Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/B.Tech/(FT-NEW)/SEM-6/FT-602/2013

2013

FOOD PROCESS TECHNOLOGY-IV
(EDIBLE FATS & OILS)

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.

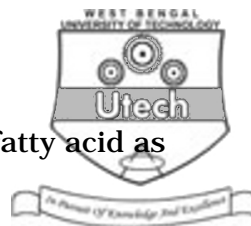## GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

    $10 \times 1 = 10$

    i)   Lard is

         a)   vegetable fat   b)   microbial lipid

         c)   animal fat   d)   rendered pork fat.

    ii) The conjugated double bond containing PUFA is

         a)   Linoleic acid   b)   Linolenic acid

         c)   Oleic acid   d)   both (a) and (b).

6240   [Turn over

iii)   Coconut oil consists of the dominant fatty acid as

    a)   Caproic acid   b)   Behemic acid

    c)   Lauric acid   d)   Myristic acid.

iv)   The transformation reaction, that directly affects unsaturation of fat is

    a)   esterification   b)   hydrolysis

    c)   winterization   d)   hydrogenation.

v)   An example of invisible fat/oil is

    a)   groundnut seed   b)   butteroil

    c)   margarine   d)   peanut butter

vi)   A non-saponifiable component of crude fat is

    a)   sterol   b)   phospholipids

    c)   FFA   d)   true fat.

vii) Tocopherol is usually removed in

    a) degumming   b) bleaching

    c) winterization   d) deodorization.

viii) Higher saponification value of an oil indicates

    a) Oil consisting high mol. wt. fatty acid

    b) Oil consisting low mol. wt. fatty acid

    c) Oil consisting of the both high and low mol. wt. fatty acids

    d) none of these.

ix) Zero-trans of a product can be obtained by the process of

    a) interesterification   b) hydrogenation

    c) frying   d) none of these.

x) The stability of oil depends on the % of

    a) Tocopherol   b) Squalene

    c) Lecithin   d) Cephalin.

xi)   The gummy matter present in Soybean oil is

a)   Gossypol

b)   Phosphatidyl serine

c)   Phosphatidyl choline

d)   Cephalin.

xii)   Tristearine is available in

a)   mustard oil   b)   butter

c)   vegetable ghee   d)   none of these.

xiii)   Fish oil consists of

a)   EPA   b)   DHA

c)   Arachidonic acid   d)   both (a) & (b).

xiv)   Rancidity can be prevented by the addition of

a)   PG   b)   TBHQ

c)   BHA   d)   all of these.

GROUP – B
(Short Answer Type Questions)
Answer any *three* of the following. $3 \times 5 = 15$

2. Mention two tests to monitor rancidity. Comment on the role of antioxidants in controlling rancidity with example. Give example of two antioxidants. $2 + 2 + 1$

3. Define any *two* of the following : $2 \times 2\frac{1}{2}$

   a) Neutralization loss

   b) Rendering of fat

   c) Esterification

   d) Salad oil.

4. What do you understand by plastic fat ? Mention the processing steps for preparation of any plastic fat. $2 + 3$

5. What is deodorization technique in processing of crude oil ? Briefly state its purpose. Mention the process parameters for this step. $2 + 2 + 1$

6. How will you evaluate quality of fats/oils ? Elaborate on the basis of different quality parameters.

7. Is solvent extraction the best method for extraction of oil from oilseeds ? What is the purity of hexane used as a solvent for extraction of oil ? $4 + 1$

GROUP – C
(Long Answer Type Questions)
Answer any *three* of the following. $3 \times 15 = 45$

8. Describe different rendering processes employed for extraction of animal fats ? What are oleo-stock and prime-steam lard ? What are different pretreatment steps followed before the animal carcass of subjected rending ? Why cooling of fat-bearing material is necessary before rendering ? How leaf fat is extracted ? $6 + 2 + 4 + 1 + 2$

9. What is a supercritical fluid ? Why is a semi-continuous process advantageous over the batch and continuous processes of supercritical CO_2 extraction of oils ? Explain the semi-continuous SC CO_2 extraction of oils. How can you differentiate between different kinetic stages of SC CO_2 extraction ? Briefly explain the advantages and disadvantages of supercritical fluid extraction process for oilseeds. What is a co-solvent ? $2 + 1 + 4 + 3 + 4 + 1$

10. What are the major characteristics of frying fat ? Describe physico-chemical changes of frying fat during frying. How hydrogenated frying fat differs from interesterified frying fat in terms of stability ? How fats and oils develop toxicity during cooking and frying ? Explain different interesterification processes employed for modification of edible fats. $3 + 4 + 2 + 3 + 3$

11. How enzymes are used for extraction of oils from oil-bearing materials ? Elaborate different steps of preparation of RBD oil using lipase. How storage conditions of oils and fats influence quality ? Explain the miscella refining process for cottonseed oil. Briefly explain the process of isolation of protein-meal from vegetable oil seeds.   3 + 3 + 2 + 4 + 3

12. What is shortening ? Mention different functions of shortening in bakery industry. What is selectivity of hydrogenation reaction ? Does a comparative study on different processes employed for manufacturing of plastic fats ? How the dead-end hydrogenator differs from recirculation hydrogenator ? Discuss thermodynamic stability of emulsions.   2 + 4 + 2 + 4 + 1 + 2

13. What do you understand by the term "cocoa butter replacers" ? Give a brief outline about their different classifications. How cocoa butter replacer can be produced from natural vegetable oil ?   3 + 7 + 5

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