Moderated version

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Chattogram Veterinary and Animal Sciences University (CVASU)
BFST 2nd Year 1st Semester Final Examination 2020: Assignment
Course Title: Unit Operations in Food Processing (Theory)
Course Code: UOP-201 (T)
Full Marks: 35

Instructions and Regulations for Assignments:

1. Assignment should be submitted within the deadline assigned by the Dean office, FFST, CVASU.
2. A cover page as per the format given should be attached on the top of the set.
3. Assignment should be hand written on A4 size sheet/paper.
4. Strictly use Black colour ink only for writing the assignments.
5. Assignments should not be copied, should be clear, readable and well presented.
6. Plagiarism is strictly prohibited.

Assignment

1. Write an assignment on "**Fundamental of Unit Operations**".
Explain your learning about "Unit Operations and Classification of Unit Operations". Also give a comprehensive self-assessment of your skills and knowledge about the applications of unit operations in food processing industries before and after completion of the course
You should aim to write below 1000 words (Not more than 10 pages)

2. Write an assignment on "**Mass and Energy Balance**".
Explain your learning about "Principle of conservation of mass and energy balance" by solving a mathematical problem (Problem should not be same as class lecture and should be different among group members). Also give a comprehensive self-assessment of your skills and knowledge about the significance and future prospects of advanced unit operations in food industries before and after completion of the course.
You should aim to write below 1000 words (Not more than 10 pages)

3 Write an assignment on "**Heat Transfer in Food Processing**".
Explain your learning about "Modes of heat transfer, Estimation of Overall Heat-Transfer Coefficient" by solving a mathematical problem (Problem should not be same as class lecture and should be different among group members). Also give a comprehensive self-assessment of your skills and knowledge about systems for heating and cooling food products before and after completion of the course.
You should aim to write below 1000 words (Not more than 10 pages)

4 Write an assignment on "**Plank's Equation to Predict Freezing Time**".
Explain your learning about "Plank's Equation to Predict Freezing Time" by solving a mathematical problem (Problem should not be same as class lecture and should be different among group members). Also give a comprehensive self-assessment of your skills and knowledge about quality changes in freezing of foods before and after completion of the course.
You should aim to write below 1000 words (Not more than 10 pages)

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08/06/2024

5 Write an assignment on "**Pham's Method to Predict Freezing Time**".
Explain your learning about "Pham's Method to Predict Freezing Time" by solving a mathematical problem (Problem should not be same as class lecture and should be different among group members). Also give a comprehensive self-assessment of your skills and knowledge about freezing systems before and after completion of the course.
You should aim to write below 1000 words (Not more than 10 pages).

6 Write an assignment on "**Dehydration System Design**".
Design a "Dehydration System (Mass and energy balance in drying)" by solving a mathematical problem (Problem should not be same as class lecture and should be different among group members). Also give a comprehensive self-assessment of your skills and knowledge about different dehydration systems before and after completion of the course.
You should aim to write below 1000 words (Not more than 10 pages)

7 Write an assignment on "**Drying-Time Prediction in Spray Dryer**".
Derive an equation for the determination of the time required to achieve the desired reduction in product moisture content in a spray dryer (constant-rate drying period and falling rate drying period) by solving a mathematical problem (Problem should not be same as class lecture and should be different among group members). Also give a comprehensive self-assessment of your skills and knowledge about spray dryer before and after completion of the course.
You should aim to write below 1000 words (Not more than 10 pages)

8 Write an assignment on "**Drying-Time Prediction in Freeze Dryer**".
Derive an equation for the determination of the time required to achieve the desired reduction in product moisture content in a freeze dryer by solving a mathematical problem (Problem should not be same as class lecture and should be different among group members). Also give a comprehensive self-assessment of your skills and knowledge about freeze dryer before and after completion of the course.
You should aim to write below 1000 words (Not more than 10 pages)

9 Write an assignment on "**Single-effect Evaporator**".
Design a "Single-effect Evaporator" by solving a mathematical problem (Problem should not be same as class lecture and should be different among group members). Also give a comprehensive self-assessment of your skills and knowledge about the applications of evaporation in food industries before and after completion of the course.
You should aim to write below 1000 words (Not more than 10 pages)

10 Write an assignment on "**Water Relations to Food**".
Explain your learning about "water activity, sorption isotherm, hysteresis, factors affecting water activity, limitations of water activity and potential alternative". Also give a comprehensive self-assessment of your skills and knowledge about the roles of water activity in food preservation before and after completion of the course
You should aim to write below 1000 words (Not more than 10 pages)

