.
   b) Entrepreneurial motivation.
   c) Limitations of rural leadership.
   d) Urban enterprises verses rural enterprises.

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 4th year 1st Semester Final Examination, 2016
Subject: Extension Communication Management (Theory)
Course Code: ECM-401
Full Marks: 55   Time: 3 hours

(Figures in the right margin indicate full marks. **Answer any three (3) questions** from each section where **question no. 1 is compulsory**. Use separate answer script for each section. **Split answer is not allowed**.)

Section-A

1. a) What do you mean by extension education? — 2
   b) State the objective of extension education. — 3
   c) Extension is a continuous educational process-explain. — 5

2. a) Define learning. Establish relationship between stimulus and response. — 3
   b) Enumerate the laws of learning. Readiness of the learner is very important for learning-Explain from your own situation as a learner. — 3
   c) 'Maslow's need theory is applicable to all human beings' What is the major theme of Maslow's need theory? Show the needs of human beings with a neat diagram. Classify these needs according to their order. — 3

3. a) What do you mean by noise in communication? — 2
   b) What are the functions of communication? — 3
   c) What are the qualities of a good message in the communication process? — 4

4. a) State the importance of leadership in extension work. — 4
   b) How do you identify the local leaders for food extension work? — 5

Section-B

5. a) Differentiate between monitoring and evaluation. — 4
   b) Write down the steps of a project evaluation. — 5

6. a) What do you mean by human resource and human response development? Enlist the techniques of human resource development. — 2
   b) How does human resource development help the employees to adapt with the changes in environment of an organization? — 1.5
   c) Define training. — 1
   - Enlist the different types of training required for the development of human resource of your organization. — 1
   - Distinguish between carrier development and refresher or maintenance training. — 1.5
   - 'Foundation training'- is very important for an incumbent carrier- explain why and how. — 2

7. a) Define extension programme and extension programme planning. — 4
   b) What is the importance of extension programme planning? — 5

8. Write short notes on the following : (Any three) — 3×3= 9
   a) Adopter categories.
   b) Opinion leadership.
   c) Feedback in communication.
   d) POSDCORB.