

M.TECH. PRINTING ENGINEERING AND GRAPHIC COMMUNICATION

FIRST YEAR SECOND SEMESTER EXAM 2025

Subject: ADVANCED PACKAGING TECHNOLOGIES

Time : Three hours

PART I (50 Marks)

Full Marks : 100

Use separate answer scripts for each Part

Answer question number 1 and any 4 from the rest

1. Give short answer (in 1 or 2 lines) 10 x 1
 - i) What is the expanded form of ECCS in terms of packaging material?
 - ii) Which is the most eco-friendly packaging material?
 - iii) Which metal is not used for seamed can?
 - iv) What to be added in composition to get blue glass?
 - v) What is water saturation point in wood?
 - vi) What is glass transition temperature?
 - vii) Which plastic is represented by plastic no. 1 ?
 - viii) Which plastic is commonly preferred for microwavable packaging?
 - ix) Why boric oxide is added to glass?
 - x) What are the commonly used flutes in corrugated paperboards?
2. Describe the purposes of packaging with suitable examples. 10
3. Describe different packaging plastics. Write a short note on role of bioplastics in packaging. 7 + 3
4. Describe the metals commonly used in packaging also draw a comparative study between them. 8 + 2
5. Write the major points to be considered for package designing. Briefly discuss on the cost components considered in package design. 5 + 5
6. Briefly discuss some of the important factors that affect the package quality. 10
7. Describe the different types of paperboards. Make a comparison between solid paperboards and corrugated paperboards. 7 + 3

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M Tech. Printing Engineering and Graphics Communication

First year First Sem Exam 2025

Advanced Packaging Technologies

Time : Three hours

PART II (50 Marks)

Full Marks : 100

Use Separate Answer script

Answer two following questions:

1. Name any three commonly used plastic processing methods. Mention one application for each. What is calendaring in plastic processing? Mention one example of a product made using this method. Compare injection molding and blow molding in terms of process, types of products, and tooling requirements. Describe the extrusion process for plastics with a neat diagram. Highlight its significance in packaging applications. [4+5+6+10=25]
2. Define sustainable packaging and mention any two of its key objectives. Explain how packaging material properties affect product shelf life. Support with examples. Describe Modified Atmosphere Packaging (MAP). How does it influence the shelf life of perishable food items? Differentiate active packaging and bio-based packaging. Give at least one example of each and explain how they contribute to sustainability. [5+5+5+10=25]
3. Discuss the thermoforming process types (vacuum, pressure, mechanical), advantages, and examples used in packaging (e.g., trays, blisters, clamshells). Give common properties of LDPE and HDPE with chemical structure. Differentiate between chemical and mechanical pulping process. Name two common sizing agents used in paper production and their function. [8+ (4+4)+ 5+ 4=25]
4. Define aseptic packaging. How is it different from conventional sterilization techniques? Describe the steps involved in the aseptic packaging process. Explain how aseptic packaging contributes to extended shelf life, especially for dairy or juice products. What are the regulatory and hygienic requirements for aseptic packaging plants? Explain the role of packaging materials used in aseptic systems. Give examples. [5+5+5+5+5=25]