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08/06/2024

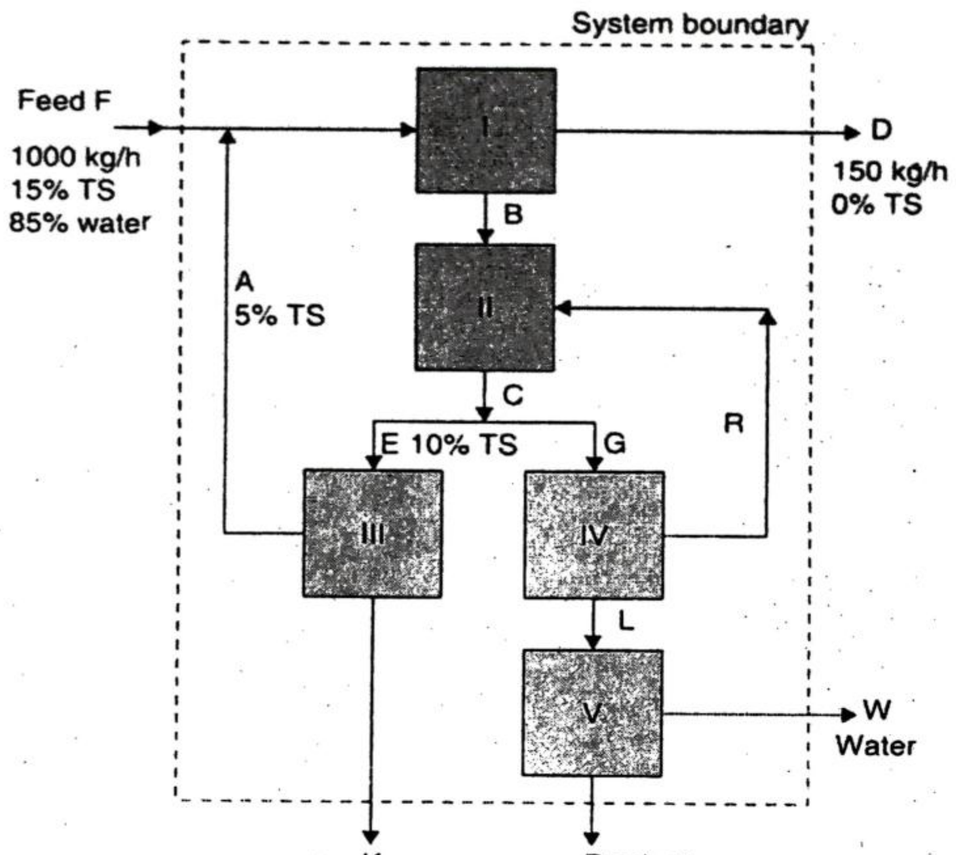
Set 1

Chattogram Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 2nd Year 1st Semester Final Examination 2020
Subject: Unit Operation in Food Processing (Theory)
Course Code: UOP-201 (T)

Full Marks: 35 Time: 2 Hours

Figures in the right margin indicate full marks. Answer any four (4) question where question no. 1 is compulsory. Split answer is discouraged

1	Make the following conversions: a) 13.248 ft^3 lb_f/in^2 lbmol ^oR to J/kgmol K b) 30 Btu/h ft^2 ^oF to kW/m^2 ^oC	2.5×2=5
2	a) Derive an expression for drying-time prediction in constant-rate drying period.	5
	b) Orange juice with 90.5% initial moisture content is being spray dried to a final moisture content of 5% using 120°C air with 7% RH. The density of the juice powder is 1000 kg/m^3, and the largest droplet diameter is 125μm. The critical moisture content is 45%, and the diameter of the particle at the critical moisture content is 25μm. The equilibrium moisture content is 3.85%, and the mass diffusivity for water vapor within the particle is 5×10^{-11} m^2/s. Estimate the drying time for product within the spray drier. Assume the wet bulb temperature for the heated air (120°C, 7% RH) is 57.1°C (droplet surface temperature); latent heat of vaporization at 57.1°C is 2354 kJ/kg; thermal conductivity of the heated air at 120°C is 0.042 W/(m °C).	5
3	a) How do you describe the effect of temperature and product thickness on the drying-rate constant?	6
	b) Classify unit operations based on the nature of the transformation performed and the transferred property.	4
4	a) 1000 kg/h of a fruit juice with 10% solids is freeze-concentrated to 40% solids. The dilute juice is fed to a freezer where the ice crystals are formed and then the slush is separated in a centrifugal separator into ice crystals and concentrated juice. An amount of 500 kg/h of liquid is recycled from the separator to the freezer. Calculate the amount of ice that is removed in the separator and the amount of concentrated juice produced. Assume steady state.	3
	b) A cylindrical food product is being frozen in an air-blast freezer. The initial product temperature is 15°C and the cold air -45°C. The product has a 7 cm diameter with density of 1000 kg/m^3, the initial freezing temperature is -1.25°C, the thermal conductivity of the frozen product is 1.2 W/(m K), and the latent heat of fusion is 250 kJ/kg. Final center temperature is -18°C, density of frozen product is 950 kg/m^3, moisture content of the product is 75%, specific heat of unfrozen product is 3.6 kJ/(kgK), specific heat of frozen product is 1.8 kJ/(kgK), shape factor for sphere is 3 and Biot number is 1.46, convective heat transfer co-efficient is 50 W/m^2K. Compute the freezing time using Pham's method.	7
5	a) State the followings: i. First and Second Law of Thermodynamic ii. Newton Law of Heating and Cooling	2×2=4
	b) An experimental engineered food is being manufactured using five stages, as shown in Figure. The feed is 1000 kg/h. Various streams have been labeled along with the known composition values on the diagram. Note that the composition of each stream is in terms of solids and water only. Stream C is divided equally into streams E and G. Product P, with 80% solids, is the desired final product. Stream K produces a by-product at the rate of 450 kg/h with 20% solids.	6



Calculate the following:

a. Calculate the mass flow rate of product P.

b. Calculate the mass flow rate of recycle stream A.

c. Calculate the mass flow rate of recycle stream R.

