



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.TECH(FT)/SEM-2/MFT-205A/2012**

**2012**

**UTILIZATION OF FOOD INDUSTRY WASTE**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for the following :  $10 \times 1 = 10$ 
  - i) The utilization of food industry wastes
    - a) reduces pollution
    - b) increases profitability
    - c) can be a raw material for other industry
    - d) all of these.
  - ii) Which among the following food wastes is not biodegradable ?
    - a) Peels of fruits
    - b) Seeds of fruits
    - c) Husks of cereal grains
    - d) None of these.
  - iii) The most important consideration to use food industry wastes to produce by products should be
    - a) free of dust and dirt
    - b) sterilized
    - c) of reasonable microbiological quality
    - d) free of harmful chemicals.



- iv) Which one among the following will be a better source for pectin extraction ?
  - a) Spent guava extract      b) Lime peel
  - c) Apple pomace              d) Mango seeds.
- v) While making candied peels, during the simmering in sugar syrup, stirring
  - a) is advisable for better absorption
  - b) is not advisable as it forms large sugar crystals
  - c) has no effect
  - d) disintegrates the peels.
- vi) Tea wastes can be used for
  - a) manufacture of caffeine
  - b) manufacture of instant tea
  - c) using a manure in the tea field
  - d) all of these.
- vii) For production of fish meal, the raw material is
  - a) wastes from fish processing
  - b) fish protein concentrate
  - c) fish oil
  - d) all of these.
- viii) For the industrial production of lactose, the most preferred raw material is
  - a) milk                              b) fermented milk
  - c) whey                             d) all of these.
- ix) Sorghum protein can be used as a supplement
  - a) for improving the functionality of foods
  - b) for gluten-free foods
  - c) for improving the digestibility
  - d) cannot be used as a supplement.
- x) Rice bran consists of
  - a) pericarp                         b) aleurone layer
  - c) part of endosperm            d) all of these.



**GROUP – B**

**( Short Answer Type Questions )**

Answer any *three* of the following.  $3 \times 5 = 15$

2. Discuss about the probable ways to overcome the disadvantages of utilizing food industry wastes.
3. Draw the flow diagram for an anaerobic biogas plant.
4. Give a brief outline of the manufacture of candied peels.
5. How is silica extracted from rice husk and what other product/s can be recovered during the process ?
6. Discuss how the fish glue is manufactured.

**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. Discuss the advantages and disadvantages of compounded feed production using fish meal and dry grain. Discuss the production of such a compounded feed. What should be the profile of the grain for the feed ?  $5 + 7 + 3$
8. Which are the wastes that can be used to produce pectin ? What is the principle of extraction of pectin ? Discuss the manufacturing process. What are its uses ?  $2 + 4 + 7 + 2$
9. With the help of a flow-diagram, describe the production of an important by-product from shellfish. Which are the raw materials that can be used ? To which uses this can be put to ?  $8 + 2 + 5$
10. In a milk processing industry, where does whey generate ? Mention the constituents of whey. How can an important by-product be made from this ? What are the precautions needed for handling whey ?  $2 + 3 + 7 + 3$



11. Assume that there are some fish processing units located along the coast, who do not have any useful system to handling the wastes. You have been given the responsibility to open one industrial unit for the job. Discuss about the following :
- a) Initial criteria for the feasibility
  - b) Raw materials to be used
  - c) The possibility of production of different by-products
  - d) Flow sheet for the production of one product
  - e) The processing of another useful product as outlined in (c) above.

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