Printed Pages : 1 **EAG-035**

(Following Paper ID and Roll No. to be filled in your Answer Books)										
PAPER ID :	**Roll No.**									

B.TECH.
Theory Examination (Semester-VIII) 2015-16
FOOD PACKGING & TECHNOLOGY

Time : 3 Hours ***Max. Marks : 100***

SECTION-A

1. Attempt *all* parts of the following. **(10×2=20)**

a) What do you mean by tetra pack?
b) Write the objectives of food packaging?
c) What are the advantages of modern packaging?
d) What is shrink wrapping?
e) What do you mean by aseptic packaging?
f) Define primary, secondary and tertiary packaging.
g) Explain requirement for an ideal packaging system.
h) Define water activity.
i) What is lacquering?
j) What is the purpose of introducing CO_2 in beverages during packaging?

SECTION-B

2. Attempt any *five* parts of the following. **(10×5=50)**

a) Explain the procedure of two piece and three piece cane construction.
b) What do you understand by recycling of packaging waste?
c) Explain the response of vinyl derivatives plastics used for food packaging.
d) What are different effect of environment on food stability and need for protective packaging?
e) Discuss the different mechanical test performed to inspect the integrity of packaging materials.
f) Describe the bursting test of pouches and also discusses cushioning behaviour of packages.
g) Explain the detailed process of glass bottle formation.
h) What is labelling and lamination? Why it is important?

SECTION-C

Attempt any *two* questions of the following. **(15×2=30)**

3 a) Write short note on the following term-

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i. Biodegradable plastics
ii. Bag in box packaging
iii. Hermetical Sealing
iv. Shrink packaging
v. Combination film

b) What do you mean by permeability? Explain the different methods to determination of permeability.

4 a) Describe aseptic packaging in detail. Give different methods of sterilization of packaging material.

b) Describe the loss of vitamin C in a moisture sensitive food. Give a mathematical relation between shelf life and vitamin C loss.

5 a) Lemon juice at a concentration 9° brix is stored at 10° C and the concentration of vitamin C measured over a period of weeks, gave the following results.

Time (weeks)	0	4	8	12	16
Vitamin C (mg/100 ml)	52.9	45.1	38.3	32.5	16.7

Determine the rate constant if reaction is pseudo first order and calculate the time for vitamin C concentration to reach 20 mg/100 ml.

b) Beef is to be packaged in plastic film and stored at chilled temperature. The initial level of contamination of the beef immediately after packaging is 10^3 MO/cm^2, and the maximum permitted level of MO is 10^8. Assuming micro-organisms are solely pseudomonas fluorescence, which has a generation or doubling time 8.5 hr at 5° C. Calculate the time for which beef can be stored the maximum permissible level of MO is reached.