Set 2

Chattogram Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 2nd Year 1st Semester Final Examination 2020
Subject: Unit Operation in Food Processing (Theory)
Course Code: UOP-201 (T)

Full Marks: 35 Time: 2 Hours

Figures in the right margin indicate full marks. Answer any four (4) question from where question no. 1 is compulsory. Split answer is discouraged

1 A concentrated sugar cane juice is being freeze-dried by placing a 2 cm thick frozen layer of the product over a heated platen. The product is frozen to –75°C initially and before placing over the 30°C platen. The freeze-drying is accomplished in a chamber at a pressure of 38.11 Pa with a condenser temperature of –65°C. Properties needed to describe the process have been measured in an experimental system; mass diffusivity 2×10^{-3} m^2/s and mass transfer coefficient 1.5 kg mole/s m^2 Pa. The initial moisture content of the concentrate is 40%, the density of dry product solids is 1400 kg/m^3. Universal gas constant is 8314.41 m^3 Pa/kg mol K, absolute temperature is 243 K, vapor pressure of condenser surface is 0.5 Pa, molecular weight of water is 18, specific volume of water is 0.00107 m^3 solid/kg water. Compute the drying time for the product. 5

2 a) Derive the interrelationship expression for Moisture content wet basis (MCwb) and Moisture content dry basis (MCdb). 3

b) 1000 kg/h of milk is heated in a heat exchanger from 45^0C to 72^0C. Water is used as the heating medium. It enters the heat exchanger at 90^0C and leaves at 75^0C. Calculate the mass flow rate of the heating medium, if the heat losses to the environment are equal to 1 kW. The heat capacity of water is given equal to 4.2 kJ/kg^0C and that of milk 3.9 kJ/kg^0C. 4

c) List the quality changes occurred during drying. 3

3 a) A cabinet dryer is being used to dry a food product from 68% moisture content (wet basis) to 5.5% moisture content (wet basis). The drying air enters the system at 54°C and 10% RH and leaves at 30°C and 70% RH. Absolute humidity at 30°C and 70% RH is 0.0186 kg H_2O/kg dry air and at 54°C and 10% RH is 0.0094 kg H2O/kg dry air. The product temperature is 25°C throughout drying. Compute the quantity of air required for drying on the basis of 1 kg of product solids. 4

b) Define freezing point depression. Classify and describe the methods of freezing. 1+5=6

4 a) Derive the general expression of Plank's equation that is appropriate for calculating freezing time of a food material. 5

b) What do you mean by critical moisture content? Briefly describe the principles of drying by explaining drying rates curves. 1+4=5

5 a) Estimate the percent unfrozen water in frozen strawberries at −10°C. The composition of raspberries and molecular weights for each component are: 4

	Mass fraction	Molecular weight
Water	0.9095	18.02
Protein	0.0067	50,000
Carbohydrates		
Sugar (monosac.)	0.0336	180.2
Sugar (dissac.)	0.0432	382.3
Lipids	0.0030	50,000
Ash	0.0040	37.42

b) Illustrate the schematic relationship of food stability as a function of water activity. 3

c) Explain the principle of conservation of mass and energy balance. 3

Set 1

Chittagong Veterinary and Animal Science University
Faculty of Food Science and Technology
FST 2nd Year 1st Semester Final Examination-2020
Course code: TFP- 201, Course Title: Technology of Food Preservation (Theory)
Full marks: 35 Time: 2 hours

(Figure in right margin indicates full marks. Answer any four questions where question no. 1 is compulsory.)

1. Define food preservation. Note down the scope and importance of food science and technology. 5

2. a. What do you mean by quality of food? Enumerate the purpose of quality control. 3

   b. Express in brief the quality characteristics desired for fruits and vegetables intended for processing. 3

   c. Elucidate viscosity and consistency of foods. Clarify the principles of measurements of viscosity and consistency of foods. 4

3. a. Discuss briefly the climatic pattern of respiration and associated changes in fruit ripening. 5

   b. Discover the interrelations among the grain bulk, organism and their abiotic environment in the spoilage of stored grain. 5

4. a. Recognize canning with principles. Briefly explicate the spoilage of canned products. 6

   b. What is cold point? Clarify the factors affecting heat penetration in canned foods. 4

5. Write short notes on **(any four)**: 2.5 x 4= 10

   a. BET equation; b. Intermediate moisture food (IMF); c. Freeze drying;
   d. Reconstitution test; e. Thawing;

Faculty of Food Science and Technology
BFST 2nd Year 1st Semester Final Examination, 2020
Subject: Basic Electrical and Electronic Engineering
Course Code: EEE-201(T) Set-A

Full Marks: 35.0 **Time: 2 hours**

(Figures in the right margin indicate full marks. Answer any **Five (5)** questions. Split answer is strongly discouraged.)

Section-A

1. a) Briefly explain Ohm's law, Kirchhoff's voltage law (KVL) and current law (KCL). 3

b) For the circuit shown in Fig. 1(b): 4

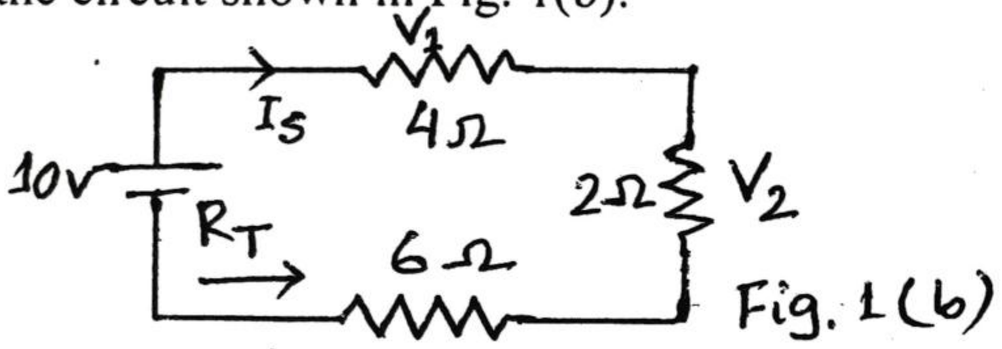


Fig. 1(b)

(*i*) Find the total resistance, R_T (*ii*) Calculate the resulting source current, I_S
(*iii*) Determine voltage across each resistor.

2. a) For the parallel network shown in Fig. 2(a): 3

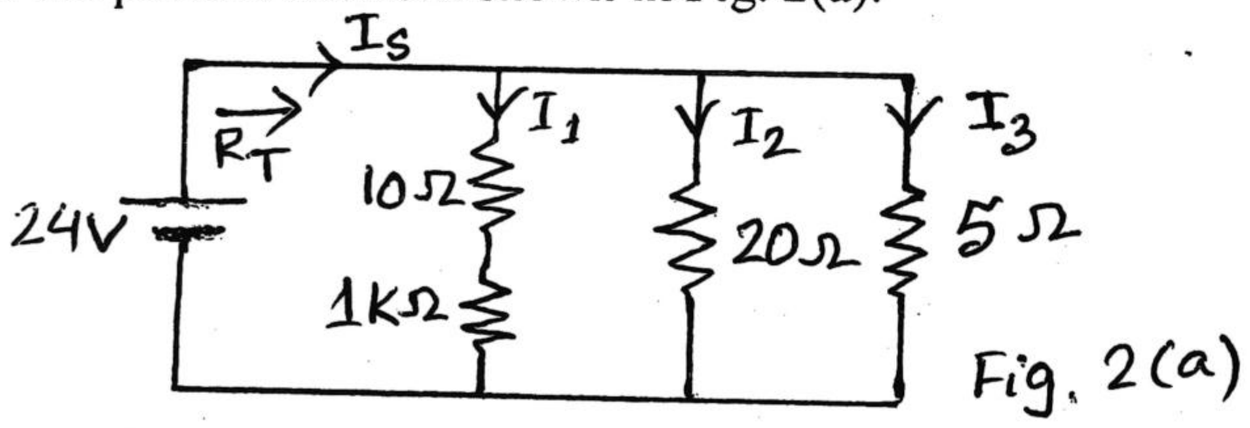


Fig. 2(a)

(*i*) Find the total resistance (*ii*) Calculate source current (*iii*) Determine the current through each branch.

b) For the series circuit in Fig. 2(b): 4

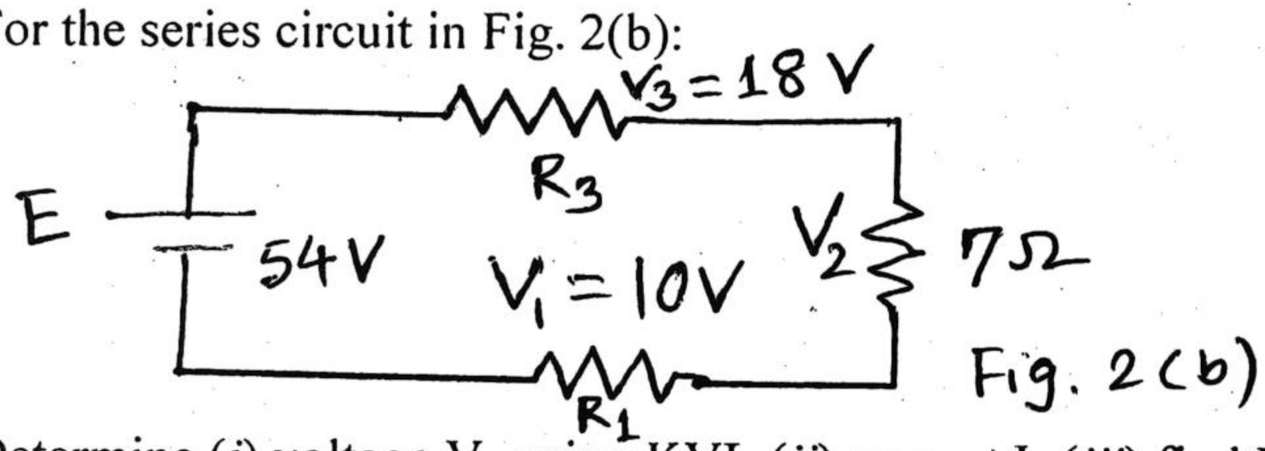


Fig. 2(b)

Determine (*i*) voltage V_2 using KVL (*ii*) current I_2 (*iii*) find R_1 and R_3.

3. a) For Fig. 3(a), determine currents I_1, I_2, I_3 and I_4 : 3

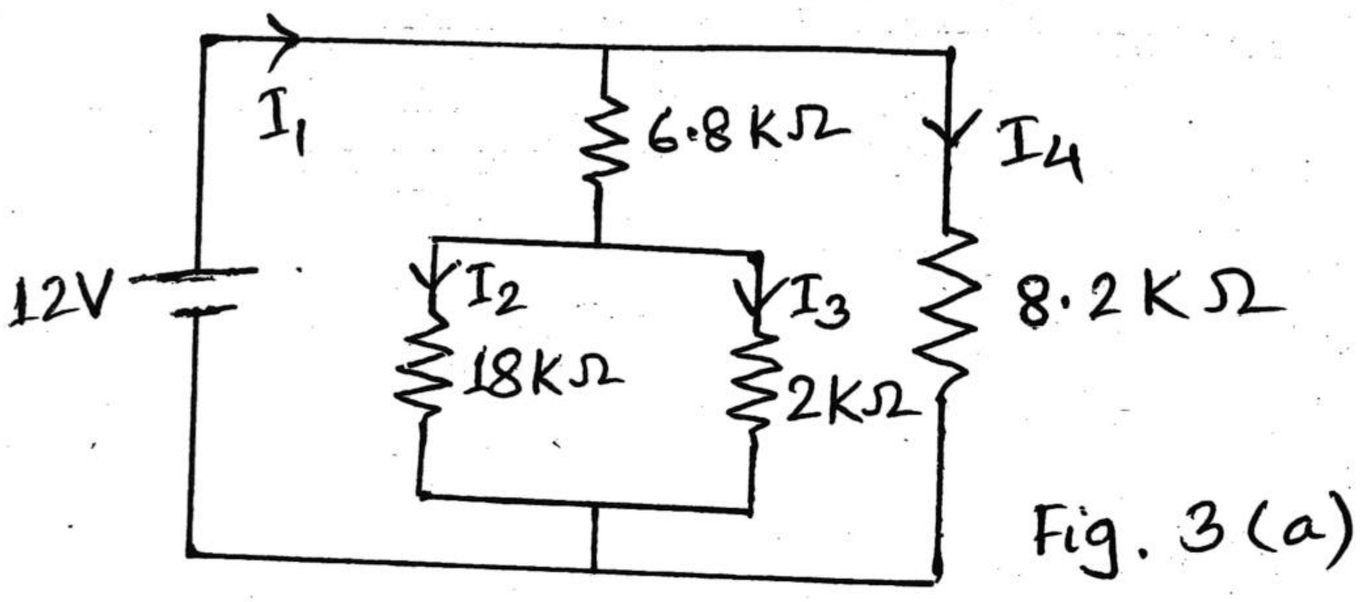


Fig. 3(a)

b) Using Superposition theorem, determine the current through R_2 for network in Fig. 3(b). 4

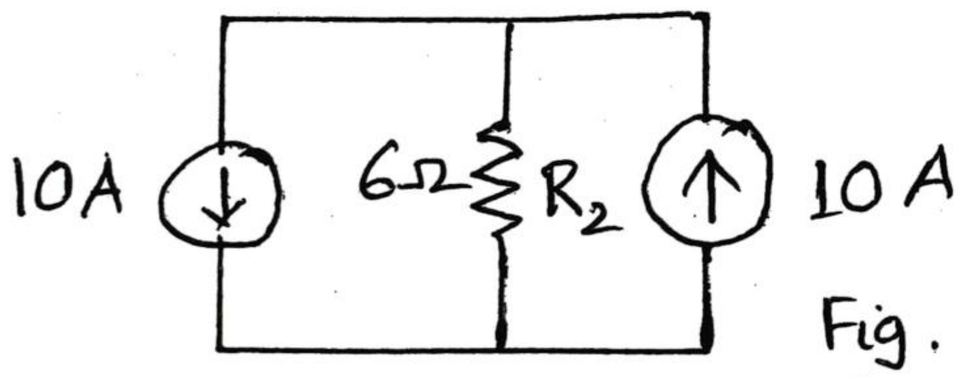


Fig. 3(b)

4. a) Find the Thevenin equivalent circuit for the network shown in Fig. 4(a) : 3

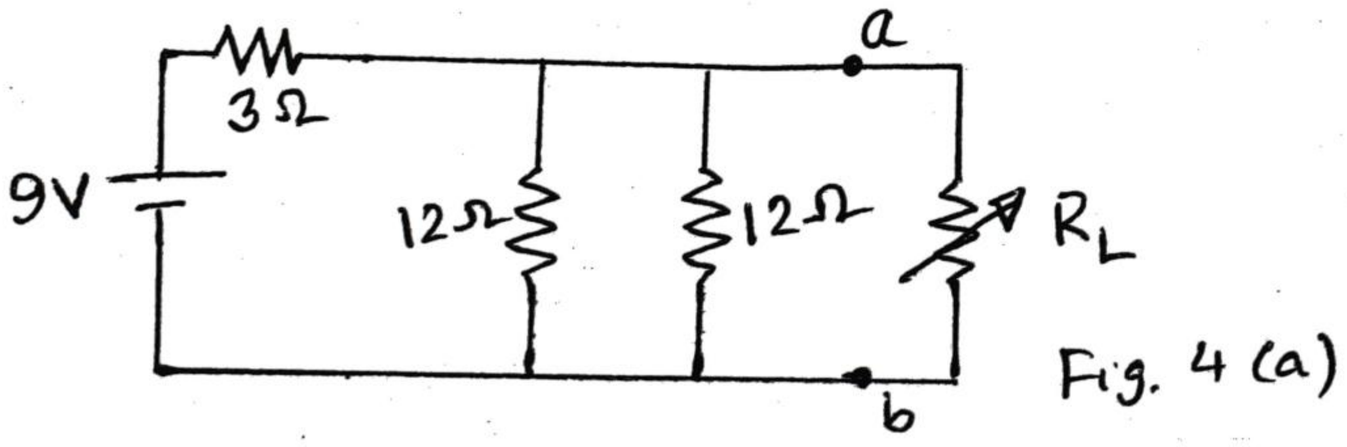


Fig. 4(a)

b) Determine the phase relationship between current, i and voltage, v. 4

$$i = \sin(2\omega t + 30) \text{ and } v = 10\cos(\omega t - 10)$$

5. a) Define electronics. Write the importance of electronics. 3
   b) Classify the materials based on valence electrons. Why do insulators not have any free electrons? 4

6. a) Explain why semiconductors have negative temperature co-efficient of resistance? 3
   b) Define *pn* junction. How *pn* junction is formed. 4

B.FST 2nd Year 1st Semester Final Exam, 2020
Subject: Technology of Food Preservation (Theory)
Course Code: TFP-201
Section: B (Assignment)
Full Marks: 35

Assignment Title (Word limit: minimum 1500 words)

1 Food Processing Technology: Principles and Practices
2 Recent Advances on Packaging and Storage Technologies for the Preservation of Fresh Food Produce
3 Rheology of Food Materials: Impact on and Relevance in Food Processing
4 Current trends in the analysis and quality control of food supplements
5 Spray drying for food powder production
6 Effect of sun drying and mechanical drying on the quality of fruits and vegetables
7 Freeze-drying of fruits and vegetables: principles, process, stability and practices
8 Freezing of fruits and vegetables: An agribusiness alternative for rural and semi-rural areas
9 Canning: an approach for the long-time preservation of fruits and vegetables
10 Innovative technologies for producing and preserving intermediate moisture foods

N.B.:
a) Avoid plagiarism(< 10%)
b) Give references

08/06/2024

BFST 2nd Year 1st Semester Final Examination 2020

Course Title: Basic Electrical and Electronic Engineering (T)

Course Code: EEE-201 (T)

Section B: Assignment **Full Marks: 35**

1. Assignment on electronic structure of the elements, crystalline and amorphous solids. Discuss PN junction, biasing and V-I characteristics of diodes.
2. Assignment on concept of rectifier, half wave and full wave rectifiers. Narrates N and P type semiconductor with example.
3. Assignment on biasing, DC and AC load line, and transistor equivalent circuits. Illustrates different types of crystal.
4. Assignment on Junction transistors, their principles of operation, characteristics in different configurations (CE, CB & CC)
5. Assignment on gain and impedance, analysis of small signal low frequency transistor amplifier by using h -parameters.
6. Assignment on construction of JFET, its parameters, biasing, characteristics and principles of operation.
7. Assignment on different types of MOSFET, their operation and characteristics.
8. Assignment on determination of Average and R.M.S values of different sinusoidal and non-sinusoidal waves, and power calculation of RL, RC and RLC circuits.
9. Assignment on Average and R.M.S. values of current, voltage and power, Real, Reactive and Apparent power.
10. Assignment on different types of transformer, transformer construction, working principle, transformer's EMF equation, transformer regulation and efficiency.

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Chattogram Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 2nd year 1st Semester Final Examination, 2020
Subject: Organic Chemistry (Theory)
Course Code: OCM-201 (T)

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

Set-1

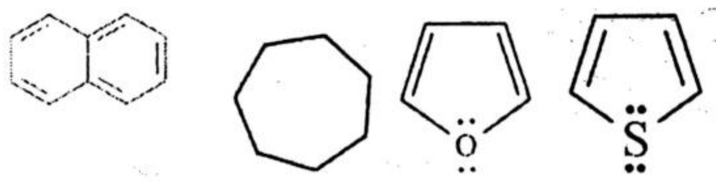
(Figures in the right margin indicate full marks. Answer any **Four questions** where question no. **1** is compulsory. Split answer is not allowed.)

Section-A

1. Define Organic Chemistry. Differentiate between Organic Chemistry and Inorganic Chemistry. 1.5+3.5

2. a) Rewrite three methods which can produce alkanes with suitable examples. 06
   b) Discuss chlorination of alkanes with mechanism. 04

3. a) Discuss molecular orbital structure of benzene. 04
   b) What is "Huckle rule"? Which of the following compound are benzene and why? 02+04



4. a) Why do alcohols have higher boiling points than corresponding alkanes? 02
   b) How do you prepare different types of alcohol using Grignard reagent? 05
   c) How do you differentiate between 1^0, 2^0, 3^0 alcohol chemically? 03

5. a) Discuss the following reactions: 2.5x4=10
      i) Fridel craft acylation
      ii) Polymerization of Alkynes
      iii) Esterification
      iv) Aldol-condensation

Chittagong Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 2nd Year 1st Semester Final Examination 2020
Course Title: General Microbiology (Theory)
Course Code: GMC-201(T)

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

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

SET-A

1.	Write down the major contributions of Louis Pasteur and Joseph Lister to the development of Microbiology. What are Koch's postulates?	2+3
2	Name two genera of pathogenic bacteria that contain endospore forming species. Describe different types of bacteria based on their preferences and O_2 requirement.	1+4
3.	Explain different phases of growth curve of bacteria in a closed system.	5
4.	Summarize the principal differences between eukaryotic and prokaryotic cells. Why endospores are much more resistant to heat than are vegetative cells?	3+2
5	Point out the reasons why virus is said to be non-living and living. Name five viruses that have potential to be transmitted through food	3+2
6	List the important enzymes involved in replication of bacterial DNA. Explain different types of mutations observed in bacteria.	2+3
7	Describe the telopmorphic pathway of fungal reproduction. Name five important mycotoxins along with the toxigenic fungi.	3+2

Assignmemt topics for Organic Chemistry (OCM-201) course

1. Write an assignment on "**Alkane**" which will encompass the following topics:
   i) Definition of Alkane
   ii) Nomenclature
   iii) General Structure
   iv) Preparation

2. Write an assignment on **"Alkane"** which will cover the following topics:
   i) Physical Properties
   ii) Chemical Properties (With respective mechanisms)
   iii) Uses

3. Write an assignment on **"Alkene"** which satisfies the following queries:
   i) Definition
   ii) Nomenclature
   iii) Structural Characteristics
   iv) Synthesis

4. Write an assignment on "**Alkene**" which will encompass the following topics:
   i) Physical properties
   ii) Chemical Properties (With respective mechanisms)
   iii) Uses

5. Write an assignment on "**Alkyne**" which will cover the following topics:
   i) Definition
   ii) Nomenclature
   iii) Structural Characteristics
   iv) Synthesis

6. Write an assignment on "**Alkyne**" which will encompass the following topics:
   i) Physical properties
   ii) Chemical Properties (With respective mechanisms)
   iii) Uses

7. Write an assignment on "**Benzene**" which will satisfies the following queries:
   i) Structural Explanation
   ii) Synthesis method
   iii) Chemical reactions (with discussed mechanism)

8. Write an assignment on "**Alcohol**" which will cover the following topics:
   i) Synthesis method
   ii) Physical properties
   iii) Chemical properties
   iv) Uses

9. Write an assignment on "**Aldehyde and Ketone**" which will encompass the following topics:
   i) Synthesis
   ii) Physical properties
   iii) Chemical properties

10. Write an assignment on **"Carboxylic Acid"** which will satisfies the following queries
    i) Synthesis
    ii) Physical properties
    iii) Chemical properties

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Chattogram Veterinary and Animal Sciences University

FST 2nd Year 1st Semester Final Examination, 2020

Course: General Microbiology (Assignment)

Total marks: 35

Prepare your assignment on the title assigned and submit individually within the deadline given.

Assignment No. 1: Bacterial nutrition

Assignment No. 2: Bacterial genome

Assignment No. 3: Fungal morphology and diversity

Assignment No. 4: Genetic recombination occurred in bacteria

Assignment No. 5: Bacterial metabolism

Assignment No. 6: Growth and death patters in bacteria

Assignment No. 7: Sterilization and disinfection

Assignment No. 8: Mutation in bacteria

Assignment No. 9: The historical background on the establishment of the Germ theory of cause of disease

Assignment No. 10: Morphological features of bacteria

(Dr. Paritosh Kumar Biswas)

(Name and Signature of the setter)

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08/06/2024

Chattogram Veterinary and Animal Sciences University (CVASU)
BFST 2nd Year 1st Semester Final Examination 2020: Assignment
Course Title: Applied Nutrition (Theory)
Course Code: APN-201 (T)
Full Marks: 35

Instructions and Regulations for Assignments:

1. Assignment should be submitted within the deadline assigned by the Dean office, FFST, CVASU.
2. A cover page as per the format given should be attached on the top of the set.
3. Assignment should be hand written on A4 size sheet/paper.
4. Strictly use Black color ink only for writing the assignments.
5. Assignments should not be copied, should be clear, readable and well presented.
6. Plagiarism is strictly prohibited.

Assignment Topics	Assignment should contain	Marks
1. **Basic nutrition**	a. Why Nutrition is important for modern life. b. Are healthy foods more expensive? Use local grocery prices and/or restaurant prices except organic foods/prices for this exercise. c. Select 5 nutritious foods that's you regularly consume and also explain its nutritional importance.	5 20 10
2. **Anthropometry**	a. What is Anthropometry b. List some challenges that you have been faced to maintained healthy living. Please provide a strategy for overcoming those challenges. c. Describe the Anthropometric Assessment of Nutritional status	5 15 15
3. **Clinical Assessment**	a. What is Clinical Assessment of nutritional status b. List at least 3 grain foods that you eat on a regular basis. For each, identify if it is a whole grain or refined. If any are refined grains, are you willing to try/switch to a whole grain version of that food? c. Describes the clinical sign symptoms of Iodine Deficiency Disorder	5 15 15
4. **Quality life leading**	a. Why Biochemical Assessment need. b. There are no guarantees in life. But the best insurance against having a heart attack or stroke is a healthy lifestyle. c. Describes the clinical sign symptoms of Vitamin A Deficiency Disorder	05 15 15

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5. **Biochemical Assessment**	a. Describes mostly used biochemical test for Iodine, Anemia, Serum Albumin. b. A good diet and a healthy body weight both enhance general well-being and reduce the risk of diseases including heart disease, stroke, cancer, diabetes, and osteoporosis. c. Why we need biochemical assessment?	15 15 05

6. **Nutritional Problem and their remedies.**	a. What is Double Burden of malnutrition? b. How you combating double burden of malnutrition among poor people of Bangladesh? c. Write down some clinical sign symptoms of Kwashiorkor and Marasmus	05 15 15

7. **Nutritional Education**	a. A child of 3 years old boy is suffering from malnutrition. How will you assess his nutritional status? b. Do you think that mass media can be used to combating nutritional problem? Justify your thought.	20 15

8. **Applied Nutrition**	a. After completing "Applied Nutrition" course how it can help you to lead a quality life. b. Why Dietary assessment is the complex and indirect methods of nutritional status? c. What is food fortification?	15 15 05

9. **Weight balance**	a. The key to a healthy body weight is energy balance: simply put, "energy in" must equal "energy out." Explain. b. Write Some Strategies for Combating Micronutrient Deficiencies	20 15

10. **Nutrition in government policy development** .	a. How nutrition is important for government policy development b. Where and when you need to start selective feeding program. c. Is Globalization processes linked with the nutrition transition?	05 15 15

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Chattogram Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 2nd year 1st Semester Final Examination-2020
Subject: Applied Nutrition (Theory)
Course Code: APN-201

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

Set-01

(Figures in the right margin indicate full mark. Answer any **4 (Four)** questions where question no. **1** is compulsory. Split answer is not allowed.)

Section-A

1. a) Define nutritional status. List out some nutritional status assessment method. 2+1=3
   b) What do you mean by nutritional emergency? 2

2. a) What is food security? Describe the components of food security. 2+4=6
   b) How food security can be assessed? 2
   c) Enlist some nutritional problems faced by developing country like Bangladesh. 2

3. a) What is protein-energy malnutrition? Differentiate between Kwashiorkor and Marasmus. 2+4=6
   b) Illustrate the underweight and overweight situation of Bangladesh. 4

4. a) Define dietary assessment. Classify the dietary assessment method. 1+4=5
   b) Differentiate between the 24-hour recall method and food frequency questionnaire method. 3
   c) What do you mean hidden hunger? 2

5. a) Define nutrition transition. Is it good or bad? Justify your answer. 4
   b) How researchers divide nutrition transition in different patterns. Explain. 4
   c) Write down the principle of general feeding program. 2